

## Development of fieldwork activities to educate the youth for the biological and cultural preservation in rural communities of Ishikawa Prefecture, Japan

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### ABSTRACT

In order to achieve the regional sustainability and bio-cultural preservation, environmental education of youth will be critical, however due to the lack of the specific subject of regional studies at the educational curriculum, students are not able to achieve the skills to understand the local environment and feel isolated from nature.. We decided that, it would be very important to create active nature fieldworks where students can connect with nature by using five senses of perception (hearing, seeing, smelling, touching and tasting), to educate the feeling of connection and belonging to the nature and later develop the awareness of nature-human-culture interactions through the on-hands participatory fieldworks with local communities. Fieldworks were divided in two main parts; biodiversity experience with nature activities (NA) to increase the sense of belongings to the nature, by using five senses; visual (seeing), auditory (hearing), tactile (touching), gustatory (tasting), and olfactory (smelling) in three different ecosystems; marine, forest and mountain areas. The second part was cultural diversity fieldworks with rural communities (RC) to understand the nature-human-culture interactions. The survey, was conducted twice, before the fieldworks to evaluate the overall environmental awareness, knowledge, and attitude, and after the fieldworks, together with the reports submission. Results showed that NA helped students to understand the rural communities more deeply (96%) and they became more concerned about its future (95%). Before visiting the rural communities only 39% showed an interest in volunteering in the community, however after the NA and on-hands experiences with local people 95% showed the willingness to volunteer and help local people. This study suggest about the importance of fieldworks to educate the sense of unity with rural environment and recognizing the local issues. Students became more concerned about the regional issues and evoked the willingness to volunteer in the regions and contribute for the sustainable regional development.

### KEYWORDS

local community, Fieldworks, Bio-cultural diversity

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## Introduction

For the last 30 years many environmental education programs have been launched and applied in different educational and social structures (1), and if

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before it was mainly considered as education focused on nature, science and conservation, then recently the concept was expanded into more social, individual, community-based, and political perspectives (2). Planners and developers of the environmental education programs face large difficulties related to the variety of educational fields, methodologies and pedagogical approaches (3). Also, many discussions exist related to the effectiveness of the programs to reach the objectives of environmental education such as awareness, knowledge, skills, and values increase towards the sustainable future (4). Outdoor activities and fieldworks, have shown to give the positive results for environmental education, especially for the nature related studies, biodiversity education and conservation (5, 6, 7). However, until now no fieldworks were created to link the biodiversity education with cultural components for the environmental preservation. Although, culture can fail to embrace all environment units, it plays an essential role in supporting the natural livelihood of large populations and communities (8). Human culture has adapted to the natural environment on which they have developed for many years, and loss of one of them will bring to the loss of another. Besides, it was shown in many studies, that culture can motivate people for the environmental preservation, due to the “inextricable” linkage between the biological and cultural interaction (9, 10, 11), ecosystem and human communities (12). Perception of this link is very weak in the urbanized societies because of the weak direct dependence on nature. The awareness of the link remains strong in the indigenous or rural communities, who plays key role in maintenance entire social identity. However, rural areas, are facing the major challenges of the environmental (natural and cultural) loss due to the aging and declining population, environmental changes, economic instability and others. In order to achieve the regional sustainability and bio-cultural preservation, environmental education of youth will be critical, as the youth comprise, 50% of the developing world population (13) and the numeric strength of the youth, if they are involved for the community development, would play essential role, for the economic, social and environmental development of the community and contribute for the natural and cultural preservation. Environmental education can help to create the “awareness and understanding of the relationship between the humans and their environments – natural, manmade, cultural and technological” (14) and prevent environmental issues (15, 16). The acknowledgement of the fact that the issue exists can encourage the youth for the personal commitment to work to solve environmental issues (17). Unfortunately, the modern changes in the 21<sup>st</sup> century exposed student’s interest towards economical and technologically advanced societies and seized the values towards the environment. And also, due to the lack of the specific subject of regional studies at the educational curriculum, students are not able to achieve the skills to understand the local environment and its relationship with culture. Isolation from the nature halts the development of the ability to perceive the nature with basic human sensual senses, and interrupt the development of the values, feelings and motivations towards the social responsibilities of the environmental preservation (18).

