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Effects of Forest Experience Activity on the Attitude toward Forest and Personality of Primary School Students

Soyeon Kim and Jungkee Choi*

Department of Forest Management, College of Forest and Environmental Sciences, Kangwon National University, Chuncheon 24345, Republic of Korea

Abstract

The present study aimed to identify the importance of forest experience activity by examining what effects forest experience activity has on primary school students. The study population consisted of 108 students enrolled as fourth graders in primary schools in Chuncheon as of November 2017. The study measured the changes in their attitude toward forest and personality from before and after forest experience activity. The results indicated that the primary school students who participated in forest experience activity showed statistically significant increase in attitude toward forest and personality. In other words, the study identified the positive effects of forest experience activity on recognizing the importance of nature and personality building. The present study aimed to test the importance and effects of forest experience through forest experience activity outside of the classroom, as well as to present the validity of promoting forest experience activity.

Key Words: forest experience, attitude toward forest, personality

Introduction

With recent interest in and expansion of forest welfare service, forest experience activity and education are being actively pursued, and enactment of the “Forest Education Promotion Act” in July 2011 established the legal foundation for forest education (Korea Forest Service 2011). Moreover, “Comprehensive Forest Education Plan (2013-2017)” was established in February 2013 with visions of “realization of a green welfare state for sharing, enjoying, and learning together in forests” (Korea Forest Service 2013). This suggested the importance of forest education in response to ever increasing social issues faced by

adolescents, such as school violence and bullying (Korea Forest Service 2016).

It was reported that forest education can build understanding and consideration in adolescents by reducing stress and providing them with psychological and physiological stability (Ha et al. 2013). Moreover, the renowned American environmentalist Aldo Leopold mentioned that “a forest is a giant laboratory and classroom because there is a perfect harmony between living and non-living things and you can observe what roles are being played by each element that makes up an ecosystem” (Seo 1999).

A study by Kim defined forest experience as the benefits obtained from the forest; physical, environmental, mental,

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Corresponding author: Jungkee Choi

Department of Forest Management, College of Forest and Environmental Sciences, Kangwon National University, 188-77 Gonji-ro, Chuncheon 24345, Republic of Korea

Tel: 82-33-250-8337, Fax: 82-33-259-5617, E-mail: jungkee@kangwon.ac.kr

and psychological effects obtained from experiences in the forest; and activities that can wash away the fatigue from urban life (Kim 2004). Therefore, forest experience is one of the methods in environmental education that promotes nature-friendly attitude and understanding on the relationship between human life and nature through the forest environment that represents nature (Yu and Park 2015).

In addition to forest experience programs, the Korea Forest Service (KFS) also implemented “Let’s go to the forest” campaign, starting in 2011, for personality building in adolescents, emphasizing personality as an important virtue in adolescents (Cho et al. 2014). Personality, defined as “the capacity to lead a life that pursues and practices values in a desirable manner that human should have,” is a trait emphasized in a rapidly-changing society, like today (Kim et al. 2016). In addition, the Ministry of Education (2015) found the answer to supporting education and leaders of future society from personality and enacted the “Character Education Promotion Act (2015).” Moreover, in a joint effort with KFS, forest education was incorporated as a major part of a comprehensive personality education plan. In addition, by actively utilizing the free semester system pursued as a pan-governmental policy, 20,000 middle school students participated in education that involved forest experience in 2015 (Korea Forest Service 2016).

Kim (2016) reported that although the importance of personality education over other education is being emphasized as a fundamental aspect of education, the system and operation of personality education have not reached a mature stage yet. Therefore, if forest can contribute to personality education, then it may play a role as an important alternative to personality education. Moreover, personality is important since gathering of personality creates an atmosphere of a community (Kim et al. 2015b) and creates the zeitgeist and culture of that society (Kwon 2013).

