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Can Online Learning about UNESCO Biosphere Reserves Change the Perception on SDGs and Different Aspects of Sustainability between Japanese and International Students?

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Abstract: Sustainability is one of the main global concerns to deal with and know-how about is it important for the unprecedented survival to cope with the social, political, economic, and energy scarcity issues. Higher institutions are important learning places which can play the role of transformation and create the opportunities and avenues in order to minimize the barriers towards more sustainable future. In this research study, an online training program for the understanding of Sustainable Development Goals (SDGs) and Sustainability was designed. Students from different Japanese and International Universities were invited for two weeks of training program. A Comprehensive questionnaire was designed in which students were introduced about UNESCO Biosphere reserves, SDGs, and different concepts of sustainability. The analysis of the statistical results confirm that the understanding of the students has improved after the online training program about SDGs and different aspects of sustainability. The results imply that the understanding of the international students about SDGs and sustainability is more as compared with the Japanese students. In 14 out of 17 SDGs, the familiarity of international students is more as compared with their counterparts. In this exploratory study, some of the challenges faced by the universities are also identified which impede the efforts for the implementation of goals and initiatives towards sustainable development. It has been concluded that the universities must design dedicated training programs to seize the opportunities for improving the understanding of the students and promotion of sustainable initiatives by using UNESCO Biosphere Reserves as learning platforms through innovation in teaching, research, and trainings. The possible limitations of this research study can be; (a) it involves the professionals about SDGs, which might have made the online training program as intensive one, giving some vague idea about SDGs and sustainability to the students, (b) though the personal information of the students were not gathered, however, the broader scope of the research study have provided strong international base which can be used as an adequate profile of sustainability and comprehension of SDGs currently being found in the universities. Design of practical implications is imperative for stimulating the creativity and autonomy about the comprehension of SDGs and sustainability to meet the demands of present and future challenges imposed for sustainable development.

Keywords: sustainable development; SDGs; UNESCO Biosphere reserves; sustainable learning; students' learning

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1. Introduction

Sustainability is one of the main global concerns to deal with and know-how about is it important for the unprecedented survival to cope with the social, political, economic, and energy scarcity issues. The growing social concerns about SDGs and climate has put

the pressure on the organizations to think evolutionary for the promotion of sustainable value-oriented solutions [1]. Therefore, higher institutions are important learning places which can play the role of transformation and create the opportunities and avenues in order to minimize the barriers towards more sustainable future. There is an increasingly intense debate among the stakeholders to explore about how the higher institutes can play an imperative role to face the challenges about sustainable behaviors without significant compromise on the resources for future generations.

Among these resources, Biosphere Reserves (BRs) are the natural sites recognized by UNESCO Man and Biosphere Programme (MAB), which are considered as the sites for the conservation of biological and cultural diversity for the promotion of sustainable behaviors among communities. They are considered as model regions which can be used for the promotion and development of sustainable behaviors among the communities [2]. Thus, as models for sustainable development, BRs can provide platform for implementation of the UN's agenda of 2030 for its 17 SDGs. In this agenda, it has been emphasized that education is one of the core components to attain some significant progress for the achievement of 17 SDGs. Education for Sustainable Development (ESD) can be promoted by using BRs as learning platforms in order to raise the awareness, enhance skills and attitude among the community's for dealing with some of the pertinent sustainability issues which are social, environmental, and cultural in nature. BRs as educational tools [3] have been used as learning sites for the implementation of special training programs both at the regional and local level in many of the communities, with their special focus on ESD. However, it is pertinent to mention that the successful implementation of the SDGs into BRs needs some dedicated and cross cutting multidisciplinary approaches because the concept of sustainability is complex [4]. ESD calls for the involvement of diverse stakeholders, local authorities, enterprises, local communities, and civilians to be involved in the educational processes and curriculum development. The concept of ESD was first propagated inside the MAB's Madrid Action Plan for 2008–2013 [5], and it was intended that this should be made an integral part of UNESCO's working strategy adopted for the development and achievement of its agenda for inclusive development towards sustainable development. In the meeting of UNESCO's World Conference held in Bonn in the year of 2009, it was agreed that BRs are excellent learning places which can be used for ESD among different stakeholders in the communities such as residents, researchers, policy makers and governmental personals. For 2015–2025, MAB used four strategic objectives, and one of which is "facilitate biodiversity and sustainability science, ESD and capacity building" [6]. In 2016, the famous Lima Action Plan (LAP) was adopted which was solely focusing on the importance of training and learning for the conservation of biodiversity and promotion of sustainable behaviors. In its "strategic action area A", it was stressed that the coordinated connection between different partners in the community is very much important among the local and global authorities for engaging communities to learn about SDGs inside the BRs and strengthening and bridging the connection between educationists, policy makers, and scientists for enhancing the sustainable behaviors among different communities. In other words, it can be related that LAP was intended to promote the coordination and linkage between universities and local authorities for the facilitation of ESD [7]. Universities are excellent learning spaces which can enhance the knowledge and skills of the citizens to make them able to face the future challenges posed by the scarcity of the sustainability concerns [8]. In the communities, universities are considered as one of the most important learning places which can enhance the skills of the stakeholders to provide the specific expertise which can be utilized for the contribution and development of regional development, apart from providing concrete policy suggestions to the local stakeholders and governments for effective policy making. In other words, universities can be used as a learning spaces which promote the cooperation between regional stakeholders for the promotion of regional developments keeping in mind the sustainable behaviors as one of the main important key points [9].

