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Practical Strategies for Integrating the Winter Solstice into the Kindergarten's Food Education Program

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Abstract

The Twenty-four solar terms represent a knowledge system developed by ancient Chinese laborers through observing the annual motion of the sun, enabling them to understand the patterns of seasons, climate, and phenology. Rooted in the agricultural civilization of China, this system reflects the unique cosmological and natural philosophies of the Chinese people. This study focuses on the Winter Solstice, one of the Twenty-four solar terms, and integrates it with the developmental characteristics of senior kindergarten children and the practice of food education. Through theme activities, the study implements the content in various contexts, including collective teaching, regional activities, play, and home-kindergarten cooperation. It summarizes five practical strategies for integrating solar term culture into food education activities, providing a reference for the integration of traditional culture education and food education in kindergartens.

Keywords: Twenty-Four Solar Terms, Theme Activities, Food Education, Winter Solstice

Introduction

The Twenty-four solar terms are a knowledge system formed by the working people in ancient China through observing the annual movement of the sun to recognize the changing patterns of seasons, climates, phenology and other natural phenomena throughout the year. In 2016, they were inscribed on the Representative List of the Intangible Cultural Heritage of Humanity by UNESCO and hailed as “China’s Fifth Great Invention” by the international meteorological community (Dao Zhonghua WeChat Official Account, 2022). Emerging alongside Chinese agricultural civilization, the Twenty-four solar terms are a model of outstanding cultural achievements. They embody the unique cosmic outlook and view of nature of the Chinese people, demonstrate the production modes, life attitudes, philosophical thoughts and cultural spirit of harmonious coexistence between humans and nature, and have been inherited for thousands of years, making them an outstanding cultural heritage from which continuous nourishment can be drawn (Sui & Zhang, 2020). Among the Twenty-four solar terms, eight major ones, including Start of Spring, Spring Equinox, Start of Summer, Summer

Solstice, Start of Autumn, Autumn Equinox, Start of Winter and Winter Solstice, reflect astronomical phenomena and traditional customs. The others are named after phenological features in the middle and lower reaches of the Yellow River basin, thus forming phenology-related solar terms such as Rain Water, Awakening of Insects, Pure Brightness, Grain Rain, Lesser Fullness of Grain, Grain in Ear, Lesser Heat, Greater Heat, End of Heat, White Dew, Frost's Descent, Lesser Snow, Greater Snow, Lesser Cold and Greater Cold (Liao, 2006). As an important node of the Twenty-four solar terms, the Winter Solstice has both natural and humanistic attributes. Scientifically, it is the day with the shortest daylight and longest night in the Northern Hemisphere, serving as a natural carrier for astronomy and meteorology education. Culturally, there is a folk saying that "the Winter Solstice is as significant as the Spring Festival", accompanied by rich folk activities including eating Jiaozi, Tangyuan, ancestor worship and counting nine cold days, which embody the cultural connotations of reunion, gratitude and reverence for nature. The natural scientific laws, folk cultural connotations, labor philosophy and life wisdom contained in the Twenty-four solar terms are highly consistent with the life-oriented and play-based educational concepts of kindergartens, providing abundant and feasible curriculum resources for cultural inheritance and holistic education in preschool education (Cheng, 2025; Zhou, 2026). The Guidelines for Improving the Education of Excellent Traditional Chinese Culture issued by the Ministry of Education in 2014 (Ministry of Education, 2014) and the Kindergarten Care and Education Quality Evaluation Guidelines released in 2022 (Ministry of Education, 2022) both clearly propose integrating excellent traditional Chinese culture into the whole process of kindergarten care and education, which provides policy support and practical directions for integrating the Twenty-four solar terms into kindergarten education.