The traditional rural landscapes (*Satoyama*) of Japan represent the sphere with “encultured” nature, where the nature and culture coexisted in harmony for many centuries (19). However, for the last half-century with the rapid industrialization, and the shift from rural-based to urban-based economic structure, these landscapes and rural management systems started to decline

(20), resulting in land use decline, field abandonment and depopulation of the rural areas. To attract more attention for the regional regeneration in Japan, academic institutions are trying to implement new educational approaches (21), however, in most of the cases students never feel motivated to learn about the nature, because they do not perceive themselves as a part of the nature, or fear that nature is not safe (22, 23). In our previous studies, to raise the awareness about environmental sustainability, we have conducted fieldwork activities where we linked the biodiversity with cultural diversity at the urban areas, and monitored about the importance of the human capital for the preservation and management of the natural resource (24). We found that in most of the cases, students are mainly interested to know about the local culture, and are not so much motivated to learn about nature.

In this study, we assumed that in order to increase the awareness about the rural environmental preservation, both natural and cultural components must be presented to the students, as both culture and nature are “inextricably linked” with each other, especially in rural communities of Japan (9, 11, 19). Considering, that culture is derive from the surrounding natural environment, we hypothesized that education to raise natural awareness should come first, and later that natural awareness can help to deeply understand the traditional culture, and motivate for the environmental preservation in total. We decided that, to increase natural awareness, it would be very important to create active nature fieldworks where students can connect with nature by using five senses of perception (hearing, seeing, smelling, touching and tasting), to educate the feeling of connection and belonging to the nature. Later, to develop the awareness on nature-human-culture interactions, we suggested that service-learning practice will be the most applicable in our study, as this kind of learning can provide deep experiential and culturally-relevant learning (25-29). Service-learning can bring the equal benefits to the provider (students) and the recipient (local villagers) (8), and effectively expose students to the diverse natural and cultural attitudes and beliefs (30). During the service, students have many contact hours with the community members and environment, which allows them to identify, process and critically analyze the information.

### Materials and Methods

Ishikawa Prefecture is located at the center of the Hokuriku Region in west-central Japan and faces the Sea of Japan to the north. It is comprised of 19 municipalities, 11 cities and 8 towns. The entire population is shrinking due to the urbanization, aging and depopulation. The prefecture has diverse natural environment with the Noto Peninsula facing the Sea of Japan and stretching to the south with high altitude area of Mount Hakusan. Rural communities inhabit in Coastal, Mountain and Forest (*Satoyama*) areas of the Prefecture. Each rural community has diverse culture and livelihood according to the natural environment. The diverse biological and cultural richness of the Prefecture, was a perfect place for the students to experience the diverse livelihoods and their relationship with nature.

Participants were 23 students from Kanazawa University, and average age was  $\pm 23$  years. Only three students had environmental studies as a major subject, the rest were mainly from humanitarian studies, like literature, law and

economic. All participants had no information about the rural areas of Ishikawa Prefecture, before the fieldworks.

Fieldworks were divided in two main parts: biodiversity experience with nature activities (NA) and cultural diversity with rural communities (RC). During the first part students experienced only NA, where they learned nature through the five sensual feelings and perceptions of the body such as: listening (to the birds, wind, sea waves and rain drops); touching and smelling (for the different plants, stones, woods and insects); tasting (the edible plants and cooking own food); watching (for the ecosystem diversity and creating the poems). NA were conducted in three times in three different natural ecosystems: low altitude mountains, forests and coastal areas. All fieldtrips were conducted by the local nature instructor.

Next were experiential fieldworks to the RC regions of Ishikawa Prefecture: Mount area (Hakusan region), Sea side area (Noto region) and Forest area (Komatsu region). All regions were visited once. In this fieldworks students met directly with the local communities and learned how the nature is used to create the culture, experienced the sustainable rural lifestyle and had a direct on-hands experience with culture and rural lifestyle. In Hakusan students made experiential practice for wood-chopping's and charcoal production, and planted the fungus for the mushroom cultivation and also collected the chestnut seeds from the forest for making the traditional chestnut-rice cake. In Noto students performed community services, like cleaning the fishing nets, cleaning the water channels and grass pulling around the abandoned houses, and performed the group activities for the meal cooking using the natural resources of the forest and nearby farmlands, together with local people. In Komatsu students learned directly from the local villagers about the natural resource utilization from the forest and satoyama, such as clays and stones for creating the traditional crafts, architecture, sculptures and townscapes.