BRs are designed in such a way that they can be used to encourage the local stakeholders and regional governments to contribute for the conservation and utilization of the resources in more sustainable and environment friendly manner to meet the needs of the current and future generations without compromising the sustainable consumption of the resources [10]. In many of the cases, BRs are also sometimes designated as the learning sites which can be used as interaction platforms among different people and function in order to promote the sustainable behaviors and conservation of natural resources [5,11,12]. BRs when used as learning platforms can successfully create integrated programs which can engage the local governments, stakeholders, and educational institutes to bring them together for the conduction of different activities which can be used as promotion of sustainable behaviors among different communities.

Until now, ESD inside BRs in Japan is used mainly for outdoor, field works and face-to-face learnings to give positive attitude and awareness pertinent to specific social, cultural and environmental concerns regarding the biodiversity education and conservation [13,14]. Those outdoor activities helped to create a positive attitude among the communities for improving their awareness and understanding in order to bridge the gap in the relationships between humans and environment [9,15,16] and prevent the negative menaces of the environmental concerns [17,18]. However, since the spreading of the COVID-19 pandemic around the world, all educational system was changed from the traditional in class, outdoor education, into online and virtual education [19,20]. Students exchanges with local communities, as well as overseas students' exchanges were halted and restricted. The Ministry of Foreign Affairs of Japan imposed the entry restrictions on many of the foreign countries in order to curb the spreading of COVID-19 pandemic. In the time period from mid of 2020, Japan restricted the entry of nationals from 146 countries [21]. Among those citizens of foreign countries, the tourists and students were also the affecters who were unable to travel to Japan. As a result of this measure the number of international students who travelled to Japan reduced significantly. According to the Ministry of Education, Culture, Sports, Science and Technology (MEXT) of Japan, in 2018 the number of foreign students who entered in the fall of 2018 were around 35,000 in total, while in the spring of 2019, these numbers rose to around 54,000 students. However, with the implementation of restrictive measures, it almost become impossible to visit the country, therefore, the learning mode changes from traditional face-to-face learning to online learning. According to a study by the survey research conducted by the Digital Knowledge stock company, [22], which specializes in e-learning, in March 2020, the percentage of implementation of e-learning in Japanese universities throughout the country was approximately 4.2%, but literally a month later in April and May of the same year, this figure was already 93.7% (89.5% growth is seen). Japanese government also imposed the restrictions for the internal travels between the regions, and it was impossible to create any on-site ESD activities even for local Japanese students. There was a big need and challenges on how to shift the classical ESD inside Biosphere Reserves, which requires lots of fieldtrips and hands-on activities with e-learning online.

Online learning is an electronic learning environment, which provides freedom of time and space without physical contact with the learners. With the growth of e-learning and access to the Internet, e-learning through the telecommunication platforms (Zoom, Mood le, Skype, QQ, etc.) have become the leading practice and secured a good position in all Japanese universities. However, researchers, educationists, and other professionals are very concerned and want to know whether e-learning is able to provide better results and academic achievements when compared with traditional learning. The suddenness of this shift initiated the debate about the quality of learning and student satisfaction.

For those reasons, it was very crucial to investigate and analyses 1. how the e-learning will effect on the perception of BRs and SDGs, 2. Observe the perceptions of students about BRs and SDGs 3. Will their perceptions change significantly as a result of online learning? Here, we decided to create a unique educational curriculum and integrate the local government and local citizens together with international partners into the academic

processes by using e-learning, so that the students were able to learn about SDGs through online platforms.

Our main questions were:

- How can online learning change the perception of students about SDGs and different perspectives of sustainability?
- Whether the online course will affect the perception of students about Biosphere Reserves?
- How well the manifestations of the students will be changed with their virtual experiences and communication about different aspects of sustainability in relation with BRs as learning sites.

The rest of the research study is divided in the following manner: Section 2 describes the research methods adopted in this manuscript, Section 3 discusses some of the results and findings of the research study. Finally, some of the conclusions are summarized, limitations are mentioned, and future research directions are proposed.

2. Methods

In summer and autumn of 2021, we created three intensive online training courses for the students from Japan, Europe, Central Asia, and ASEAN countries. All courses used UNESCO Biosphere Reserves as the platform to educate about the concept of Sustainability and SDGs. 4 Japanese Biosphere Reserves (Mount Hakusan BR, Aya BR, Minakami BR, Odaigahara, Omine and Osugidani BR) and 3 European (Nordhordland BR, West Estonia Archipelago BR, Vidzeme BR), 3 Central Asian (Altyn Emel BR (Kazkhstan), Ugam-Chatkal State BR (Uzbekistan) and Issyk-Kul BR (Kyrgyzstan) and 3 Russian BRs (Baykalskiy, Altayskiy and Katunskiy) presented their online courses. Online courses were divided with on-demand and real time meetings. On-demand lecture martials were voice recoded lectures or video movies, created by the lecturers from partner Universities (6 Japanese Universities, 1 Estonia, 2 Latvia and 1 Russia), and the local representatives of each BRs listed above, as well as introduced the local villagers' lifestyles. In total 23 on-demand materials were created, with the shortest 15 min, to the longest 60 min of duration. All lectures and study materials were translated into English, Japanese and Russian, so that students were able to understand the context, even if they were not native speakers. Real-time meetings were conducted every-day for 90 min, during one week. However, it is pertinent to mention that the application was open to all the participants, no specific criteria was followed for application and the number of female students was more who applied for this online training session.