"Food education" refers to an educational modality that uses food as a carrier or medium. It not only concerns the nutritional health of children but also focuses on the cultivation of sound personalities and cultural inheritance. Possessing extensive social functions—such as regulating individual behavior, strengthening familial bonds, and promoting economic development—it is regarded as the foundation of intellectual, physical, and moral education (Zhang, 2018). The functions and scope of food education extend beyond the nutrition and health of young children; it also fosters healthy dietary practices and cognitive understanding of food, nature, and culture (Zhang, 2018). China boasts a time-honored dietary culture characterized by unique philosophies and norms regarding dietary concepts and etiquette. Philosophically, it advocates the Confucian "Way of Eating" and the unity of medicine and food (Zhao, 2010), promoting harmony with nature and dietary balance (Zhao, 2018). Japan serves as a paradigmatic example in the practice of "food education". Its research and practice revolve closely around the Basic Law on Food Education, establishing a systematic framework ranging from national legislation to school lunch curricula and regional ingredient education. Relevant academic analyses not only focus on practical efficacy but also delve into ideological characteristics potentially inherent in food education, such as nutritional reductionism and neoliberalism (Ueda, 2020). Conversely, research in European and American academia is more closely integrated with public health issues and sustainable food system theories. It emphasizes evaluating the impact of intervention projects—such as school gardens and cooking courses—on students' dietary behaviors and is committed to developing standardized food literacy assessment tools. Its research paradigm emphasizes empiricism and criticality, paying close attention to the influence of the food environment on children (Hou et al.,2018). Review studies indicate that current domestic research primarily consists

of theoretical discussions, curriculum descriptions, and cross-sectional surveys. Compared with international academia, there is a paucity of empirical research regarding long-term intervention evaluations, standardized measurement tool development, and cross-sectoral collaborative mechanisms (Hou et al.,2018;Doustmohammadian et al., 2022). However, recent trends suggest that China's food education research is gradually shifting from early conceptual introduction and policy interpretation toward localized empirical exploration. For instance, the Guidelines for Infant and Young Child Feeding and Nutrition issued by the National Health Commission in 2022 reflects an emphasis on early-life nutritional intervention (Wu et al., 2025). Although food education research in China started relatively late, it has developed rapidly under the "Healthy China" strategy, demonstrating a distinct localized orientation. For example, studies focus on the design and practical exploration of food education curricula in kindergartens and primary and secondary schools, actively exploring the integration of "food education" with other components of the "five forms of education", such as labor and aesthetic education (Hu & Xiong, 2022).

Research has found that although the academic community has reached a certain consensus on the value and principles of solar term education, research on food education for senior kindergarten children remains relatively weak. Existing practices mostly focus on designing theme activities around specific solar terms, taking diverse forms such as observation records, farming experiences, handicraft making, reciting nursery rhymes, and tasting seasonal foods. However, existing research also reveals certain deficiencies. Macro-level and systemic aspects are insufficient, with most studies remaining at the level of general introductions or case studies of individual solar term activities, lacking a systematic and progressive curriculum system tailored to different age groups (Zhang, 2023). Wu Junmei (2025) pointed out that the integration of solar terms into kindergarten curricula often remains superficial, with activities concentrated on a few festivals such as the Winter Solstice and Qingming, lacking coherent design throughout the year (Wu, 2025). The depth of practice needs to be strengthened, as many activities focus on custom experiences, with insufficient exploration of the astronomical and geographical scientific principles behind the solar terms, as well as phenological changes, failing to fully realize the potential of STEM education. Senior kindergarten children (aged 5–6) are in a critical period of transition from concrete image thinking to abstract logical thinking, during which their cognitive abilities, social development, and exploratory interests significantly increase. They have already developed preliminary abilities in observation, comparison, classification, and generalization, and show strong interest in natural phenomena and cultural customs. Therefore, integrating the Twenty-four solar terms into food education at the senior kindergarten stage is age-appropriate. Through experiential and play-based activities tailored to their age characteristics, children can be guided to perceive the rhythms of natural changes, understand the traditional wisdom of harmonious coexistence between humans and nature, and begin to establish cultural identity.

As an important carrier of China's excellent traditional culture, the Twenty-four Solar Terms embody rich wisdom concerning seasonal diet and folk cultural connotations, which are highly consistent with the life-oriented, introductory, and comprehensive characteristics of food education in kindergartens. As such, they constitute valuable educational resources for kindergarten food education and provide an effective pathway for connecting cultural inheritance with young children's holistic development. Building on this understanding, the present study focuses on the Winter Solstice, a solar term with distinctive seasonal

significance and cultural implications, and organically integrates its cultural elements into food education activities for senior kindergarten children. In doing so, it designs a set of theme-based activities that are both feasible and pedagogically meaningful, with the aim of exploring effective approaches to incorporating the Twenty-four Solar Terms into kindergarten food education. The novelty of this study lies in transforming traditional solar-term culture from static knowledge transmission into an interactive, experiential, and generative educational context. In this way, it not only enriches the cultural depth and implementation modes of kindergarten food education, but also offers an example of the creative transformation and innovative development of traditional culture within early childhood education. Moreover, the study engages with key themes in contemporary social sciences, including cultural inheritance, the construction of children's lived experience, and the localization of educational practice, thereby demonstrating both theoretical and practical significance.

