



Core-to-Core Programme Joint Seminar 2022
“Bridging Ideas between Asia and Europe for Promoting Education for Sustainable Development in Higher Education”
Co-organized by University of Ljubljana, Slovenia and Okayama University, Japan
Supported by the Slovenian Research Agency (SRA), Slovenia and Japan Society for the Promotion of Science (JSPS), Japan

Ljubljana, 14-17 September 2022

Concept Note

1. Background

Education for Sustainable Development (ESD) occupies a prominent place in the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs) adopted by the United Nations (UN). It is “a vital means of implementation for sustainable development” and “a key enabler” of all the SDGs, as affirmed by the UN General Assembly in its resolution 72/222.

Educators including teachers have a crucial role to play in this global pursuit of sustainable development through education. As UNESCO’s new ESD promotion measure “ESD for 2030” recognizes, educators are “key actors in facilitating learners’ transition to sustainable ways of life.” They can facilitate learning for sustainable development.

Recognizing the critical importance of educators in the SDGs, Okayama University, the only UNESCO Chair on ESD in Asia, launched the JSPS Core-to-Core Programme (Type B. Asia-Africa Science Platforms) (FY 2017-2019). It established core research exchange institutions for ESD teacher education and their academic network in Asia and contributed to building the capacities of the next generation of researchers. Subsequently, the University obtained a grant sponsored by the Japanese National Commission for UNESCO (FY 2018-2019), and it developed the “Asia-Pacific ESD Teacher Competency Framework” and a guide for effectively disseminating the framework in collaboration with 34 institutions in 16 countries across the Asia-Pacific region and with the support of UNESCO Bangkok and Asia-Pacific Cultural Centre for UNESCO. The framework currently comprises a programme guideline for developing ESD teacher education in the Asia-Pacific region and its research and educational achievements.

On the other hand, University of Ljubljana has participated in the UNESCO/UNITWIN Network in Education for Sustainable Lifestyles and conducted various researches for promoting teachers’ ESD competency in collaboration with 27 institutions in 18 countries in Europe. An academic journal edited by the University published a special issue on “Sustainable Development in Education” and reported fruitful results of research and practice on ESD (see CEPS Journal, 3(1), 2013). The University has energetically developed teacher education for ESD through various activities, including incorporating ESD into existing teacher training programmes and courses, a green campus, and a student club on sustainability.

The whole-institution approach, directly linked to the institution’s organizational culture and the leadership and management of students and faculty staffs, is the key to mainstreaming ESD in all aspects

of teacher education institutions. This approach, however, has not advanced sufficiently in any teacher education institution worldwide, not just in Japan and Slovenia. As stated by UNESCO, achieving a breakthrough in mainstreaming ESD necessitates teacher education institutions to provide good examples of the whole-school approach.

2. Objectives

The overall goal is to organize an event that will promote the collaboration between University of Ljubljana in Slovenia and Okayama University in Japan, both of which have outstanding achievements in ESD teacher education in Europe and Asia-Pacific, respectively, and to develop good examples of a whole-institution approach in ESD teacher education.

Specifically, the event is also aimed to achieve the following objectives:

- To better understand how to incorporate sustainability and ESD into all aspects of higher education institutions, particularly teacher education institutions.
- To report on progress in the development, implementation, and evaluation of teacher education programmes and courses that is a critical component of a whole-institution approach to ESD.
- To train young researchers on how to align their academic research with sustainability and ESD to ensure the approach's continued development.

3. Expected outputs

- Reports on the successes and lessons learned from integrating ESD into teacher education programmes and courses, including a framework of indicators for evaluating such integration.
- Sharing information between young researchers on their research and its alignment with the overarching theme of sustainability, ESD and the whole-institution approach.
- Suggestions and recommendations for fostering environments conducive to transforming teacher education for sustainable development via a whole-institution approach.

4. Participants

The event will bring together approximately 50 participants onsite from University of Ljubljana, Okayama University, and other universities, as well as online participants from partner institutions in Asia, Europe, and other regions of these universities.

5. Tentative time, Venue and Programme

14 – 17 September 2022 at University of Ljubljana, Ljubljana, Slovenia

Day 1: Opening, keynote speech, research presentation, workshop, welcome function

Day 2: Invited speech, research presentation, students seminar

Day 3: School visit, wrap up, food events

Day 4: ESD excursion

6. Deliverables

Participants have submitted the following document prior to the event.