During on-demand materials, students were able to study the materials without time and place restrictions. During real-time meetings, online meetings using ZOOM platform were created between students and lecturers. Each course lasted for 3 weeks. First week was on-demand study period. To evaluate how well students learned and understood the course, after each on-demand material we conducted tests with pass score above 80%. Only those students who passed the first week of on-demand study were able to continue with real-time meetings, which we conducted during the second week. During real-time meetings, students were able to directly meet with BRs representatives as well as with other students and have direct discussion on SDGs topics conducted inside each region. During the 3rd week, students were requested to submit the completion report on their chosen topic related to the SDGs. Only those students who have competed all tests, and report submission, were provided with the Training Course Completion Certificates.

2.1. Questionnaire Design and Data Collection

A comprehensive questionnaire was designed in order to extract the response of the students. As a methodological precedent, this research study was conducted at Kanazawa University, which in this case study is an ESD research institute. This questionnaire was basically divided into three different parts. In this first part, some of the basic socio-economic information of the respondents were collected such as; gender, nationality, age, education and major field of study. It is pertinent to mention that none of the personal

information of the respondents were used except for the sake of study purposes. Some of the basic information about the UNESCO defined Biosphere Reserves in different countries were introduced in the first part of the questionnaire (as mentioned in introduction section). Additionally, the general understanding of the respondents about Biosphere Reserves were also asked. Moreover, they were also asked about why they are interested to take part in this research study. In the second part of the questionnaire, the questionnaire was designed on Five-point Likert scale and the questions about the understanding of the students about 17 SDGs were asked. While, in the third part of the questionnaire, again, questions were designed on Five-point Likert scale and the response of the students about some of the common perspectives of sustainability were recorded. It is pertinent to mention that the length of the questions was kept short so that an exact response of the respondents can be recorded. The data was collected in two phases, in the first phase, after the recruitment of the students for an online training program, the students were asked to record their responses about the SDGs and sustainability. The detailed flow chart of the research study can be seen in Figure 1.

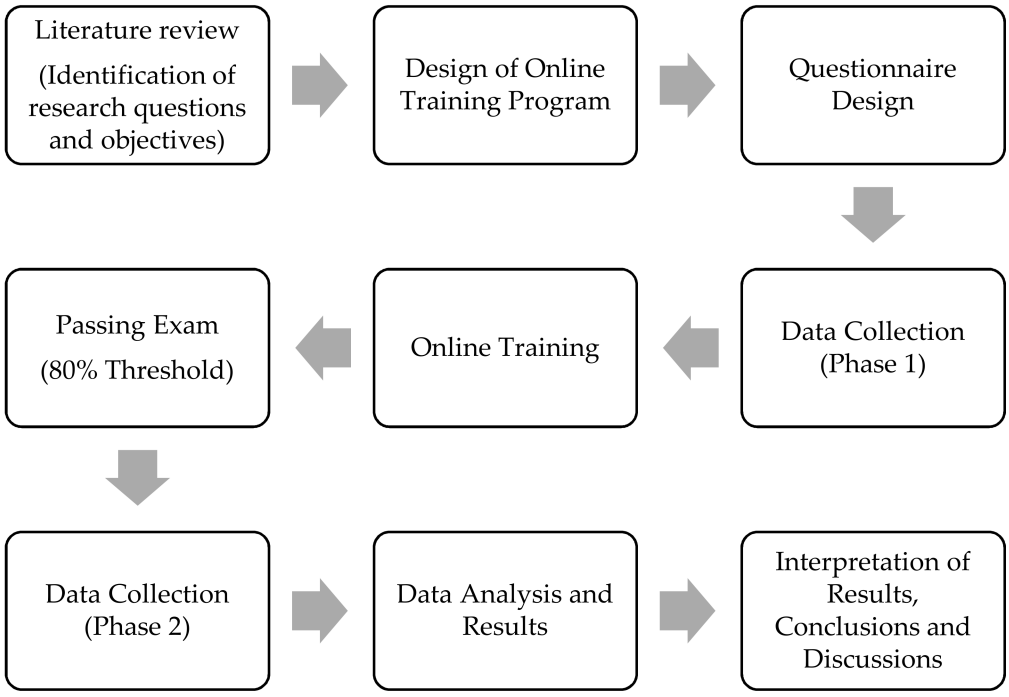


Figure 1. Flow chart of the research study.

Then, a dedicated online training program about SDGs and sustainability was conducted for a time period of two weeks. During this time, the experts about SDGs and Sustainability from different universities were invited to give talks about this intended program. The lectures and the materials about SDGs and sustainability were translated into different languages keeping in mind the easy understanding of the respondents so that they should have a clear idea about the intended objectives and purposes of the research study. During the online training programs, the students were asked to take part in different tasks which can improve their comprehension about SDGs and sustainability and a threshold value of 80% was set as a cut-off value for passing. Therefore, the number of students in the post-evaluation are less than pre-evaluation. Then, the students who passed the required training program were awarded with certificates as a token of appreciation for their successful participation in the training program.

2.2. Socio-Economic Demographics of the Respondents

The students were invited to join from different countries. Some of the basic statistics of the students are presented in this section. Based on the gender, there were 32.25% males, and 67.74% were females in this research study. The participation of the female students was almost double than their male counterparts. Among these students, 37.32% were Japanese nationals, 38.70% of the students were Russian and Central Asian, 23.96% of them from other Asian countries. Some of the prominent countries from where the students take part in this research study were from, Japan, Russian, Kazakhstan, Indonesia, Malaysia, Philippines, and Cambodia. In total the students from 36 different universities participated in this research study. Among these universities, 20 (55.55%) were from ASEAN region, 5 (13.88%) from Japan, 5 (13.88%) from Russia, and 6 (16.67%) from Central Asia.