### ***Data collection and Analysis***

Before visiting the field's data collection was carried out to evaluate nature awareness, knowledge and experience by answering 46 questions, from which 6 questions were about sensual natural experience, 6 on nature knowledge, 10 on awareness, 15 on concerns and 9 on nature attitudes, 6 question on attitudes of the rural regions, and the series of questions to covering demographic characteristics and overall environmental issues. Awareness and Knowledge was scored by 1=Very Bad, 2=Bad, 3= Good, 4=Very Good, attitudes were employed by Likert scale of four rates 1=Strongly Disagree, 2=Disagree, 3=Agree and 4= Strongly Disagree, and concerns were rates as 1 = Not concerned at all, 2 = Somewhat concerned, 3 = Neutral, 4 = Concerned, 5 = Very concerned. After fieldworks, closed-ended questions and multiple choice question were collected, with yes/no replies, to evaluate the changes.

All students were required to submit the reports, to answer for the following question 1) how sensual nature perceptions helped them to recognize the regional culture of the communities 2) how does developed social and economic factors influence the nature-human-culture interactions and the lifestyle of the local villagers

## Results

### *Before the fieldworks:*

On sensual natural experience 44% of the students replied that they have seldom and 26% have never experienced nature by using the sensual skills (Figure 1). For the overall nature knowledge 52% responded that they know nature badly, and 34% replied as good (Figure 2). The overall scores for the awareness level showed that 75% of the students had bad environmental issues awareness (Figure 3). Data showed that in total more than the half of the students was concerned about environment (43% concerned and 30% very concerned) and 9% somewhat concerned (Figure 4). For the attitudes, results showed that the majority of students had positive nature attitudes (95%). After becoming university students only 17% of students have made dynamic nature activities like camping, hiking and trekking, and 57% replied as seldom (Figure 5). Students indicated that the main source to get the environmental information was Internet and mass media 96%, and information from the universities was 39% and only 17% replied like they receive the information from neighbor communities (Figure 6).

Attitude for rural communities was positive in the majority of the students (83%), however 78% indicated that they have never experienced rural lifestyle.

### *After the fieldworks:*

87% of the students replied that NA helped them to understand the environment more intensely. After the NA 96% of the students replied that the sensual activities helped them to understand the rural communities' lifestyle and their culture (Figure 7). 86% of the students showed that their attitude changed about the rural lifestyle in a better way, and that they became more concerned about the regional future (95%) (Figure 8). On the question "what they think about regional lifestyle", 50% replied that their lifestyle is challenging and 41% as enjoyable. Figure 9 shows, the pre and post multiple-choice questions related to the favorite activities that students wanted to do in the community. Post survey showed that among all on-hand activities they mostly liked volunteering in the communities (95%).

## Discussion

The purpose of this study was to link NA classes with the perception of cultural diversity of RC and raise the awareness about the rural challenges and environmental issues of the regions.

### *Before the fieldworks:*

The overall results before the fieldworks presented that most of the students have never (26%) or seldom (44%) experienced nature activities by using five senses like, watching, seeing, touching, hearing and smelling. Moreover, after becoming university students, only 17% had nature activities very often, and 57% seldom. These results shows that after becoming university students, less time is dedicated to spend in nature, and outdoor activities are replaced mainly by the indoor activities.

The data in this study also presented that the overall awareness and knowledge about the nature was very low. In most of the cases students replied that they get the environmental information from the TV, mass media and Internet, and 39% from the teacher, 35% by outdoor activities and 17% from the neighbor community. This results shows that the environmental education is not implemented on the curriculum of the academic institutions, and students if their background is not environmental subject, have less opportunity to experience the nature and know about environmental issues. However, students presented a very big concern and had a positive attitude for the nature and regions, which indicates that student's motivation and willingness to know the nature existed all the time, but it was not well conducted and educated by the academic institutions or the society.