Participant	Deliverables
Master course students	Poster Presentation
PhD students	Abstract and Poster and PowerPoint presentations
Professors and Keynote/Invited speakers	Abstract and PowerPoint presentation



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Programme Schedule

*The event will take place at the Faculty of Education, University of Ljubljana, Kardeljeva ploščad 16, 1000 Ljubljana.
University professors and graduate students from Asia and Europe who are interested in Education for Sustainable Development (ESD) in higher education, especially teacher education, will participate in this seminar either on-site or online.*

Wednesday, 14 September 2022	
8:30 – 9:00	Registration
9:00 – 9:15	Opening Ceremony Room: 048 Moderators: Gregor Torkar (University of Ljubljana, Slovenia) and Hiroki Fujii (Okayama University, Japan) Opening remark by Janez Vogrinc (Dean, Faculty of Education, University of Ljubljana, Slovenia) Opening remark by Atsushi Takase (Dean, Faculty of Education, Okayama University, Japan)
9:15 – 10:00	Agenda 1: Keynote speech Room: 048 Moderator: Gregor Torkar (University of Ljubljana, Slovenia) ESD for 2030 – Updates on the implementation and way forward Jun Morohashi (UNESCO Headquarter, Paris)
10:00 – 10:45	Teacher education for sustainable development: Where do we stand and where should we go next? Daniel Fischer (Wageningen University, The Netherlands)

10:45 – 11:15	Coffee Break
11:15 – 12:15	<p>Agenda 2: Research presentation</p> <p>Room: 048</p> <p>Moderator: Hiroki Fujii (Okayama University, Japan)</p> <p>17 Sustainable Development Goals in the curricula of the selected undergraduate study programs at the Faculty of Education of the University of Ljubljana</p> <p>Gregor Torkar (University of Ljubljana, Slovenia)</p> <p>Sustainability competence and general professional competence to teach ESD among Japanese pre-service teachers</p> <p>K. F. Ardh (Okayama University, Japan)</p>
12:15 – 13:30	Lunch
13:30 – 14:30	<p>Agenda 3: Poster presentation</p> <p>Room: Entrance Hall</p> <p>Introduction to the PhD seminar by Janez Krek (University of Ljubljana, Slovenia)</p> <p><i>Participants will present their research on posters and share their ideas.</i></p>
14:30 – 16:30	<p>Agenda 4: Workshop for all participants</p> <p>Room: 048</p> <p>Rooms: P044, P037</p> <p><i>Participants will gain a better understanding of ESD by taking part in one of the workshops: the science education workshop or printmaking workshop.</i></p>
18:00 –	<p>Guided tour of the city centre</p> <p><i>Participants will enjoy a guided tour in the centre of Ljubljana.</i></p>
Thursday, 15 September 2022	
8:45 – 9:30	<p>Agenda 5: Invited speech</p> <p>Room: 048</p> <p>Moderator: Saeko Fujimoto (Asia-Pacific Cultural Centre for UNESCO, Japan)</p>

	ESD promotion of teacher education institutions in the Philippines: A collaborative transformation process Jestoni Babia (University of San Jose – Recoletos, the Philippines)
9:30 – 10:15	Strengthening quality and relevance in teacher education through integrating interdisciplinary approaches on ESD Robert J. Didham (Inland Norway University of Applied Sciences, Norway)
10:15- 10:45	Coffee break
10:45 – 11:30	Agenda 6: Research presentation Room: 048 Moderator: Iztok Devetak (University of Ljubljana, Slovenia) and Karen Onodera (Kyoto Koka Women’s University, Japan) Green chemistry education and ESD initiatives Vesna Ferik Savec (University of Ljubljana, Slovenia)
11:30 – 12:15	Multicultural teacher education on ESD for 2030 reflecting the situation of the immigrant background students Tomonori Ichinose (Miyagi University of Education, Japan)
12:15 – 12:35	Nurseries of plant biodiversity and the seeds for sustainability in a seminatural environment in Okayama Taro Harada (Okayama University, Japan)
12:35 – 14:00	Lunch
14:00 – 17:00	Agenda 7: Students Seminar Room: 026, P038 Moderators: Janez Krek (University of Ljubljana, Slovenia), Iztok Devetak (University of Ljubljana, Slovenia), Toshinori Kuwabara (Okayama University, Japan) and Koji Miyamoto (Okayama University, Japan) Short presentations <i>Students will be divided into two groups, science education and social studies education, and will give brief presentations on their research. They will discuss how to incorporate ESD/GCED foundational ideas into their research and formal education.</i>
Friday, 16 September 2022	
8:00 – 13:00	Agenda 8: Secondary School Visit <i>Participants will visit an ESD-focused secondary school in Naklo and learn about whole-school approach initiatives on ESD.</i>

