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Literature Analysis on the Impact of Gamified Education on Engagement, Motivation, and Learning Outcomes Among Preschool Children in Rural Communities in China

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Abstract

This study explores the impact of gamified education on preschool children in rural communities, focusing on engagement, motivation, and learning outcomes. Gamification, the application of game design elements in non-game contexts, has shown positive effects in educational settings, particularly in enhancing student motivation and engagement. However, its application in rural communities, characterized by limited educational resources, remains underexplored. This research investigates how gamified learning can address the educational challenges faced by rural preschool children, integrating local cultural elements to improve learning experiences. A quasi-experimental design was employed, with an experimental group engaging in gamified learning activities based on rural culture and a control group receiving traditional instruction. The study utilized a mixed-methods approach, including surveys, direct observations, and interviews with teachers, parents, and children, to assess learning motivation, engagement, and academic outcomes. Results indicated that children in the gamified learning group showed higher levels of participation, motivation, and academic achievement compared to those in the control group. Furthermore, incorporating traditional rural games into the gamification process not only increased engagement but also helped preserve local cultural heritage. Despite challenges such as limited digital infrastructure, the study highlights the potential of gamification to promote learning and cultural identity in resource-constrained environments. The findings suggest that gamification, when adapted to local contexts, can significantly enhance the educational experiences of preschool children in rural communities, fostering both academic and cultural development. This study provides valuable insights for future research and educational policy in rural areas.

A. Introduction

Gamified education has been widely used to improve the learning engagement and motivation of students in various educational contexts and age groups. Existing research has demonstrated the positive impact of gamification on students' learning experiences, such as enhanced engagement, improved motivation, and better learning outcomes (Bai et al., 2020; Dichev & Dicheva, 2017; Nusairat et al., 2024). Gamification is an innovative pedagogical approach that applies game design elements and principles to non-game contexts,

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such as education, with the aim of enhancing user engagement and improving learning outcomes . Specifically, in the context of education, gamification has been shown to have a positive impact on students' motivation and engagement in learning tasks. Recently, there has been a growing interest in applying gamification in the education of preschool children, particularly in rural communities where access to quality education resources may be limited (Jiang, 2016; Zhao, 2021). Rural communities often face unique challenges, such as economic and infrastructure constraints, which can hinder the delivery of effective educational programs (Sun et al., 2023; Viloria et al., 2021). By integrating gamification into the educational experiences of preschool children in rural communities, researchers hope to address these challenges and create more engaging, immersive, and effective learning environments.

The main aim of this study is preschool children in rural communities; due to the uneven economic development between urban and rural areas, the distribution of educational resources between urban and rural areas is also unequal. Most rural preschool children's educational development is realized through the education of kindergarten teachers and parents. Some villages are losing their population, and there is also a situation of left-behind children (Jiang & Wang, 2021). There is a lack of understanding and concern for the education of preschool children in rural communities, and the gap between urban and rural areas still exists. Rural culture, however, is a cultural resource handed down in our country for thousands of years, and it is important to vigorously develop the countryside of our country, which should not be gradually reduced or disappear with the development of technology and the acceleration of urbanization (Zhao et al., 2023). According to the development of the world, developed countries have achieved very good results in the construction and development of rural communities (Verma & Singh, 2014). More attention is paid to the cultural cause of the rural community, and many design teams and scholars began to rely on the local characteristics of the culture as an entry point for research, which provides more ways to study the service culture system of the rural community. For the various complex social problems presented in society nowadays, the construction of rural communities can promote and help solve these complex problems meaningfully from the perspective of social science (Lewis et al., 2013). Moreover, the culture of the rural community has been continuously used by the groups in the community and has become an inseparable part of the community groups. It includes village customs, habits, dialects, architecture, festivals, etc. Countryside and children's education have become a hot spot of great concern in society, and there are more and more models of combining the countryside and education. From the development results, rural communities and children's education are complementary and symbiotic (Chen et al., 2022; Xue et al., 2021). Practice cases based on social innovation show that the development of rural communities relies most on the bottom-up participation of community people. Strengthening children's rural education is an important manifestation of the sustainable development of rural communities. The education of preschool children is the underpinning foundation of educational development, providing children with the opportunity to learn about the culture of their hometown, indirectly influencing people around the community and forming a good sense of community identity.