Materials and Methods

With the core concept of "Nourishing Hearts with Food Knowledge, Cultivating Character through Culture," the Winter Solstice theme activities have the following overall objectives:

(1) To construct a thematic activity framework for the Winter Solstice centered on food education with integrated disciplinary content, forming a complete and implementable kindergarten food education activity plan for solar terms.
(2) To guide young children in perceiving the natural and cultural connotations of the Winter Solstice through immersive experiences, helping them establish food education concepts of knowing, valuing, enjoying, and respecting food, while nurturing a sense of familiarity and interest in traditional solar term culture.
(3) To summarize practical experiences and implementation points for integrating solar term culture into kindergarten food education, providing a practical reference for the design and implementation of similar theme activities in kindergartens.

This activity takes food education as its core thread, designing five interconnected Winter Solstice activities. The specific framework is as follows（Figure 1）:

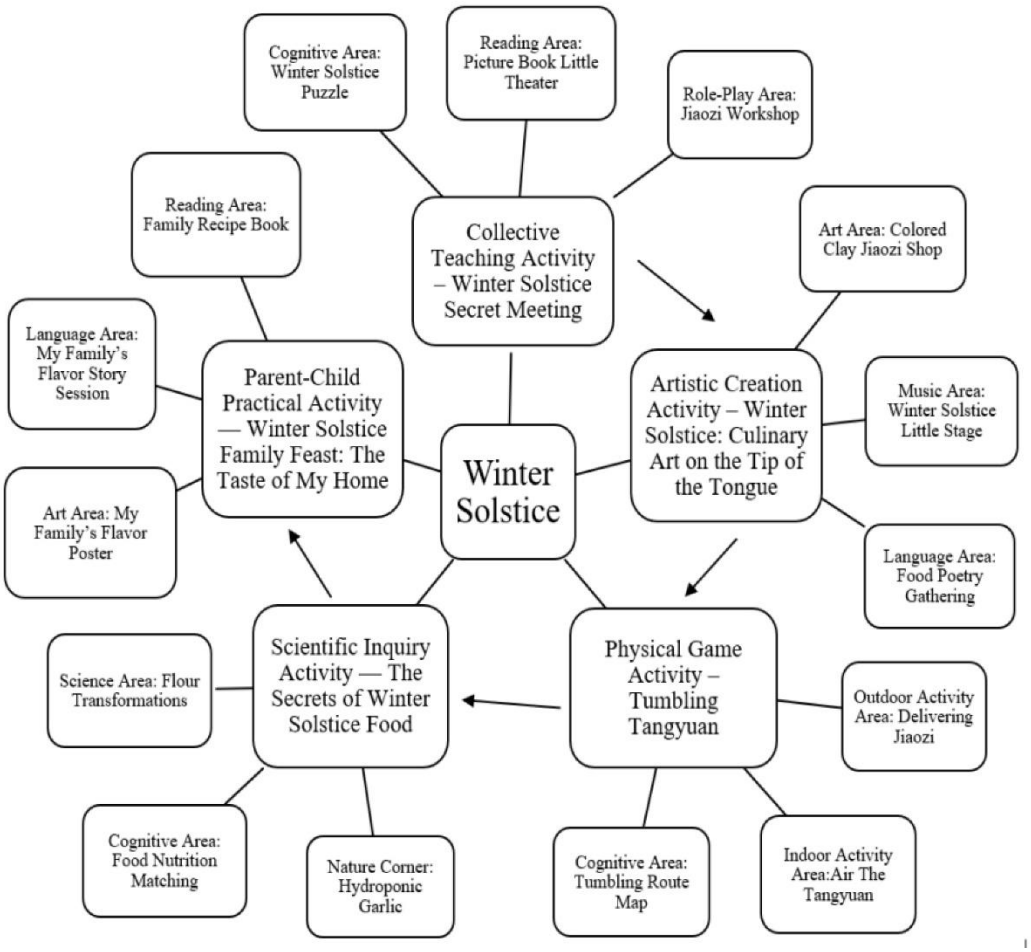

Figure 1 Winter Solstice Theme Activities Network

Results and Discussion

Taking theme activities as the pathway, this study constructs a holistic activity framework for food education based on the Twenty-four solar terms. Learning among children in senior kindergarten classes is characterized by holism and connectivity; therefore, food education regarding the Twenty-four solar terms should not be confined to isolated collective teaching sessions. Instead, it should be permeated into children's daily lives through theme activity networks. In practice, teachers can utilize the "Winter Solstice" as a central nexus to organically integrate collective teaching activities, such as the Winter Solstice Secret Meeting, with various regional activities. For instance, Winter Solstice Puzzles can be placed in the cognitive area to guide children in understanding solar term phenology through visual integration, while a Picture Book Little Theater can be conducted in the reading area to enable children to reconstruct the origins and customs of the Winter Solstice through language expression. Through this "one-axis, multi-point" educational model, food transcends being a mere object of consumption and becomes a carrier connecting language communication, cognition, and artistic expression. This multi-domain complementary strategy enables children to systematically establish experiences regarding solar term culture imperceptibly.

Inquiry-based experiments can be conducted to explore the scientific value of the Twenty-four solar terms behind food. One of the core goals of food education is to guide young children in understanding the relationship between food, nature, and science. Given the strong curiosity of children in the senior kindergarten class, teachers should make full use of