13:00 – 14:30	Lunch	
14:30 – 16:30	Agenda 9a: Food event for Students Room: P053, 026 <i>Students will work with each other to prepare and enjoy foods of each country.</i>	Agenda 9b: Meeting for Professors Room: 048 <i>Professors will discuss the whole-institution approach to promoting ESD teacher education.</i>
16:30 – 17:00	Wrap up and closing remarks	
Saturday, 17 September 2022		
8:30 – 17:00	Agenda 10: ESD excursion <i>Participants will visit the scenic Lake Bled and will explore the surroundings, tour an island of the lake and tour to the castle from a sustainability perspective.</i>	

Abstracts

1. Keynote Speeches

ESD FOR 2030 – UPDATES ON THE IMPLEMENTATION AND WAY FORWARD

Jun MOROHASHI, UNESCO Headquarter, Paris, France

To accelerate the achievement of the 2030 SDG Agenda, UNESCO's Education for Sustainable Development for 2030 framework (ESD for 2030) was adopted in 2019 with underscoring the central role of education as a key enabler to achieve all SDGs. In May 2021, on the occasion of the World Conference on ESD, education stakeholders including over 80 ministers adopted the Berlin Declaration on ESD, and renewed their commitments to transforming education through implementing ESD. Ministries of education and environment as well as education and development stakeholders in all countries are invited to collaborate in fully integrating ESD into policies, learning environments, educator's development, youth empowerment and community action.

Framed by ESD for 2030, Member States are invited to develop their respective "country initiatives" as a long-term programme in support of the country's good quality education policy and practice, instead of as an ad-hoc/short-term project or activity. Currently, more than 60 countries have committed to the Country Initiative process. Teacher development is one of remaining gaps for many countries. UNESCO has carried some studies, and found that overall, environmental themes are included in policy and curriculum, but the implementation is still low on average. 47% of national curriculum frameworks of 100 countries made no reference to climate change. Nearly 95% of teachers believed that it is important to teach about climate change, but fewer than 40% were confident in teaching it.

In addressing the gap related to teacher capacities, higher education has a key role to play. First, as many higher education institutions are already showcasing, they can be pioneers in adopting a whole-institution approach, where sustainability is not just seen a guiding principle, but also a principle of action that is practiced in all areas of the University in research, education, and governance, social participation and campus operations. Second, they are the key institutions that train future teachers as well as decision-makers. HED are expected to create and put into practice sustainability-ready pedagogy and training. Third, higher education institutions are where many youth leaders are engaging in action as students. For many, it is their first interaction with social action and will help shape their vision and inspiration for the world. HED institutes should facilitate youth engagement and creativity in all spheres of education including the design of policies and programmes on education and sustainable development. Finally, higher education institutions can become hubs for sustainable communities by providing expertise and support to local initiatives – it is a space where many different sub-sectors of society, including business, local community, schools, etc. can meet and collaborate.

Keywords: ESD for 2030, Whole-institution approach, Teachers, Higher education

TEACHER EDUCATION FOR SUSTAINABLE DEVELOPMENT: WHERE DO WE STAND AND WHERE SHOULD WE GO NEXT?

Daniel FISCHER, Wageningen University, The Netherlands

Strengthening the capacity of educators to implement sustainable development in teaching-learning settings is one of the priority action areas of the #ESDfor2030 program. The field of teacher education for sustainable development (TESD) has become a vibrant area of research and practice in the wake of the Decade for ESD as well as the Global Action Program in recent years, which has also begun to spill over into general teacher education. Because the field is so dynamically evolving and contributions come from very different disciplines, determining what characterizes TESP as a research area and what it has produced in terms of results is challenging.