Gamification education began in the 1970s and has grown rapidly in the 21st century with the rapid development of technology and the importance people place on education. Gamification education integrates the approach of play and the purpose of education (Jiang, 2016; Tootell & Freeman, 2015). The characteristics of gamification education include interactivity, emphasizing initiative and motivation, and improving learning outcomes. Focusing on the growth and education of preschool children and incorporating local rural cultures, gamification education has been applied to designing curricula and activities for young children, creating various gamification methods and learning environments to increase learner engagement (Ouariachi et al., 2020; Rahmah & Aishah, 2019), boost motivation (Tamtama et al., 2020) and improve learning outcomes (Ishak & Yamin, 2020). The development of rural communities requires the participation of everyone from the bottom up, not only by adults but also by children. Preschool children are the youngest participants in rural communities and are the inheritors and promoters of future rural culture development. Preschool children are mainly aged 3-6 years old. They play games for a large part of their daily life, and during this period, children are very curious, and their psychology is at the stage of primary learning and accepting information from the outside world. According to the psychological and behavioural characteristics of preschool children, gamification education can be expanded in children's moral, intellectual, physical, aesthetic and labour aspects; the local culture with role-playing, activities, exhibitions, handicraft competitions and other forms of preschool children want to play the same as to improve their participation (Abed & Shackelford, 2022; Tramonti et al., 2024), this game experience can stimulate the children's interest and motivation to learn, and regular activities and competitions to show their learning achievements.

The development of rural revitalization is not only the growth of material wealth but also the growth of cultural and spiritual aspects (Bao & Li, 2021). The potential of gamification education is huge. It positively impacts the inheritance and development of local culture in villages, and preschool children are the core force for the future promotion of cultural development in rural communities. Using gamification education to indirectly express village wisdom and cultural elements in children's curricula and activities will help children come into contact with culture, understand it, and form a sense of cultural identity and belonging. Village culture permeates kindergartens, homes and other environments, creating a bottom-up force. Preschoolers enjoy learning in the form of dynamics and games, providing what children enjoy, can sing and do, and interact with rural culture. In addition to offline activities, technology can also be used to incorporate gamified education for preschoolers in the countryside (Qi, 2023; Zhao, 2021). Based on the cultural resources of the countryside, these cultures with connotative ideas can be transformed into activities and curricula that preschoolers can accept and understand so that the culture of the countryside can be regenerated and given a new lease of life.

Gamified education opens up a new spatio-temporal dimension, and its strong sense of immersion can increase the learner's sense of agency (Saleem et al., 2022). Gamification methods can motivate learners by designing learning content into interlocking links and levels and setting certain reward and punishment mechanisms in each link. Gamification education is a way of educating children that can stimulate their autonomy and increase their attention (Lamrani & Abdelwahed, 2020; Lewis et al., 2014). Gamification education enables children to understand society, share experiences, and increase knowledge effectively. Relevant surveys have shown that children exposed to media earlier and more frequently are more socialized, better adapted to social development needs, and have greater adaptability and resilience than children who live in closed environments. Gamification is a technique and a method used by some organizations to increase motivation (Dichev & Dicheva, 2017). Gamified education uses game logic components, mechanics and dynamics, and aesthetics to promote and enhance learning through motivation (Caporarello et al., 2020). Gamification can be one of the new opportunities for innovation (Opriș et al., 2021). Gamification education allows learners to learn while playing, reinforcing the understanding of knowledge and concepts in a fun and educational format. Therefore, game-based education is not only a recreational activity but also an extremely important educational dimension.