the science area and natural corner to carry out in-depth inquiry activities. Taking "The Secrets of Winter Solstice Food" in the figure as an example, teachers can guide children to conduct the scientific experiment "Flour Transformations," observe the physical changes of flour from dry powder to dough and from raw to cooked, and help them perceive the ratio of water to grain. Meanwhile, experiments such as "Hydroponic Garlic" can be carried out in the natural corner, allowing children to compare the growth status of crops before and after the Winter Solstice. In addition, traditional games such as "Counting Nine and Drawing Nine" can be organized for children. By tracing brushstrokes daily, children can perceive the passage of time and the changes of winter. At the same time, teachers can guide children to observe ice flowers outside the window and record the discovery that daytime becomes shorter, enabling them to experience phenological changes brought by the Twenty-four solar terms in the process of getting close to nature. Such a "learning by doing" strategy transforms abstract solar term knowledge into operable experiments. Through hands-on touching, comparison, and recording, children can intuitively understand the scientific basis of "warming and tonifying" on the Winter Solstice and the impact of "phenological changes" on diet, so as to cultivate their rigorous scientific observation skills and respect for natural laws.

Embodied outdoor games can be carried out to enrich the folk aesthetic and physical experiences in the process of food education. Embodied cognition theory emphasizes the central role of the body in learning. In food education related to the Winter Solstice, traditional "didactic instruction" can be transformed into embodied games that young children can participate in and perceive. Teachers can set up a "Jiaozi Workshop" in the role-play area, providing real or simulated weighing tools, rolling pins, and colored clay, allowing children to practice fine motor skills such as kneading, rolling, and wrapping through division of labor and collaboration, while experiencing the artistic beauty of folk food culture. Meanwhile, physical activities such as "Delivering Jiaozi" and "Tumbling Tangyuan" can be conducted in the movement area, transforming food forms into physical games, enabling children to experience the morphological characteristics of Winter Solstice food through rolling and running. This strategy integrates folk aesthetics with health education, making food education dynamic and playful, allowing solar term culture to be genuinely experienced through children's hands and feet.

Food education takes place not only in kindergartens but is also deeply rooted in home-kindergarten cooperation. Teachers should actively guide parents to become collaborators in food education by designing activities such as "Family Recipe Book" and "My Family's Flavor Story Session," encouraging children to engage in family life and explore the dietary memories of their elders regarding the Winter Solstice. In authentic kitchen settings, children and parents can make Jiaozi or Tangyuan together and complete a "My Family's Flavor Poster." This strategy aims to elevate food education from mere nutritional intake to the dimension of emotional connection. Through the transmission of "family flavor," children can experience the warmth of family heritage amidst the aroma of food and understand the cultural core of the Winter Solstice: "reunion." This approach not only extends classroom teaching but also, through the medium of food, plants the seeds of ethnic cultural identity in the hearts of young children.

Instead of pursuing the approach of "completing a solar term within a single activity," this strategy emphasizes allowing solar term culture and food education to develop over time.