According to precedent studies, participation in forest healing programs by maladaptive students had a significant effect on building their moral personality and psychological and social abilities (Kwon 2013), forest kindergarten play was helpful for personality education (Kwak 2011), increase in the level of forest experience activity of primary and middle school students increased personality indices, such as responsibility, autonomy, affectivity, and cooperatives (Nam 2014), and forest experience using all sensory

functions resulted in positive changes in personality aspects (Bae 2015). Moreover, Yu and Park (2015) reported that forest activity in primary school students showed significant changes in their awareness about the forest and the need for forest interpretation, while their behavior towards living organisms and environmental awareness improved as well. A study by Son et al. (2013) showed that positive change in attitude toward forest and reduction in aggressiveness were achieved through forest experience.

Kim et al. (2015a) reported that forest experience activity reduced impulsiveness and aggressiveness in primary school students. Cho et al. (2011) reported that forest experience activity had a positive effect on the sociability and psychological stability of low-income children, while Kang et al. (2011) reported that participation in school forest activity had a positive effect on the environmental sensitivity and environmentally-friendly attitudes of primary school students. As shown, numerous precedent studies have reported on the forest experiences of children and adolescents, in which such forest experience had a significant effect on respect for life, creativity, environmental awareness and sensitivity, personality building, aggressiveness, state anxiety, and stress (Choi 2003; Park 2008; Jeong et al. 2010; Kim 2011; Kim 2014; Lee 2017).

Accordingly, the objective of the present study was to investigate what effects forest experience activity has on fourth grade primary school students and how their personality, represented by morality, sociability, and emotions, is changed through forest experience activity. The study also aimed to use the findings on changes in those students between before and after forest experience activity in presenting a proper direction for future forest experience activity that incorporate personality education.

Materials and Methods

Subjects

The subjects in the present study consisted of 108 fourth grade students (42 from “A” and 66 from “B” primary schools) from Chuncheon, Kangwon Province. “A” elementary school has a school forest, and “B” elementary school has an urban forest nearby.

Procedures

The study method consisted of pre-test, application of forest experience program, and post-test. In the pre-test, self-reporting questionnaire survey was conducted using tools for measuring attitude toward forest and personality. The survey was conducted prior to participating in the forest experience activity by personally visiting the two primary schools. Also, I received ethical consent before forest experience activity.

Forest experience activity, as a single day event, an elementary school on November 13, 2017 (42 people), and B elementary school on November 14, 2017 (66 people). Experiential sites were forest experience activities at Kangwon National University Forest Environment Education Center and Academic Forest. The program consisted of four activities: becoming friendly with forest, making environmentally-friendly pencil holder, treasure hunt in nature, and picture book discussion (1 hour each). Becoming friendly with forest used a course that required easy-walking over a roundtrip distance of 1.7 km, which was a mountainous course along a valley that passes through communities of oaks, larch, and zelkova, reaching a 300-year-old three-flowered maple tree.

The course was designed to personally feel intimacy and preciousness of nature. Making environmentally-friendly pencil holder was designed to use only natural materials, so that the participant can feel a sense of environmental

friendliness. Treasure hunt in nature was designed to build curiosity about surrounding vegetation and power of observation for nature that may be usually overlooked. Lastly, picture book discussion involved discussions about gratitude toward and preciousness of forests and nature after reading forest-related picture books. In addition, in order to increase the concentration of experience, about 10 people on November 13, and about 17 people on November 14, divided into 4 groups and conducted forest experience activities (Table 1). Post-test was conducted after the forest experience program, using the same questionnaire used for the pre-test.

Measurement tools

Scale about attitude toward forest

The present study used the attitude toward forest scale developed by Ju (2001). This scale, consisting of 12 items, was supplemented and revised to meet the situation in Korea and incorporated the elements of forest-related experience and interest reported by Wending and Wuensch (1985). According to a study by Son et al. (2013), attitude toward forest can be defined as “a consistent and learned tendency to behave friendly or unfriendly towards forest.” Based on a factor analysis on attitude toward forest, sub-factors were identified as “interest toward forest” and “protection and importance of forest.” The present study conducted the analysis with the same sub-factors (Table 2). Using a 5-point Likert scale, higher scores indicated more