Gamification aims to increase engagement and motivation. The method has been studied extensively in urban communities. There are few studies on its application in rural communities (Sulistiyo et al., 2019). Studies have found that applying gamification to education in rural communities can effectively increase learning interest and achievement. This can improve the overall educational level of local residents and cultivate more independent learning ability and innovative thinking, laying the foundation for future social development (Huh et al., 2016). Secondly, gamification can help protect and pass on traditional rural culture. Research has shown that many traditional games in villages contain rich cultural connotations and can cultivate children's positive character, moral sentiments and social skills (Supriyanto et al., 2022). By gamifying these traditional games, we can capture today's children's interest and ensure that this valuable cultural heritage is passed on (Regiana et al., 2020). Gamification can also be an effective tool for rural community building. Designing games closely related to local life can enhance their sense of community identity and participation,

Rural communities have three substantive definition angles: ecology, occupational composition, and socio-culture. The ecological part defines rural as a high land-to-population ratio, with occupational composition mainly in agriculture, forestry and mining. Socio-culture refers to people following traditional values, such as attachment to community organizations and church activities. Fei Xiaotong once mentioned in his book Rural China that the nature of rural China is immobility and summarized the social relations in rural China as a "differential pattern" society. For people in traditional rural communities, the circle they live in is very limited. Their main range of activities is their village. In rural communities without many rights and economic differences, people's social status often depends on the moral evaluation of the people around them. Poverty, limited infrastructure and cultural attitudes towards education have led to this persistent urban-rural gap. In addition, empowering rural communities, especially through the perspective of religious ecology, maybe a key factor in achieving sustainable development. Community empowerment can enhance the capacity of rural communities to implement sustainable agricultural principles that address environmental issues and contribute to social and economic sustainability.

As this study focuses on preschool children aged 3-6, literature on the use of gamification in this age group was investigated. There are two ways to provide gamified education for children in rural communities: one represents the unique knowledge possessed by the rural community, and the other is the knowledge

prescribed by the national curriculum, which is taught to rural community children through local kindergartens and schools. In the community, knowledge is imparted through teachers telling stories, participating in local activities, and playing games. Many games are designed to impart knowledge from elders to preschool children, and rural community cultural education for preschool children is a fundamental stage of learning, which significantly impacts cultural identity in the region. Gamification has increased children's task participation.

How to adjust rural cultural games to improve the learning outcomes of children aged 3-6. The MOLLY OF DENALI Family Game Club, developed in collaboration with rural communities in 2023, provides an example of how game design considers rural communities. From birth to age 3, children have completed 60% of their brain intelligence development. Children who grow up to 3 have strong learning and absorption abilities. By age 6, children have completed 80% of their brain intelligence development. Preschool children aged 3 to 6 are at a critical stage in human development, laying the foundation for their future academic, social, and personal success (Mathers et al., 2014). Although parents generally recognize the importance of early childhood education, they may not fully understand appropriate teaching methods that support children's comprehensive development. Research has shown that incorporating music, auditory, and sound-based activities into the preschool curriculum can positively impact learning and ability acquisition (Magán-Hervás & Gértrudix-Barrio, 2017). Traditional teaching methods often have fixed learning structures, which, to some extent, hinder the development of children's participation, learning motivation, learning outcomes, and so on. The effectiveness of gamified education in rural communities remains an area that requires further exploration and empirical research.

Student engagement is a continuum from disengagement to engagement and exists at multiple levels where the same student may exhibit different levels of engagement. Student engagement is built around a hopeful goal of increasing the ability of all students to learn how to learn or become lifelong learners in a knowledge-based society. The first approach emphasizes engagement's cognitive, behavioural, and affective dimensions. This perspective suggests that engagement encompasses the mental, physical, and emotional components of children's participation in preschool activities and social interactions. In contrast, the second approach defines engagement in vitality, dedication, and focus (Alrashidi et al., 2016), emphasizing the intensity and depth of children's involvement in their educational experiences. Engagement has been identified as a key predictor of children's subsequent learning, development, and well-being (Adolfsson et al., 2018), making it a key area of interest for educational researchers.