### **NA Fieldworks**

According to the students reports NA helped them to “connect with nature as well as with local people”, and one of the students reports it as, “even though I went in the nature many times, this time was a completely different as I learned to appreciate nature much better and deeper. We learned how to utilize and experience the nature in a way that we wouldn't have thought about it before (such as feeling the nature with senses)”. Majority of the students agree that NA helped them to acquire the skills to understand how to “interact with nature, feel the nature, and use imagination with nature. Interact with nature makes us more familiar with nature treasures, and it helps us to adapt to any nature conditions”.

Also, students emphasized that “acquired nature skills, helped us more easily recognize lifestyle in the rural community”. Nature and culture are very often seen as a separate existence, however, when the students embraced the biodiversity with all five senses, it was very easy for them to see, feel and understand how the nature and culture are interconnected, and the loss of one is direly linked with the loss of other. Most of the students (87%) replied that nature activities by using five senses helped them to deeply understand the lifestyle of rural communities. Nature recognition helped them to feel closer with the ways of its utilization to create the local culture of the communities. One student indicated that “after nature classes we could see the community lifestyle from inside – see how they live in the harmony with the nature around them, and create the culture which was preserved from generation to generation, thanks to the preserved nature around them”. Another statement was that “although we were only introduced briefly to the different types of community lifestyles, it gave us a big insight to see what a huge role nature plays in their lifestyle”.

### **RC Fieldworks**

On-hands experience results showed that most of the student's attitude about rural lifestyle was changed (86%) and they became more concerned about the future of the nature (95%). In their reports students submitted that they felt that life in rural areas are challenging rather than enjoyable. “Experiencing it on-hands and seeing it for myself, I get a different perspective to what they're doing and it helped me to understand their lifestyle and culture. I started to better understand what they do and what are their daily struggles and challenges.” Other students reported that “it also opened my eyes to see the

reality of how fragile these valuable intangible heritage and culture are and how they are at risk of being gone forever if we don't do something about it. I also got to see and understand how sustainable lifestyle plays a part in helping to keep the balance of the eco-system and put wise management of natural resources to good use. But at the same time, I am seeing the danger of how lack of interest and awareness can pose a threat to the intangible heritage within the Ishikawa region”.

Several students indicates about the importance of the fieldworks “Only going there and see what the local people do and feel how difficult their lives are helped students truly understand the community lifestyle. These things cannot be learn through theory classes or pictures. It also helped to improve my knowledge about natural environment and somehow affected to my lifestyle.”

Some students could see the rural issues more deeply and stated the concern towards the future of the communities “lifestyle is being kept by a few amount of population, decreasing more and more. There are no new initiatives in those communities, young people are leaving to university or to work in cities, and if they are not receiving new population, those communities will die, and with them, their lifestyle and the traditional production related to it. Those areas need repopulation, but who? It seems no one is really interested”. Before visiting the rural communities only 39% showed an interest in volunteering in the community, however after the NA and on-hands experiences with local people 95% showed the willingness to volunteer and help local communities (Figure 9). This result shows that the motivations of the students was changed after the service-learning practices. Although, acknowledging the fact that the lifestyle of the rural communities was very challenging, bio-cultural fieldworks encouraged the students for the personal commitment to work and contribute to the society.

## Conclusion

In this study, we decided to create the fieldworks for the students to raise the awareness about how the biological and cultural interaction functions in the integrated manner for the sustainable development of the community, and how those systems are vulnerable to the external socio-economic factors that creates the environmental issues. We use the five sensual perception to connect students with nature, and we could see that those nature activities helped the students to understand the rural communities and their lifestyle. Service-learning experiences helped them to unite with rural communities and understand their challenges and daily life struggle. Recognizing the local issues, made the students to became more concerned about the regional issues and evoked the willingness to volunteer in the regions and contribute for the sustainable regional development. The study suggest that in order to educate the youth with the senses of the responsibility for the environmental preservation, it is very important to create the fieldworks where they can feel the connection with the nature, culture and communities. This study also suggest about the implementing the environmental education as independent syllabus at the higher institutions with the outdoor fieldwork activities. This study was the first study to link biological and cultural units in the educational fieldwork development for rural preservation of Japan, and we consider to apply our study with a large group of participants in the future.

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## Disclosure statement

No potential conflict of interest was reported by the authors.

## Notes on contributors

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