Table 1. Forest experience program schedule

Time	Activity			
	Pre-test questionnaire survey			
	Group 1	Group 2	Group 3	Group 4
10:00-11:00	Becoming friendly with forest	Picture book discussion	Treasure hunt in nature	Making environmentally-friendly pencil holder
11:00-12:00	Making environmentally-friendly pencil holder	Becoming friendly with forest	Picture book discussion	Treasure hunt in nature
12:00-12:40	Lunch			
12:40-13:40	Treasure hunt in nature	Making environmentally-friendly pencil holder	Becoming friendly with forest	Picture book discussion
13:40-15:00	Picture book discussion	Treasure hunt in nature	Making environmentally-friendly pencil holder	Becoming friendly with forest
Post-test questionnaire survey				

Table 2. Scale about attitude toward forest

Factor	Item	Cronbach's α
Interest in forest	Forest is a fun place	0.856
	I am very interested in forest	
	Forest is a fun place to learn about nature	
	It is more enjoyable to study in forest than learning about nature in school	
	I feel comfortable when I am at a forest	
Protection and importance of forest	I enjoy going to a forest	0.681
	Forest is full of life	
	Humans and all living beings in forest are important	
	We cannot live without forests	
	Humans are causing serious destruction of forest	
	We must protect forests	
	I feel grateful toward forests	

Table 3. Scale about personality

Factor	Item	Cronbach's α
Sociability	It is bad to bully friends at school	0.671
	I believe I should cooperate well with friends during group activities	
	I try to understand people from other countries and their culture	
	It is important to respect the feelings of others	
Morality	I worry when a friend looks depressed	0.765
	It is important to act with honesty	
	School rules must be obeyed	
	I take responsibility for assigned work	
Emotions	It is important to be good to one's parents	0.704
	You must mind your manners and be respectful in front of your elders	
	You can be someone others need	
	I believe I am a happy person	
	I know what my strengths are.	
	It is bad to take my anger out on someone else	
	I believe I should actively participate in activities involving friends	

positive attitude toward forest. The reliability of this tool was Cronbach's $\alpha = .855$.

Scale about personality

As the scale for measuring personality, 5 items each were selected from categories of sociability, morality, and emotions, which were sub-scales in student personality index developed by Hyoja Primary School (2017). Since the tool was being used on fourth grade students, items with difficult sentences were excluded. Using a 5-point Likert scale, higher scores indicated more positive attitude toward personality. The overall reliability of this tool was

Cronbach's $\alpha = .862$ (Table 3).

Data analysis

Statistical analysis was performed using SPSS Statistics and the general characteristics of the subjects were analyzed by descriptive statistics. Moreover, mean and t-test were performed to investigate attitude toward forest and personality from before and after forest experience activity. The significance level was set to $p < 0.05$ and internal consistency (Cronbach's α) was calculated to determine the reliability of sub-factors.

Results and Discussion

Participant Characteristics

The study population of the present study included 42 (38.9%) and 66 (61.1%) students from “A” and “B” primary schools, respectively. There were 55 boys (50.9%) and 53 girls (49.1%), showing no significant difference in gender. For accuracy of the study, the study population was limited to only fourth grade students. “A” primary school had school forest, “B” primary school had an urban forest close to the school. Among the subjects, 92 students (85.2%) responded “Yes” to having previous participation in forest experience and 16 students (14.8%) responded “No,” showing that most of the student had previous participation in forest experience (Table 4).

Effect of Forest Experience Activity on Attitudes toward Forests

To investigate the effects of forest experience activity on attitude toward forest, changes between before and after participation in the program were analyzed. The results

showed that the mean total score was 4.23 points at before participation, which improved significantly to 4.49 points after participation (Table 5).

Analysis of sub-factors of attitude toward forest, “interest in forest” and “protection and importance of forest,” showed mean score of 4.02 and 4.38 points for “interest in forest” and 4.43 and 4.60 points for “protection and importance of forest” at before and after participation, respectively, showing increase in score for both factors ($p < 0.05$). Moreover, the scores for “interest in forest” increased more than the score for “protection and importance of forest” after the primary school students participated in forest experience activity, which indicated that the forest is a fun and enjoyable place. The overall average of attitudes toward forests was as high as 4.23 because school A had a school forest and school B had an urban forest nearby. In addition, the forest is experiencing continuous forest experience, and it is considered that the average is high in forests

Effect of forest experience activity on personality

To investigate the effects of forest experience activity on personality, changes between before and after participation in the program were analyzed (Table 6). The overall score increased significantly from 4.41 to 4.62 points.