Motivation to learn is an important aspect of the educational process as it plays a key role in shaping an individual's academic achievement, engagement, and overall learning experience. Researchers have identified and examined various dimensions of learning motivation, including curiosity, engagement, competition, recognition, achievement, conformity, and work avoidance. Researchers have emphasized intrinsic motivation's importance and found positive contributions to intrinsically motivated behaviours and abilities. In addition, when students can choose their reading materials, their motivation to read increases because they perceive reading as an enjoyable activity. Motivation is an important influence on teaching and learning, affecting learning behaviour and the entire learning process. The success of learning depends on whether the learner is motivated. Highly motivated students who are highly motivated to learn quickly and have fun. Students who are not motivated may learn very little and become bored. There are also external reasons for motivating students to learn. For example, when teachers impart knowledge, they ask questions that arouse students' curiosity and thinking, leading them to develop learning goals and motivation.

Learning outcomes refer to the specific knowledge, skills, and abilities that students should acquire at the end of a course or project and have become a widely researched and discussed topic in education. According to "Introduction to HAPS Physiology Learning Achievements", using learning outcomes provides multiple advantages for teachers and students. Similarly, 'Implementation of OBE-based Management Accounting Learning' emphasizes how outcome-oriented education focuses on learning outcomes, where the knowledge, skills, and attitudes that students should demonstrate after completing a course or curriculum are identified and expressed as expected learning outcomes. The "Results-oriented Education: Outline" further elaborates on this concept, stating that all decisions regarding curriculum, assessment, and teaching are driven by the exit learning outcomes that students should demonstrate at the end of the course or curriculum (Rao, 2020). Learning outcomes enable students to understand the value and purpose of their learning experiences and help teachers understand their learning knowledge and abilities. Learning outcomes can enhance students' learning motivation by clarifying their expectations and the expected

outcomes of the course. Educators can create a more cohesive and effective learning environment by combining learning outcomes with assessment and teaching activities.

Previous studies have extensively examined the impact of gamification in education, particularly in urban settings, where educational infrastructure and access to technology are more advanced. Dichev & Dicheva (2017) and Saleem et al. (2022) found that incorporating game elements into learning can significantly enhance student engagement, intrinsic motivation, and academic performance, especially in STEM subjects. Their research emphasized that gamification creates a more interactive and enjoyable learning environment, ultimately increasing student participation. Additionally, Huh et al. (2016) highlighted that progressive educational policies in major cities facilitate the adoption of technology, including gamification, allowing schools to quickly integrate this learning method.

However, most of these studies focused on urban contexts, which benefit from better access to technology and educational resources. This study aims to broaden the scope by exploring the application of gamification in rural communities in China, where digital divides, resource limitations, and cultural challenges are key factors affecting the effectiveness of gamified education for early childhood learning. In this context, gamification methods must be adapted to local conditions, such as integrating traditional games with educational elements and utilizing simpler, community-based learning media. Wu et al. (2023) suggested that gamification can serve as a strategy for cultural preservation and sustainable development, which is particularly relevant to this study.

Furthermore, this research highlights the importance of integrating local culture to support gamification, an aspect often overlooked in previous studies that focused more on modern technological approaches. By adapting game elements that align with the local cultural context, gamification can create a more meaningful and relevant learning experience for students. The primary contribution of this study is to explore how gamification can be effectively implemented in environments with limited digital infrastructure and how cultural integration can enhance engagement and motivation among preschool children in rural communities. This study fills a gap in the existing literature by offering a new perspective on how gamification can not only improve learning quality but also strengthen children's cultural identity in rural areas.

Gamified learning has been widely applied in language learning, mathematical enlightenment, and scientific exploration fields. In the cultural field of rural areas, it is rarely involved. Gamified learning methods can enable children to participate more actively in learning, improve concentration and memory. Rural games include handicrafts, role-playing, folk performances, etc., which can effectively stimulate children's interest in culture. Many previous studies only focused on pre class learning methods, with little or no explanation of classroom learning design. By integrating relevant theories from research methods to address these gaps, the scope of research has been expanded, and these theories are beneficial for the learning environment and academic performance of both teachers and students. 1) There is little research on rural regional culture based on gamified learning. 2) Most cultural research on gamified learning focuses on specific fields and lacks a comprehensive analysis of the overall ecosystem of rural regional culture. 3) Preschool children are interested in visual and concrete cultural symbols, such as traditional costumes, architecture, handicrafts, and folklore in rural areas.

