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Analysis of Public Cognition and Demand for Nature Education in National Park: A Case Study of Baishanzu National Park

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Abstract: National park hold significant value for scientific research, education, and ecology. Conducting nature education activities is a crucial means of realizing the educational potential of national park. Understanding public demand for nature education in national park is essential for the development of a comprehensive national park nature education system. This study focuses on visitors to Baishanzu National Park, employing field research and questionnaire surveys to assess public awareness and demand for nature education. The findings aim to contribute to the construction and advancement of nature education in national park.

1. Introduction

Since the establishment of the world's first national park, Yellowstone National Park in the United States, in 1872, national parks have been a significant focus of scholarly research worldwide, yielding a substantial body of literature. For instance, Blanco (2002) emphasized the necessity of incorporating environmental education programs in national parks, highlighting the importance of community residents' participation in such programs[1]. Stern et al. (2012) examined the barriers and motivations influencing participation in national park education programs, identifying factors such as the alignment of educational programs with student curricula, methods of engagement, and enjoyment as key predictors of participation[2]. Sirivongs and Tsuchiya (2012) found a strong

correlation between public decisions to engage in environmental conservation behaviors and their perceptions, attitudes, and willingness to participate in national parks[3]. Lee et al. (2013) argued that the development and design of national park environmental education programs should consider students' developmental stages and their connection to academic subjects[4]. Piñeiro-Corbeira et al. (2020) evaluated the underwater aesthetic value of the Galician Atlantic Islands National Park, demonstrating that environmental education enhances the ecological awareness of snorkelers[5]. In contrast, research on national parks and nature education in China has developed more recently, with most studies focusing on successful examples of nature education in American national parks [6-8].

With the advancement of China's national park pilot project and the establishment of the first five national parks, scholarly attention has increasingly focused on the development of a nature education system tailored to China's national parks. For example, Li Tiehui et al. (2021) examined the functional roles and models of nature education in national parks with Chinese characteristics, considering the socio-cultural context of the new era[9]. Li Xia et al. (2020) conducted a quantitative study of the Wuyishan National Park nature education system, analyzing tourist perceptions to inform system design[10]. Tang Yiqi et al. (2021) highlighted the importance of nature education and the need for national parks to implement such programs[11]. They proposed a comprehensive nature education system for Giant Panda International Park, incorporating operational management, site infrastructure, service offerings, and organizational support. Di Hua et al. (2020) developed a nature education curriculum for the Gansu section of Qilian Mountain National Park, designing an experiential course based on the age and knowledge characteristics of the target audiencee course based on the age characteristics and knowledge structure of the nature education audience[12].

Currently, there is a greater focus on the five established national parks in China, while relatively fewer studies have examined the pilot national parks. Therefore, this study uses Baishanzu National Park, one of the ten pilot national parks in China, as a case study. By conducting field surveys and analyzing the statistical results of collected data, the study assesses public awareness and demand for nature education in Baishanzu National Park. It also examines the relationship between the existing supply of nature education and public demand, identifies challenges in the development of nature education functions, and provides recommendations to support the further advancement of nature education in national parks.

2. Research Methods

This study employs field research and questionnaire surveys to collect data. The questionnaire is divided into three sections: the first section gathers basic demographic information, the second assesses public awareness of national parks, and the third examines public demand for nature education facilities and services. The survey participants were visitors to Baishanzu National Park, and the data collection took place from October 1, 2023, to October 15, 2023, yielding 205 valid responses for analysis.

3. Results Analysis

3.1 Demographic characteristics of the sample

The frequency analysis of the demographic characteristics of the sample is presented in Table 1. In terms of gender, the sample consists of 103 males (50.24%) and 102 females (49.76%). Regarding age distribution, 58 respondents are under 18 years old (28.29%), 120 are between 18 and 25 years old (58.54%), 18 are between 26 and 35 years old (8.78%), 7 are between 36 and 45 years old (3.41%), and 1 respondent is between 46 and 60 years old (0.49%). In terms of education level, the largest group consists of individuals with a college or undergraduate degree (65.85%), followed by 39 respondents with a high school or technical secondary school education (19.02%), 16 with postgraduate education or higher (7.80%), and 15 with a junior high school education (7.32%). Occupationally, students represent the largest proportion of the sample (70.24%), followed by enterprise employees (12.20%), government office staff (6.83%), independent business owners (5.85%), self-employed individuals (3.90%), and retirees (0.49%). In terms of monthly income, the highest proportion of respondents (40.49%) reported earning less than 1,000 yuan, followed by those earning between 1,000 and 3,000 yuan (22.93%), 3,000 to 5,000 yuan (20.93%), 5,000 to 8,000 yuan (9.27%), and more than 8,000 yuan (6.34%).