With respect to the sub-factors of personality, sociability, morality, and emotions, the mean scores increased from 4.47 to 4.64 points in sociability, 4.39 to 4.60 points in morality, and 4.39 to 4.60 points in emotions ($p < 0.05$). Therefore, forest experience activity had a positive effect on the personality of primary school students.

Table 4. Participant characteristics

Characteristics		Ratio
School	A school	42 (38.9)
	B school	66 (61.1)
Gender	Male	55 (50.9)
	Female	53 (49.1)
Grade	4	108
Previous participation in forest experience	Yes	92 (85.2)
	No	16 (14.8)
Nearby urban forest	A school	No
	B school	Yes

Table 5. Comparison of mean scores of attitude toward forest at before and after participation

Factor		Mean	Standard deviation (SD)	t-value	p-value
Attitude toward forest scale	Before	4.23	0.64	-3.597	0.000
	After	4.49	0.54		
Interest in forest	Before	4.02	0.85	-3.627	0.000
	After	4.38	0.67		
Protection and importance of forest	Before	4.43	0.54	-2.555	0.012
	After	4.60	0.50		

Table 6. Comparison of mean scores of personality at before and after participation

Factor		Mean	SD	t-value	p-value
Personality scale	Before	4.41	0.55	-3.498	0.001
	After	4.62	0.45		
Sociability	Before	4.47	0.57	-2.933	0.004
	After	4.64	0.43		
Morality	Before	4.39	0.56	-3.362	0.001
	After	4.61	0.50		
Emotions	Before	4.39	0.64	-3.304	0.001
	After	4.60	0.50		

Conclusion

The objective of the present study was to investigate the effects of forest experience activity on attitude toward forest and personality of primary school students. For this objective, the present study had 108 fourth grade students participate in single forest experience activity. The study performed pre- and post-tests on the attitude toward forest and personality of the subjects, the results of which were as follows:

First, positive changes in attitude toward forest were achieved through forest experience activity. The overall attitude toward forest, as well as the sub-factors of “interest in forest” and “protection and importance of forest,” all showed statistically significant improvement. These findings were consistent with the study by Kim et al. (2015a) that showed similar scale for attitude toward forest after forest experience by primary school students and similar to other studies (Son et al. 2013; Eom et al. 2015) that reported forest experience had a positive effect on attitude toward forest, environmental sensitivity, and state anxiety. Improvement in mean attitude toward forest was demonstrated through the changes from before and after participation in the program. Based on the findings in the present study, increased forest experience activity may be anticipated as a method for improving the attitude toward forest in primary school students, and the findings may be helpful in expanding the basis of forest experience activity.

Second, positive changes in personality were achieved through forest experience activity. The overall personality, as well as the sub-factors of “sociability,” “morality,” and “emotions,” all showed statistically significant improvement, and forest experience that utilized all sensory func-

tions had a positive effect on personality aspect. These findings were similar to a study by Kwon (2013) that reported forest healing program had a personality building effect through changes involving reduced aggressiveness in students and their willingness to recognize and apologize for bad behavior, and a study by Kwak (2011) that reported forest kindergarten play was helpful for personality education. Moreover, Kim (2016) explored measures for activating various forest elements and spatial benefits of forest as the basis for personality education. It is necessary to establish a direction for systematic forest experience activity for personality building for future application and advancement in students.

The present study demonstrated that forest experience activity is effective in improving the attitude toward forest and personality of primary school students, which also demonstrated the positive aspect providing significant changes in the opportunity to encounter nature, attitude toward forest, and personality. Although there are limitations in generalizing the results from participation in a single forest experience activity by a specific group of students to represent all primary school students, summary of the findings showed that forest experience activity had a positive effect on the attitude toward forest and personality of primary school students, which gave legitimacy to forest experience activity.

It is believed that additional future studies with diverse study such as grade, gender, nearby urban forests and long-term forest experience activities are needed. In addition, correlation analysis is carried out with various measures and scales.

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