2.3. Data Analysis Methods

Since the non-parametric tests require only fewer assumptions and easy to carry out on ordinal data. Also, they are easy to comprehend, therefore, non-parametric testing was conducted on this data because of the nature of the collected data [23]. It is pertinent to mention that maybe the prediction power of the non-parametric testing would be lower, however the loss of the data is small of the data follows a normal distribution and meets all the required assumptions [24]. Investigations suggest that non-parametric testing should be used if there is no evidence about the distribution of errors in the data [23]. As the data collected in the part 2 and part 3 of the questionnaire was an ordinal data, therefore some special considerations were required for the data analysis and SPSS v. 20 was used for performing these statistical testing.

The Mann-Whitney U test was used to compare the difference between two independent group of students. The Mann-Whitney U test is an alternative of the two-sample t-test and does not require the samples to be continuous and dependent variable and normally distributed. Therefore, by checking the applicability of this non-parametric test, the Mann-Whitney U test was performed on the independent samples when the dependent samples were ordinal, e.g., nationality.

3. Results and Discussion

3.1. Familiarity with UNESCO Biosphere Reserves

The Mann-Whitney U test was applied to assess the familiarity of the students with the UNESCO Biosphere reserves. It is pertinent to mention that certain group of nationalities from different countries were added together because they form a small percentage of the respondents in those individual categories. For example, all the Russian, Central Asian and Asian students were added in one category of "International" students, while the other category was divided as "Japanese". The detailed results of the Mann-Whitney U test can be seen in Table 1. The results depict that the international students are more familiar with the UNESCO Biosphere Reserves as compared with their Japanese counterparts. One of the possible reasons can be that the international students are more well-versed about social and societal issues as compared with the Japanese students. Another reason which can be attributed that Japanese student are quite occupied with their studies and part-time jobs. Therefore, they have less time to focus on these things apart from their regular curriculum.

3.2. Familiarity with UNESCO Biosphere Reserves (Pre- & Post- Evaluation)

The Mann-Whitney U Test was applied to check the familiarity of the students before and after the training program. The number of students in the pre-evaluation were 203 and the students in the post-evaluation were 62. The detailed results of the Mann-Whitney U Test can be seen in Table 2. It has been confirmed with the findings that the training program has significantly positive impact on the understanding of the students about their familiarity and comprehension about UNESCO Biosphere Reserves. In other words, it can be implied that these sites can be used as learning platform to spread the awareness and knowledge about SDGs and sustainability. After the training program students put more

emphasize on their familiarity with the UNESCO Biosphere Reserves as the difference in their understanding and comprehension is statistically significantly different. These findings suggest a strong notion that these types of training programs have the potential to initiate the discussion about SDGs and sustainability by using these UNSECO designated places as a learning platform. The detailed results can be seen in the Table 2 below.

Table 1. Familiarity with UNESCO Biosphere Reserves (results of Mann-Whitney U Test).

Test Statistics [a]				
	How much are you familiar with the UNESCO Biosphere Reserves?			
Mann-Whitney U	4367.500			
Wilcoxon W	27,803.500			
Z	−1.761			
Asymp. Sig. (2-tailed)	0.078			
Ranks				
Nationality		N	Mean Rank	Sum of Ranks
How much are you familiar with the UNESCO Biosphere Reserves?	Japanese	48	149.51	7176.50
	International	216	128.72	27,803.50
	Total	264		

[a] Grouping Variable: Nationality.

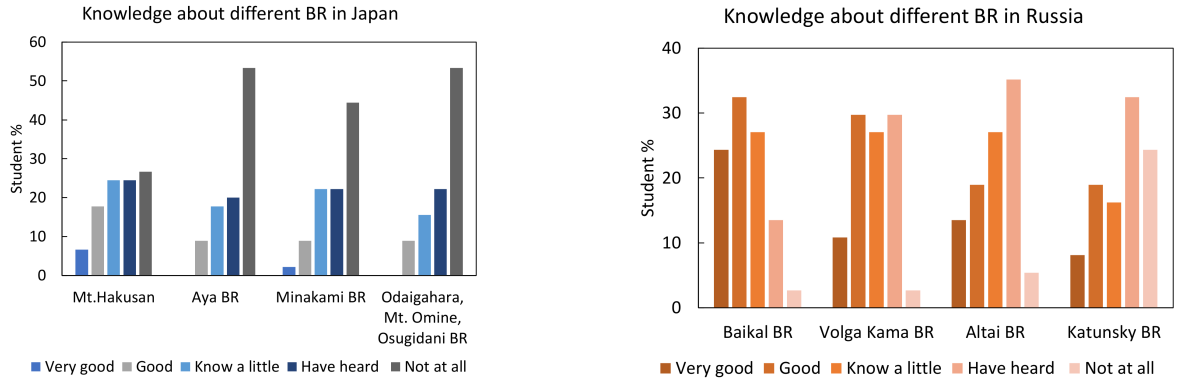
Table 2. Familiarity with UNESCO Biosphere Reserves before and after the training program (results of Mann-Whitney U Test).

Test Statistics [a]				
	How much are you familiar with the UNESCO Biosphere Reserves?			
Mann-Whitney U	4203.000			
Wilcoxon W	6156.000			
Z	−4.085			
Asymp. Sig. (2-tailed)	0.000			
Ranks				
Pre-post		N	Mean Rank	Sum of Ranks
How much are you familiar with the UNESCO Biosphere Reserves?	Pre	203	143.30	29,089.00
	Post	62	99.29	6156.00
	Total	265		

[a] Grouping Variable: Pre-post.