The Twenty-four solar terms form a continuous temporal sequence, and their cultural connotations cannot be fully grasped in a single attempt. Therefore, in terms of practical strategies, the goal should not be to cover an entire solar term within one activity; rather, each solar term should serve as a thread that extends forward and backward, enabling sustained permeation. For example, before the Winter Solstice, children can be organized to plant scallions to prepare ingredients for making Jiaozi. During the Winter Solstice period, they can create posters related to Winter Solstice recipes. Afterward, leftover vegetable scraps can be used for composting to grow garlic sprouts or other plants. This long-term, project-based learning approach allows children to gain a deeper understanding of the growth process of food, ecological cycles, and the concept of valuing food. In this way, food education and solar term culture gradually "ferment" over time, generating a sustained educational impact.

Ultimately, food education is education for life. Integrating the Twenty-four solar terms into food education for senior kindergarten children is, in essence, a "mutual journey" between life, nature, and culture. Amidst the fragrant aromas of food, young children rediscover the sense of ritual associated with traditional festivals, while the ancient wisdom of seasonal rhythms quietly takes root in their tender hearts—within a warm bowl of Jiaozi or Tangyuan.

References

Dao Zhonghua WeChat Official Account. (2022, October 23). Why are the 24 solar terms hailed as "China's fifth great invention"? https://www.neac.gov.cn/seac/c103391/202210/1159359.shtml

Sui, B., & Zhang, J. (2020). The connotation, value, inheritance, and development of the 24 solar terms. *Agricultural History of China, 39*(6), 111–117.[in chinese]

Liao, R. (2006). *Non-material cultural landscape tourism planning and design* [Doctoral dissertation, Tongji University].

Zhou, H. (2026). Analysis of the practical path of integrating the 24 solar terms culture into kindergarten education. *New Class Teacher*, (2), 5–6.[in chinese]

Cheng, Q. (2025). Exploration of strategies for integrating the 24 solar terms into kindergarten teaching. *Reading and Writing,* (2), 103–105.[in chinese]

Ministry of Education of the People's Republic of China. (2014, March 28). *Notice of the Ministry of Education on issuing the guidelines for improving the education of excellent traditional Chinese culture.* http://www.moe.gov.cn/srcsite/A13/s7061/201403/t20140328_166543.html

Ministry of Education of the People's Republic of China. (2022, February 15). *Notice of the Ministry of Education on issuing the evaluation guidelines for kindergarten care and education quality.* https://www.gov.cn/zhengce/zhengceku/2022-02/15/content_5673585.htm

Zhang, Q. (2018). Construction and implementation of kindergarten food education curriculum. *Studies in Early Childhood Education*, (8), 70–72.[in chinese]

Zhao, R. (2010). Historical evaluation and practical reflection on Chinese food education culture. *Journal of Nanning Vocational and Technical College*, (6), 1–5.[in chinese]

Ueda, H. (2020). *Research on food education through taste education and gastronomy: Developing the "food-related capabilities" of eaters* [Doctoral dissertation, Kyoto University].

Hou, P., Wang, L., Liu, X., Li, Y., Xue, L., & Cheng, S. (2018). Theory and practice on food education research at home and abroad. *Resources Science*, *40*(12), 2369–2381.[in chinese]

Doustmohammadian, A., Omidvar, N., Keshavarz-Mohammadi, N., Eini-Zinab, H., Mirmiran, P., & Azizi, F. (2022). The association and mediation role of food and nutrition literacy (FNLIT) with eating behaviors, academic achievement and overweight in 10–12 years old students: A structural equation modeling. *Nutrition Journal*, *21*(1), Article 1.

Wu, Q., Gong, S., Wang, Y., & Li, J. (2025). Food education for infants and young children aged 0–3 years in China. *China CDC Weekly*, *7*(19), 672–674.

Hu, C., & Xiong, L. (2022). A literature review of early childhood food education research in China. *Basic Education Research*, (3), 96–99.[in chinese]

Zhang, D. (2023). An analysis of the research status of the application of 24 solar terms culture in early childhood education. *Advances in Education*, *13*(5), 2541–2547.[in chinese]

Wu, J. (2025). A study on the current situation and countermeasures of integrating the traditional culture of the 24 solar terms into the kindergarten curriculum. *International Educational Research*, *8*(3), 47. https://doi.org/10.30560/ier.v8n3p47