Table 1: Demographic characteristics of the sample (n=205)

Variables	Categories	Number	Proportions	Variables	Categories	Number	Proportions
Gender	Man	103	50.24%	Income	Below 1000	83	40.49%
	Female	102	49.76%		1000-3000	47	22.93%
Age	Under 18	58	28.29%		3000-5000	43	20.98%
	18-25	120	58.54%		5000-8000	19	9.27%
	26-35	18	8.78%		Above 8000	13	6.34%
	36-45	7	3.41%	Occupation	Student	144	70.24%
	46-60	1	0.49%		self-employed	8	3.90%
Education	Junior school graduation	15	7.32%		Enterprise employees	25	12.20%
	high school graduation	39	19.02%		Government office	14	6.83%
	University graduate	135	65.85%		Independent business	12	5.85%
	Graduate degree	16	7.80%		Retirees	1	0.49%

3.2 Analysis of public awareness of national parks

To assess public awareness of national parks, this study included three questions: Are you

familiar with national parks? How did you learn about national parks? Are you aware of the functions of national parks? The detailed survey results are presented below.

(1) The level of familiarity with national parks

The survey results regarding the level of familiarity with national parks are presented in table 2. Among the respondents, 11 individuals reported being very familiar with national parks, 59 were familiar, 115 were somewhat unfamiliar, 18 were completely unfamiliar, and 2 had never heard of national parks. These findings indicate that while most people have some awareness of national parks, their knowledge remains limited, suggesting a need for further efforts to increase public awareness and understanding of national parks.

Table 2: The result of familiarity level

No.	Familiarity level	Number
1	Very familiar	11
2	Familiar	59
3	A little	115
4	Not at all	18
5	Never heard of	2

(2)The ways to learn about national parks

The survey question regarding how respondents learned about national parks was formatted as a multiple-choice question. The results, detailed in Table 3, reveal that the majority of respondents (71.22%) obtained information about national parks through social media platforms, including WeChat, Weibo, TikTok, and Xiaohongshu. Internet search platforms such as Baidu followed, with 49.76%. Television was cited by 32.19% of respondents, while 22.43% learned about national parks through friends and relatives. Advertising billboards were mentioned by 18.04%, and 11.22% identified other sources. These results indicate that online social media and Internet platforms are the primary means by which the public acquires information about national parks.

Table 3: The result of learning ways

No.	Learning ways(multiple-choice)	Proportion (%)
1	Social media platforms	71.22%
2	Internet platforms	49.76%
3	TV	32.19%
4	Friends and relatives	22.43%
5	Advertising billboards	18.04%
6	Others	11.22%

(3) Public perception of the functions of national park

The survey results regarding respondents' perceptions of the functions of national parks are presented in Table 4. The findings indicate that the majority of respondents view national parks as serving the functions of 'ecological environment protection,' 'leisure tourism and entertainment,' and

'science education.' A smaller proportion of respondents perceive national parks as contributing to 'science research' and 'promoting local economic development.' These results suggest that the public's understanding of national parks aligns with their recognized roles in ecological conservation, scientific research, and education.

Table 4: Results of the functions of national parks

No.	Functions(multiple-choice)	Number
1	Ecological environment protection	168
2	Leisure tourism and entertainment	144
3	Science education	107
4	Scientific research	88
5	Promoting local economic development	74

3.3 Public demand for nature education in national parks

3.3.1 Demand for nature education activities

(1) The willingness to participate in nature education activities

The survey results regarding respondents' willingness to participate in nature education activities are presented as follows: the largest proportion of respondents (60.97%) expressed a willingness to participate. This is followed by 44 individuals who are very willing to participate, 26 who hold a neutral attitude, 7 who are unwilling, and 3 who are very unwilling. Overall, 82% of the respondents displayed a positive attitude towards participating in nature education activities.

(2) The preferred forms of nature education activities

Table 5: Results of the preferred forms of nature education activities

No.	Preferred forms(multiple-choice)	Proportion (%)
1	Camping	52.20%
2	Wildlife observation	48.29%
3	Vegetation investigation	42.44%
4	Folk culture experience	36.09%
5	Geological and geomorphological survey	30.24%
6	Photography	28.29%
7	Volunteering	20.97%
8	Sports activities	17.07%
9	Others	7.80%

Regarding preferred formats for nature education activities, the majority of respondents expressed a preference for activities such as 'camping,' 'wildlife observation,' 'vegetation investigation,' and 'folk culture experience' in national parks. These preferences indicate that the public is interested in engaging directly with the natural ecological environment and resources of

the parks. Additionally, some respondents have shown interest in volunteer opportunities related to national parks. Therefore, offering a diverse range of nature education experiences can enhance public enjoyment of national parks and encourage active participation in their conservation. The specific results are presented in Table 5.