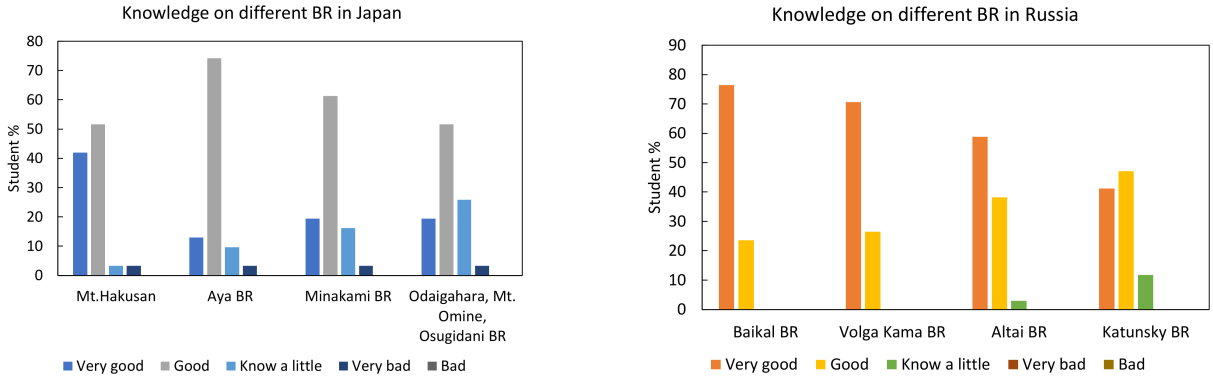
In this section, the students were asked about rating their manifestations on Five-point Likert scale about different BRs locations in Japan and Russia. As it can be seen that the understanding of the students about BRs in Japan and Russia can be seen in the Following Figure 2. It can be inferred from the results that the students are not comparatively well-aware about the BRs in Japan before attending the online course (Figure 2a). A similar kind of response can be seen in Figure 2b. The detailed responses can be seen in the following Figure 2. It is pertinent to mention that here the cross-comparison about Japanese and Russian BRs is only presented.

The same question was asked to the students to rate their comprehension and understanding of the BRs in Japan and Russia after the successful completion of the online training program. As can be seen from the following Figure 3a,b, that the understanding and comprehension of the students has significantly increased. Again, this confirms the fact that the students have become more familiar with the BRs after the participation of the course. This confirms the fact that BRs can be used as one of the most prominent sites which can be used for the learning about SDGs and different aspects of sustainability among the students. The cross comparison among the responses of the respondents before and after the course can be seen in Figures 2 and 3, respectively.



(**a**) (**b**)

Figure 2. How familiar you become about UNESCO BRs BEFORE the course. (**a**) Familiarity of students about BRs in Japan, (**b**) Familiarity of students about BRs in Russia.



(**a**) (**b**)

Figure 3. How familiar you become about UNESCO BRs AFTER the course. (**a**) Familiarity of students about BRs in Japan, (**b**) Familiarity of students about BRs in Russia.

3.3. Familiarity with the SDGs

In the present paper, the response of the respondents about the SDGs was also evaluated. They were asked to rate their understanding on Five-point Likert Scale system about their comprehension of the 17 SDGs. As the data was collected in the two-phase system (before and after the online training program). Therefore, their responses were analyzed to check if they manifest statistically significantly different responses or not. In the present research study, the understanding of the students about terminologies related with the SDGs were recorded, which enabled their evaluation of the learning contents. The previous studies also revealed that the training programs among students have the capacity to improve the understanding of the students about SDGs and sustainability. However, their perceptions are varied according to their major field of study and the duration of the training program [25,26]. It is imperative to state that the in-depth understanding about the SDGs and different perspectives of sustainability are evaluated after the students were introduced with detailed discussions on ESD and its mission and relationship towards learning about sustainability in the higher institute.

One of the main pieces of evidence from the detailed results can be confirmed that the Japanese students are clearly lacking their comprehension and understanding about their knowledge of SDGs. As the scores and the results of the research study confirm that the international students have more knowledge and understanding of the SDGs. Out of 17 SDGs, the international students are leading in 14 SDGs of their comprehension and knowledge of the SDGs. This clearly depict that the international students are more

aware of the socio-economic challenges posed by the sustainability concerns. Out of these 14 SDGs, the relationship shows that in 5 of the SDGs, the response of the international students is statistically significantly different as compared with their Japanese counterparts. These SDGs include Good Health and Well-being (SDG 3), Quality Education (SDGS 4), Gender Equality (SDG 5), Decent Work and Economic Growth (SDG 8), and Industry, Innovation and Infrastructure (SDG 9). The manifestations in the remaining 9 SDGs, still the dominance of the international students is prevalent, but their responses are not statistically significantly different as compared with their Japanese counterparts. These findings suggest that the teachers, experts, and the university administration in the Japanese higher institutes must develop as defined consensus about sustainability in their education through dialogue. It is the need of the hour that collective efforts should be undertaken to revise the curriculum, policies, and standards pertinent to the sustainable learning in Japanese higher institutes. Some of the findings as suggested by [27] can be adopted to put the participatory issues into practice for realizing the sustainable behaviors and methodologies into action. The familiarity of the students and the results of the statistical analysis can be seen in Figure 4.

Figure 4. Students' familiarity with the SDGs. * Significant at 5% ($p < 0.10$), ** Significant at 5% ($p < 0.05$), *** Significant at 1% ($p < 0.01$).

The lack of proper curriculum and infrastructure can be classified as one of the core impediments of vague learning of SDGs in the Japanese society. The learning of the sustainable behaviors in the higher institutes can be one of the main and significant reform which can be helpful in identifying the origins and solutions of SDGs concerns in the Japanese society. Universities and higher institutes can be one of the main sources of sustainable behavior learning and can be used to create awareness and access to the scientific knowledge for the enhancement of sustainable learning practice. The combination of the academic learning and the steps taken by the curriculum designing committee can be one of the significant sources of learning valuable and performance-based actions for the promotion of sustainable behaviors in the academic community in the Japanese higher institutes [28]. This stresses on one of the main and relevant issue which can be used a tool to successfully implement the sustainable behaviors in the higher education institutes

for the contribution and promotion of SDGs keeping in mind the scope and objectives of sustainable science in academia [29].