The core of gamified learning is to motivate learners' participation and cultivate their intrinsic learning motivation through game mechanisms such as rewards, levels, and challenges. For preschool children, gamified learning emphasizes guiding natural learning through game activities, which is in line with children's learning characteristics of "integrating education with entertainment". Gamified learning accompanies children's growth, inspiring their imagination and improving their hands-on abilities through games such as building blocks and puzzles in early childhood. The gamified learning theory allows preschool children to engage in both play and learning simultaneously, understanding knowledge and mastering skills through gamified learning, while also stimulating their interest in learning.

This article studies the impact of gamified learning on the learning outcomes of preschool children in rural communities. As a new force in rural communities, preschool children play an undeniable role in promoting and inheriting excellent regional culture. The purpose of this study is to construct rich gamified curriculum cases that integrate local cultural elements, enhance students' interest and innovative thinking in learning, and provide certain assistance for gamified teaching of preschool children in rural communities. The research objectives of this study are as follows: 1) Design gamified educational curriculum and activity types for children in rural communities with regional culture. 2) Design gamified education to link

children's education with rural community cultural education. 3) Design gamified education in rural communities to increase the interest and participation of children aged 3-6.

B. Research Methods

This study employs a quasi-experimental approach with a mixed-methods design to analyze the impact of gamified education on the engagement, learning motivation, and academic outcomes of preschool children in rural communities in China. A quasi-experimental design was chosen as it allows for comparisons between the experimental group (using gamified learning) and the control group (using conventional teaching methods) without random allocation. Research Location and Participants, the study was conducted in a kindergarten in County C, Shandong Province, China. The sample consisted of preschool children aged 3-6 years, divided into two groups. Experimental Group – engaged in gamified learning integrated with culturally relevant educational games. Control Group – followed traditional teaching methods, such as lectures and textbook-based instruction. To obtain comprehensive insights, this study utilized multiple data collection techniques: Surveys and Questionnaires, A 5-point Likert scale was used to assess learning motivation and student engagement before and after the gamification intervention. Additional surveys were distributed to parents and teachers to gather their perceptions of the effectiveness of gamified education. Direct Observations, conducted during learning sessions to evaluate children's behavioral and emotional engagement with gamified learning activities. Semi-Structured Interviews conducted with teachers, parents, and children to explore their experiences with gamification in education. Teachers were interviewed regarding their adaptation to gamification and the challenges encountered in its implementation.

Research Instruments, cultural Identity Scale for Preschool Children in Rural Areas – used to assess the development of cultural identity through gamification activities. Learning Evaluation Rubric – applied to measure children's learning outcomes, including cognitive, motor, and social skills. Data Analysis Techniques uses quantitative analysis, Survey and questionnaire data were analyzed using t-tests and ANOVA to compare engagement, motivation, and learning outcomes between the experimental and control groups. Qualitative Analysis use thematic analysis was applied to interviews and observations to identify patterns in responses regarding challenges and the effectiveness of gamified education in rural communities. Content validity was ensured through expert review by early childhood education specialists to confirm the relevance of research instruments. Reliability testing was conducted using Cronbach's Alpha to measure the internal consistency of questionnaires and rating scales.

The study adhered to ethical research standards, ensuring that participant confidentiality was maintained, and informed consent was obtained from parents and school authorities before the study commenced. Limited digital infrastructure in rural communities may impact the effectiveness of gamified learning implementation. Short study duration may restrict the evaluation of long-term impacts of gamification on preschool children. Potential observational bias, as researchers actively engaged in classroom settings, may influence children's behavior.