3.3.2 Demand for nature education services

(1) The preferred type of nature education interpretation

Nature education interpretation services play a crucial role in enhancing the public's understanding and appreciation of the natural and cultural values of national parks. According to the survey results on preferred types of interpretation (Table 6), the top three choices are 'personal interpretation,' 'digital images,' and 'interpretation signs,' with demand for electronic self-service interpreters ranking fourth. These findings indicate that personal interpretation remains the most favored method, while digital and electronic technologies are increasingly popular among the public.

Table 6: Results of the preferred type of nature education interpretation

No.	Preferred type(multiple-choice)	Number
1	Personnel interpretation	102
2	Digital images	98
3	Interpretation signs	84
4	Electronic self-service interpreters	79
5	Guidebook	63
6	Self-guided trails	52

(2) Preference for personnel interpretation service form

Table 7 presents the survey results on the public's preferences for different forms of personnel interpretation services in national park nature education. The 'guided experience' interpretation format is the most favored, followed by 'question-and-answer interaction,' 'performance,' and lastly, 'lecture.' These results indicate that the public prefers nature education interpretation services that offer a strong sense of engagement and interactivity, in contrast to traditional lecture-style explanations.

Table 7: Results of the preferred form of personnel interpretation

No.	Preferred form(multiple-choice)	Proportion (%)
1	Guided experience	54.63%
2	Question-and-answer interaction	46.82%
3	Performance	40.98%
4	Lecture	32.19%

(3)Preference for activities requiring interpretation services

Table 8 presents the survey results regarding the public's preferences for activities that require

interpretation services in national parks. The findings suggest that different nature education interpretation services should be tailored to specific demographic groups. The top three preferred activities are 'park visits for primary and secondary school students,' 'scientific research practices for university students,' and 'family and parent-child park activities.' These preferences underscore the significance of national parks as educational resources for school-age children. The public places high value on promoting ecological knowledge and fostering environmental protection awareness among young individuals through national park programs.

Table 8: Results of the preferred of activities requiring interpretation services

No.	**Activities**(multiple-choice)	Number
1	Park visits for primary and secondary school students	101
2	Scientific research for university students	92
3	Family and parent-child park activities	86
4	Forest health care, leisure and fitness for the elderly	65
5	Common knowledge about park nature for the general public	58
6	Teachers' professional quality and skills training	36
7	Quality expansion for organizations and groups	31

4. Conclusion

This study employs Baishanzu National Park as a case study to evaluate the public's awareness and demand for nature education within national parks. The survey results reveal the following insights: (1) While the public is aware of national parks, their understanding of these parks remains limited, indicating a need for enhanced public education and awareness. Additionally, the primary sources of information about national park nature education are online social media and Internet platforms, with offline sources being less utilized; (2) The public shows a preference for in-person interpretation as well as digital and interactive methods for nature education, favoring participatory, experiential, and interactive services; (3) Regarding nature education activities, the public prefers immersive experiences such as camping, plant and animal observation, and folk culture activities. There is also a notable emphasis on developing ecological knowledge and environmental protection awareness among school-age groups.

Based on the research findings, this study proposes the following recommendations and strategies:

(1).It is crucial to promote national parks through online and offline channels to improve public awareness of national park nature education. National park management departments should leverage social media platforms, official websites, and other digital channels to disseminate information, images, and videos about national parks. Concurrently, offline promotional activities, such as exhibitions and lectures, should be organized to provide diverse information access points.

This combined approach will enhance the convenience and effectiveness of public information dissemination.

(2).National park management departments should strengthen professional training for nature education interpreters to improve their professional ability and service level. Training programs should focus on enhancing communication, guiding, and interactive skills to ensure that interpreters can effectively engage with and educate visitors.

(3).National park management departments should strengthen the design and development of national park nature education experience activity projects. They should develop and design nature education activities suitable for different age groups, pay special attention to the cultivation of ecological knowledge and environmental protection awareness among young people and children, and give full play to the value of national park science education. Additionally, the development of nature education activities should integrate elements of ecological recreation, ensuring that these programs are both enjoyable and educational, thus maximizing their impact.

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