For the promotion of sustainable behaviors (about SDGs and sustainability perspectives), they must be rooted deep into the culture of a society and the awareness of the pertinent social and societal issues should be carried over in the higher institutes on regular basis. The higher institutes can't expect that their students, teachers, and other management staff can have clear understandings and comprehension of the sustainable behaviors. A coherence in the shared values and virtues should be developed among the stakeholders for the promotion of sustainable science in higher institutes [30]. However, it is necessary to mention here that issues pertinent to the awareness and relevant concerns are rarely taken into consideration when the practical implementation of sustainable behaviors is intended in the higher institutes.

Therefore, it is pertinent to mention that the awareness and concerns about the SDGs are one of the main barriers which hinder the desired comprehension of the respondents. For the sake of putting sustainable behaviors into practice, it is inevitable that the personal awareness and knowledge about SDGs should be improved among the stakeholders. The proper training and informed knowledge of the stakeholders (teachers, university administration, curriculum design committee, and students) is important to overcome the barriers in the understanding of the sustainable behaviors. If the higher institutes fail to comply with the rules and regulations which can promote the sustainable behaviors, then it is difficult to achieve a considerable progress which should be efficient, balanced and organized for large-scale sustainable behaviors. However, this can be promoted by introducing proper guidelines and regulations through contemplation in the curriculum in higher institutes [31].

3.4. Concern with Different Perspectives of Sustainability

Table 3 shows the manifestations of the students about different concepts of sustainability. There were carefully asked to rate their concerns about 10 different perspectives of sustainable behaviors on a Five-point Likert scale. Again, it is confirmed through the results that in almost all of the perspectives, the behavioral response of the international students is strong as compared with their Japanese counterparts except healthcare and circular economy. Rest, in almost all of the domains, the international students rated their manifestations in a stronger manner. However, the behavioral difference among international and Japanese students was statistically significantly different in three domains pertinent to climate change, human rights, and energy efficiency. These findings again confirm the results reported in the preceding section that the know-how of the international students is more about sustainable behaviors as compared with their Japanese counterparts. However, it is very interesting to note that Japanese students are less concerned about climate change, human rights abuses, and energy efficiency. This can be attributed because of the fact that Japan is a first world developed country and the students have rarely faced any of the particular issues specially related with the climate change and energy scarcity. For example, the Japanese students can't even think of that there can be a breakdown of electricity or gas supply on a fine sunny morning without strike of any natural calamity, which is quite a common phenomenon and routine in many of the Asian and Central Asian countries. It has been reported that the humans are more concerned with the issues which they face in real-life as compared with their non-experienced incidents in life.

Again, it can be suggested that the lack of awareness and knowledge which support innovation and contributions towards sustainable behaviors are one of the main barriers which are necessary for the implementation of SD in communities. One of another apparent reason for the less concern of the Japanese students about the different aspects of sustainability can be attributed because of the fact that Japan is a first world country, having least interaction (isolated nation) with the outer world. Therefore, the exposure of the undergraduate level students about different sustainability issues can be restricted and influenced because of this phenomenon.

Table 3. Concerns of the students about different perspectives of sustainability.

	Test Statistics [a]									
	[Biodiversity Conservation]	**[Sustainable Communities and Livelihoods]**	**[Circular Economy]**	**[Technology, Digitalization and AI]**	**[Food Security]**	**[Climate Change]**	**[Health Care]**	**[Human Rights]**	**[Energy Efficiency]**	**[Environmental Pollution]**
Mann-Whitney U	4933.000	4748.500	4361.500	4909.000	5122.000	3832.500	5046.500	2675.000	3477.000	4440.000
Wilcoxon W	6109.000	28,184.500	5537.500	28,345.000	28,558.000	27,268.500	6222.500	26,111.000	26,913.000	27,876.000
Z	−0.540	−0.957	−1.770	−0.588	−0.133	−2.912	−0.297	−5.357	−3.736	−1.590
Asymp. Sig. (2-tailed)	0.589	0.339	0.077	0.557	0.894	0.004	0.766	0.000	0.000	0.112
Concern	International > Japanese	International > Japanese	International < Japanese	International > Japanese	International > Japanese	International > Japanese	International < Japanese	International > Japanese	International > Japanese	International > Japanese
Significance	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Significant	Not Significant	Significant	Significant	Not Significant

[a] Grouping Variable: Nationality.

Despite the fact that there are many differences among the traditions, understandings and the culture of the Japanese and international students. However, through the conduction of this research study, we were able to draw some inferences based on the manifestations of the students. This reflects on the needs that though some of the great achievements have been attained through the involvement of SD in education in Japan [14,32,33]. However, some deeper reflections on the general structures of the education system are requisite in order to promote sustainable behaviors among the students. It is pertinent to mention that the extent up to which the higher institutes can implement the ways and adopt the approaches for achieving ESD is also much dependent and based on the general structure of the curriculum taught in the higher education institutes. The detailed results about the concerns of the students are presented in the following Table 3.