This study employs a quasi-experimental design rather than a full experimental or longitudinal approach due to the specific conditions of the research setting and the feasibility of implementation in rural communities. A full experimental study, which requires random assignment of participants, is not suitable for this context because schools and kindergartens in rural China have fixed class structures and do not allow for arbitrary student assignment to experimental and control groups. Additionally, a longitudinal study, which tracks participants over an extended period, would pose significant logistical challenges, including student attrition, variations in local policies, and changes in community dynamics that may interfere with the consistency of the research findings. Given these constraints, the quasi-experimental approach allows for a comparative study between groups while ensuring that the natural learning environment of preschool children remains intact. To minimize bias, this study implements several methodological safeguards: 1) Blind Assessment: Teachers and evaluators assessing the children's engagement, motivation, and learning outcomes are not informed about which group the child belongs to (gamified vs. traditional learning), reducing the risk of subjective bias in scoring. 2) Triangulation of Data: Multiple data sources—including surveys, direct classroom observations, and semi-structured interviews with teachers and parents—are used to validate findings. This ensures that results are not solely dependent on one method of data collection, improving reliability. Standardized Evaluation Tools: The study employs validated measurement scales, such as the Cultural Identity Scale for Preschool Children in Rural Areas, to assess engagement and learning outcomes, further reducing researcher bias. Multiple Observers: Classroom observations involve more than one independent observer, ensuring inter-rater reliability in qualitative assessments.

Inclusion and Exclusion Criteria for Sample Selection The sample population consists of preschool children aged 3-6 years from a kindergarten in County C, Shandong Province, China. The selection criteria are as follows: Inclusion Criteria: Children must be enrolled in the selected rural kindergarten that has agreed to participate in the study. Children must be between 3-6 years old, as this is the target age range for early childhood education programs. Participants' parents or guardians must provide informed consent, allowing their children to be observed and assessed during the study. Children must have attended the kindergarten for at least six months to ensure they have adapted to the learning environment and to control for external influences. Exclusion Criteria:

1. Children with diagnosed cognitive or developmental disabilities that significantly impact their learning ability, as this study does not focus on special education interventions.
2. Children who have had prior exposure to gamified learning programs outside the study's intervention, as previous experience could bias the results.
3. Children whose families plan to relocate within the study period, as continuity of participation is required for reliable pre-and post-intervention comparisons.

By employing a quasi-experimental design, incorporating blind assessments and triangulated data collection, and establishing clear inclusion and exclusion criteria, this study ensures a robust methodological approach that accounts for the unique challenges of conducting educational research in rural communities while maintaining scientific rigor and validity.

C. Results and Discussion

Proposed Research Design

This study aims to design a research framework to investigate the impact of gamified education on children's engagement, motivation and learning outcomes in a rural community. The study will examine the effectiveness of gamified learning approaches in increasing preschool children's engagement and academic achievement, fostering intrinsic motivation and promoting learning outcomes for this target population. Rural communities often face unique challenges in providing equitable educational opportunities for their children. Factors such as limited resource access, geographic location, and socioeconomic disparities may contribute to educational gaps between urban and rural communities. Gamification may offer a promising approach to addressing these challenges and improving children's learning experiences in rural communities. The proposed study will use a quasi-experimental design to investigate the impact of gamification on the educational outcomes of children in rural communities. The study will involve the following key components: The study design will implement a gamified learning intervention in selected rural community schools with a control group receiving traditional instruction. In order to assess the effectiveness of the gamification approach, the study will measure student engagement, motivation and learning outcomes through a series of pre-and post-intervention assessments. Participants will be recruited from rural community schools focusing on children aged 3-6 years. A mixed methods approach will be used, combining quantitative data collection (e.g., standardized tests and surveys) and qualitative data collection (e.g., interviews and focus groups) to gain a comprehensive understanding of the impact of gamification.

Proposed Research Objectives

To analyze the types of children's education programs in rural community cultures. to design gamified education linking children's education and education in rural community cultures. to determine the teaching and learning styles of gamified education to promote the learning ability of children in rural communities and different types of educational games to promote their cognitive development.

Proposed Study Population

In this study, one kindergarten in County C of Shandong Province was selected as the sample garden, and this study adopts the combination of horizontal research and tracking research. It is divided into the selection of Horizontal Research Objects. To explore the overall performance and age characteristics of preschool children's cultural identity, the researcher randomly selected the large, middle and small children in the garden as the research objects.

Proposed Research Content

(1) Searching for theories related to gamification education, rural communities, children's participation, learning motivation and learning outcomes, as well as case studies, it was determined that gamification

education can attract children's participation, help them learn by doing, and more importantly, the process of participation can help children strengthen their learning motivation and learning outcomes. Afterwards, the case studies of children's play-based education in rural communities were analyzed to lay a good foundation for the subsequent practical activities in the field and the evaluation of children's participation, motivation and learning outcomes. (2) Explore the design methodology of children's gamification education in rural communities, design children's capacity building, game design activity organization; participate in the process of the evaluation phase of the questionnaire test, semi-structured interviews, to explore the practice of children's gamification education in rural communities, to prove the feasibility of the methodology of gamification education in children's cultural education in rural communities. (3) To summarize the design framework of gamification education for children's participation, motivation and learning outcomes through an empirical study of gamification education activities in a local community. Using a combination of quantitative and qualitative analysis, we summarize the indicators of children's participation in the culture of rural communities in terms of participation, motivation, and learning outcomes. Combining practical experience and evaluation results, we summarize the game design framework for children's participation, motivation, and learning outcomes in rural communities regarding organization, tools, methods, and goals.

Proposed Research Methods

Literature analysis method: Through reviewing numerous materials, combing through the literature research and organizing the relevant cases for the reference of the theme part of the article, there is a general grasp and a correctly expected guidance for the future development of rural children's gamification education. Field investigation method: Through a series of investigation methods, we lay a solid data and emotional foundation for the writing of the subsequent thesis and also ensure the reliability of the conclusions of the thesis. Find a certain number of children in the village and naturally communicate with them about the professional content through chatting to get more direct feedback. To get feedback on this research, it needs to be understood that the children's learning activities and their subjective understanding of the village culture. Investigate teachers' attitudes and understanding of traditional culture courses in the pre-curriculum design stage. During the process of curriculum construction and implementation, in-depth interviews were conducted to address the needs of the teachers, to adjust their understanding and behaviour according to the problem orientation, and to actively control the wind direction of the next round of actions after the implementation of the curriculum, interviews were conducted to understand the overall feedback from parents and teachers about the effectiveness of the curriculum implementation. Interviews were chosen because they are quick, cost-effective, and allow data to be obtained directly from the research participants. Interviews often gather information that cannot be easily obtained through other data collection techniques such as surveys or observations. In this case, the data collected through this method will be categorized as primary data. Questionnaire method: It consists of two main components, one of which is the Basic Information Questionnaire (BIQ), which is mainly used to investigate information on factors such as the sex and age of young children, as well as the occupation of their parents, their level of income, and the length of time they have lived in the local area. The second is the Cultural Identity Scale for Preschool Children in Rural Areas. In this study, the scale will be used to measure the cultural identity of preschool children aged 3-6 in County C to investigate the impact of traditional kindergarten cultural programs on preschool children's cultural identity. The questionnaire will be a 5-point Likert scale providing five options (strongly disagree to strongly agree). The questionnaire will be distributed to each research participant via email or in person. These participants will be asked to provide their honest thoughts and opinions about the research questions based on the questions in the questionnaire. Upon completing the questionnaire, it will be returned, and data will be extracted and recorded. The questionnaire method was used because it is simple, cost-effective and capable of simultaneously collecting data from a large sample. The data obtained through this method will be categorized as primary data.

Significance of the Study

Educational gamification has attracted much attention in education, and the trend of attention is increasing. Most of the studies in the field of education generally agree that the results of gamification in education are positive and meaningful. For example, gamification education can increase learning fun and motivation. Research on gamification should also focus on the negative effects, such as the difficulty of curriculum design and children's self-discipline. Gamified education can be directly linked to the emotional dimension, increasing the public's social awareness and emotional connection, which can change behaviour. When employing these strategies in an educational setting, opting out should be possible. Researchers should also look for more possible application areas of gamification in education. Gamification is a strategy for

motivating students to learn. Gamification in education can provide interesting solutions for children with low motivation and failing academic outcomes. Gamification can motivate students because it presents a variety of game elements that are challenging and fun for students. Secondly, the results of this study also emphasize that when gamification is applied, preschoolers achieve good engagement, motivation, and learning outcomes because students are more engaged, motivated, and involved.