4. Conclusions

The purpose of this research article is to investigate the intentions of the students about their perceptions of Biosphere Reserves, SDGs, and different perspectives of sustainability. An online intensive learning program was designed, and the responses were collected through the administration of questionnaire survey in two phase system. Students from different international and Japanese universities were recruited for a two-week online training program. The curriculum was well-designed through the help of experts in SDGs and sustainability. The contents of the lectures were translated into different languages so that the students should have clear picture of the intended purposes of the course. During the course, some assignments and tasks were assigned to the students and a passing threshold of 80% score was determined as the passing criteria. Upon the successful completion of the course, the students who passed the exam and successfully completed the course were awarded with the course completion certificates as a token of appreciation.

The findings of the research study manifested that the students' perceptions about the Biosphere Reserves as learning platforms have statistically significantly changed. They have more aware with the BRs as learning platforms for better understanding and comprehension of the SDGs and different perspectives of sustainability. Further, the statistically analysis of the research study revealed that the overall evaluation of the international students about SDGs and different perspectives of sustainability is more as a result of online learning and training program as compared with their Japanese counterparts. Japanese students' evaluation about three of the SDGs named; No Poverty (SDG 1), Life Below Water (SDG 14), and Life on Land (SDG 15) is more as compared with their international counterparts. However, it is important to mention that still their evaluations are not statistically significantly different as compared with the international students. In the similar pattern, the evaluations of the international students about different perspectives are more rated as compared with the Japanese students. Only in 2 out of 10 dimensions of sustainability, the Japanese students are more concerned as compared with the international students, which are circular economy and health care. However, it is important to mention that still their evaluations are not statistically significantly different as compared with the international students. The overall evaluations of the international students are more about the SDGs and different perspectives of sustainability, which confirm the agreement that the international students are more aware of the social, economic, and societal issues posed by the lack of sustainable behaviors in the community. One of another reason of lacking comprehension and understanding among Japanese students regarding sustainable behaviors might be attributed because of their too occupied study and work schedules. It has been observed that in Japan usually students fund their own studies and have to take care of their daily expenditures by themselves and do not rely on their parents and guardians. Therefore, their work schedules are too occupied with part-time jobs to make both ends meet. Furthermore, the curriculum of Japanese students is comprised of too many assignments and other tasks, they rarely find the time to think out of their assigned tasks. According to the opinion of the authors, international students might have more exposure to the social and societal problems posed by the scarcity of sustainable behaviors. One of another reasons for the

deficiency and lack of understanding of SDGs and different perspectives of sustainability among Japanese students can be attributed because of the fact that Japan is an isolated nation, not very open to the out world. Therefore, there is a possibility that students are not exposed to the issues pertinent to the sustainability issues in their daily lives.

The possible limitations of this research study can be; (a) it involves the professionals about SDGs, which might have made the online training program as intensive one, giving some vague idea about SDGs and sustainability to the students, (b) though the personal information of the students were not gathered, however, the broader scope of the research study have provided strong international base which can be used as an adequate profile of sustainability and comprehension of SDGs currently being found in the Universities. Design of practical implications is imperative for stimulating the creativity and autonomy about the comprehension of SDGs and sustainability to meet the demands of present and future challenges imposed for sustainable development.

As the findings of this research study are solely based on the self-manifestations of the students who participated in this research study, therefore, there is a possibility that the response of the students might render some of the biasedness because of their social desirability. For the continuation of this research work, the students would be explicitly asked about specific behaviors about SDGs and different perspectives of sustainability in order to improve their engagement with sustainable behaviors for practice. Also, based on the intensive exploratory study, some concurrent policy suggestions would also be proposed.

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Informed Consent Statement: The respondents were informed that their responses would remain anonymous and would be used for research purposes only.

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References

1. Nogueiro, T.; Saraiva, M.; Jorge, F. Total Quality Management and Social Responsibility an Approach through Their Synergies in Higher Education Institutions. *Smart Innov. Syst. Technol.* **2021**, *256*, 311–321. [CrossRef]
2. Batisse, M. The Relevance of MAB. *Environ. Conserv.* **1980**, *7*, 179–184. [CrossRef]
3. Ishwaran, N.; Persic, A.; Tri, N.H. Concept and practice: The case of UNESCO biosphere reserves. *Int. J. Environ. Sustain. Dev.* **2008**, *7*, 118. [CrossRef]
4. Meuleman, L.; Niestroy, I. Common but Differentiated Governance: A Metagovernance Approach to Make the SDGs Work. *Sustainability* **2015**, *7*, 12295–12321. [CrossRef]
5. Ruoss, E. Biosphere Reserves as Model Sites for Sustainable Development. In *Protected Areas in Focus: Analysis and Evaluation. Proceedings in the Management of Protected Areas*; Getzner, M., Jungmeier, M., Eds.; Heyn Klagenfurt: Klagenfurt, Austria, 2013; Volume 4, pp. 99–114.
6. UNESCO and MAB Programme. *Mab Strategy 2015–2025*; UNESCO: Paris, France, 2015; pp. 1–15.
7. UNESCO. *Lima Action Plan for UNESCO's Man and the Biosphere (MAB) Programme and Its World Network of Biosphere Reserves (2016–2025)*; UNESCO: Paris, France, 2016; pp. 1–11.
8. Peters, B. Concepts and theories of horizontal policy management. In *Handbook of Public Policy*; Peters, B.G., Pierre, J., Eds.; SAGE Publications Ltd.: Thousand Oaks, CA, USA, 2006; pp. 115–138.
9. Sedlacek, S.; Gaube, V. Regions on their way to sustainability: The role of institutions in fostering sustainable development at the regional level. *Environ. Dev. Sustain.* **2009**, *12*, 117–134. [CrossRef]
10. Prokop, P.; Tuncer, G.; Kvasničák, R. Short-Term Effects of Field Programme on Students' Knowledge and Attitude toward Biology: A Slovak Experience. *J. Sci. Educ. Technol.* **2007**, *16*, 247–255. [CrossRef]

11. Price, M.F. The periodic review of biosphere reserves: A mechanism to foster sites of excellence for conservation and sustainable development. *Environ. Sci. Policy* **2002**, *5*, 13–18. [CrossRef]
12. Ramadoss, A. Biodiversity Conservation through Environmental Education for Sustainable Development—A Case Study from Puducherry, India. *Int. Electron. J. Environ. Educ.* **2011**, *1*, 97–111.
13. Nagata, Y. A Critical Review of Education for Sustainable Development (ESD) in Japan: Beyond the Practice of Pouring New Wine into Old Bottles. *Educ. Stud. Jpn.* **2017**, *11*, 29–41. [CrossRef]
14. Tanaka, H. Current State and Future Prospects of Education for Sustainable Development (ESD) in Japan. *Educ. Stud. Jpn.* **2017**, *11*, 15–28. [CrossRef]
15. Stoll-Kleemann, S.; De La Vega-Leinert, A.C.; Schultz, L. The role of community participation in the effectiveness of UNESCO Biosphere Reserve management: Evidence and reflections from two parallel global surveys. *Environ. Conserv.* **2010**, *37*, 227–238. [CrossRef]
16. Stoll-Kleemann, S.; Bender, S.; Berghöfer, A.; Bertzky, M.; Fritz-Vietta, N.; Schliep, R.; Thierfelder, B. Linking Governance and Management Perspectives with Conservation Success in Protected Areas and Biosphere Reserves. *Perspect. Biodivers. Gov. Manag.* **2006**, *1*, 46.
17. Hungerford, H.R.; Volk, T.L. Changing Learner Behavior through Environmental Education. *J. Environ. Educ.* **1990**, *21*, 8–21. [CrossRef]
18. Mammadova, A. Integrating Japanese Local Government and Communities into the Educational Curriculum on Regional Sustainability Inside the UNESCO's Biosphere Reserves and Geoparks. *Sustainability* **2021**, *13*, 2497. [CrossRef]
19. Javid, M.A.; Abdullah, M.; Ali, N.; Dias, C. Structural equation modeling of public transport use with COVID-19 precautions: An extension of the norm activation model. *Transp. Res. Interdiscip. Perspect.* **2021**, *12*, 100474. [CrossRef]
20. Abdullah, M.; Ali, N.; Hussain, S.A.; Aslam, A.B.; Javid, M.A. Measuring changes in travel behavior pattern due to COVID-19 in a developing country: A case study of Pakistan. *Transp. Policy* **2021**, *108*, 21–33. [CrossRef]
21. Wang, Q.; Huang, R. The impact of COVID-19 pandemic on sustainable development goals—A survey. *Environ. Res.* **2021**, *202*, 111637. [CrossRef]
22. Baber, H. Determinants of Students' Perceived Learning Outcome and Satisfaction in Online Learning during the Pandemic of COVID19. *J. Educ. E-Learn. Res.* **2020**, *7*, 285–292. [CrossRef]
23. Gibbson and Chakraborti. *Non Parametric Statistical Inference*; CRC Press: Boca Raton, FL, USA; Taylor & Francis Group: Abingdon, UK, 2019; Volume 53, pp. 1689–1699.
24. Kitchen, C.M. Nonparametric vs. Parametric Tests of Location in Biomedical Research. *Am. J. Ophthalmol.* **2009**, *147*, 571–572. [CrossRef]
25. Nogueiro, T.; Saraiva, M.; Jorge, F.; Chaleta, E. The Erasmus+ Programme and Sustainable Development Goals—Contribution of Mobility Actions in Higher Education. *Sustainability* **2022**, *14*, 1628. [CrossRef]
26. Chaleta, E.; Saraiva, M.; Leal, F.; Fialho, I.; Borralho, A. Higher Education and Sustainable Development Goals (SDG)—Potential Contribution of the Undergraduate Courses of the School of Social Sciences of the University of Évora. *Sustainability* **2021**, *13*, 1828. [CrossRef]
27. Disterheft, A.; Caeiro, S.; Azeiteiro, U.; Filho, W.L. Sustainable universities—A study of critical success factors for participatory approaches. *J. Clean. Prod.* **2015**, *106*, 11–21. [CrossRef]
28. Wright, T.S.; Wilton, H. Facilities management directors' conceptualizations of sustainability in higher education. *J. Clean. Prod.* **2012**, *31*, 118–125. [CrossRef]
29. Holmes, J.; Moraes, O.R.; Rickards, L.; Steele, W.; Hotker, M.; Richardson, A. Online learning and teaching for the SDGs–exploring emerging university strategies. *Int. J. Sustain. High. Educ.* **2021**, *23*, 503–521.
30. Shephard, K. Higher education's role in 'education for sustainability'. *Aust. Univ. Rev.* **2010**, *52*, 13–22.
31. Aleixo, A.M.; Leal, S.; Azeiteiro, U.M. Conceptualization of sustainable higher education institutions, roles, barriers, and challenges for sustainability: An exploratory study in Portugal. *J. Clean. Prod.* **2018**, *172*, 1664–1673. [CrossRef]
32. Fredriksson, U.; Kusanagi, K.N.; Gougoulakis, P.; Matsuda, Y.; Kitamura, Y. A Comparative Study of Curriculums for Education for Sustainable Development (ESD) in Sweden and Japan. *Sustainability* **2020**, *12*, 1123. [CrossRef]
33. Abe, O. Movement and Challenges of Education for Sustainable Development in Japan. *Environ. Educ.* **2011**, *6*, 1–7.