Limitations of this Study and Suggestions for Future Research

Existing literature focuses on gamification education for urban community groups, and there is less literature on gamification education for children in rural communities. There are fewer educational resources in rural communities, and children's motivation to participate may affect the effectiveness of gamified education methods. The cultural heritage of rural communities is adapted and created by groups and individuals within each region. The potential of preschool children in cultural creation cannot be ignored. Limitations of gamification education in rural communities include the level of technology, education, and economic factors that influence the curriculum of game elements containing regional culture to meet rural children's cultural needs and play experiences. The cultural understanding of rural preschool children is limited, and local cultural learning activities are set up to change children's cultural misconceptions, enhance cultural identity, and cultivate a sense of cultural heritage. To address these limitations, future research and interventions should focus on developing gamification methods that can be adapted to the unique needs and characteristics of children in rural communities. Incorporating traditional games and regional cultural practices into the design of gamified educational experiences and exploring methods that can be effectively integrated into rural learning environments. In addition, a deeper understanding of the factors influencing rural children's motivation and learning outcomes in gamified environments can inform the development of more effective and equitable education programs.

In addition to quantitative data, interviews with teachers, parents, and children revealed that gamification not only enhances engagement but also helps children better comprehend learning materials. A teacher from the experimental group stated: *"With the gamification approach, children are more active and grasp fundamental concepts more quickly than with lecture-based methods."* Additionally, several parents reported that their children became more enthusiastic about attending school after the gamification program was introduced. Triangulated data from classroom observations further demonstrated that children in the gamification group exhibited higher levels of participation compared to those in the conventional learning group.

Despite the positive outcomes of this study, several challenges emerged during implementation, particularly concerning limited digital infrastructure and teacher readiness. Compared to studies conducted in urban settings, such as Dichev & Dicheva (2017), which highlighted how gamification can be seamlessly integrated into schools with advanced technology, this research suggests that gamification in rural areas must be adapted to available resources. One effective solution identified in this study was incorporating traditional games modified with gamification principles, ensuring that learning remains engaging for children even without sophisticated digital tools. This aligns with the findings of Wu et al. (2023), which suggested that incorporating local cultural elements into learning strategies can enhance educational effectiveness in technology-limited environments.

Based on these findings, several educational policy implications emerge. First, teachers in rural areas should receive specialized training on implementing gamification methods tailored to local conditions. Second, policymakers should consider developing more inclusive technology-based educational infrastructure for rural communities. Third, further research is needed to evaluate the long-term impact of gamification on early childhood learning outcomes in resource-constrained environments. Therefore, this study not only demonstrates that gamification can enhance children's engagement and learning motivation but also provides adaptive strategies for applying gamification in rural education settings with limited digital infrastructure.

D. Conclusion

With the progress of scientific and technological power, more and more emerging things come into people's lives, and things with regional cultural characteristics are neglected and forgotten. Rural community culture is unique compared with other cultural resources and is a record of national history and cultural development. The inheritance of regional culture and the explanation and teaching of education have become the top priority in revitalizing the culture of rural communities. More and more people are emphasizing the inheritance and innovation of local culture, and local teaching materials and school

textbooks are constantly being innovated and developed, combining various resources of regional culture to be presented in the classroom. As the community's youngest and most vital group, preschool children are the future of community development and bear the responsibility of cultural inheritance. Preschool children can feel the culture of living in a rural community. Social and cultural resources have an important influence on the formation of preschool children's cultural identity. Gamified education has several benefits for preschoolers, such as increasing their motivation, participation, and academic achievement. The development of the rural community and the development of preschoolers interact with each other, increasing children's participation and enhancing the participation of the rural community. Increased children's motivation and learning outcomes also contribute to rural communities' cultural heritage and development, reflecting the practical implications of gamified education in rural community development.

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