This presentation draws on a recent project to take stock of the field and identify main achievements. Based on a systematic review of 158 research papers, five different types of inquiry could be distinguished as characteristic of TESD as an evolving research field: designing learning environments, understanding learner attributes, measuring learning outcomes, promoting systems change, and advancing visions for the field.

The presentation will introduce the five types of TESD research and illustrate their distinct approaches with innovative examples from recently completed and ongoing research projects. The presentation concludes with an outlook on where major innovation potentials for future work in the field of TESD lie to contribute more effectively to building the capacity of educators and reorient education systems.

Keywords: Teacher Education for Sustainable Development, TESD, Continuing Professional Development

2. Joint Research Presentations

17 SUSTAINABLE DEVELOPMENT GOALS IN THE CURRICULA OF THE SELECTED UNDERGRADUATE STUDY PROGRAMS AT THE FACULTY OF EDUCATION OF THE UNIVERSITY OF LJUBLJANA

Gregor TORKAR, University of Ljubljana, Slovenia

The main objective of the report is to present the main results of the analysis of the representation of seventeen Sustainable Development Goals in the curricula of the undergraduate study programs The Two-Subject Teacher, Special and Rehabilitation Pedagogy and Primary Teacher Education at the Faculty of Education of the University of Ljubljana, Slovenia, which, together with the University of Okayama, is implementing the bilateral project "Development of Indicator Frameworks for Whole-institution Approach in Teacher Education for ESD: Toward Achieving SDGs". A team of experts from various fields in the natural sciences, social sciences, and humanities working at both universities collaborated to create a list of keywords that define the seventeen Sustainable Development Goals. The content, goals, and literature of the curricula of all required and elective subjects were reviewed individually for each keyword. In the presentation we will highlight our first findings. Let me just highlight a few: the lowest number of hits for the keywords searched are for SDG1 and SDG7. The highest number of hits for the keywords searched are for SDG4, SDG11, and SDG9. When searching for keywords in the curriculum of the Special and Rehabilitation Education programme, there were the most hits for SDG 4; otherwise, this programme contains much less SDG content than the Primary Teacher Education programme or the Two-Subject Teacher programme. The Two-Subject Teacher programme dominates hits for majority searched keywords in all SDGs.

Keywords: Outdoor education, Environmental attitudes, Social skills

SUSTAINABILITY COMPETENCE AND GENERAL PROFESSIONAL COMPETENCE TO TEACH ESD AMONG JAPANESE PRE-SERVICE TEACHERS

K. F. ARDH, Okayama University, Japan

Introduction: To develop an effective sustainability program for preservice teachers, there is a need to understand the status quo of the target audience. In this study, we assess the sustainability competence of preservice teachers through a semi-structured interview. **Methods:** We incorporated indicators from two frameworks into our interview schedule, the European Sustainability Competence and the Asia-Pacific ESD Teacher Competence Framework. Six students from the elementary school program, five students from the secondary school science teacher

program, and eight students from the special education program made up the final sample size of 19 respondents. Data collection period was between May-July 2022. The interviews were conducted, recorded, and transcribed in Japanese. After translating the transcript into English, we assign a score based on the representation of the indicators. The maximum score is 100%, which indicates that every indicator is present in every response. We averaged all of the respondents' score based on: (1) domain, (2) demography of respondents (which program do they belong to); and (3) category indicators (knowledge, skill and attitude). We utilized descriptive statistics to explain all of the responses. **Results:** For all indicators, respondents from elementary, secondary, and special education courses scored similarly. When comparing sustainability competencies to general professional competencies for teaching ESD, respondents scored differently on knowledge and skill, but not in the attitude category indicators. The average respondent scored half or less on all indicators. Respondents scoring the lowest on the domain "Envisioning Sustainable Future", which include futures literacy (34%), adaptability (23%) and exploratory thinking (17%). **Discussions:** Based on the above finding we concluded that to improve the preservice teachers' sustainability competences through experiential learning that challenges to envision their desired future and explore ways to reach it. In the general professional competencies for teaching ESD, respondents demonstrated indicators of the teachers' competencies to develop themselves (Continue to learn and create) and connect with others (Connect, collaborate and engage). Further study is needed to determine whether this awareness is particularly evident in teaching ESD. **Keywords:** Sustainability competence, General professional competence to teach ESD

3. Invited Speeches

ESD PROMOTION OF TEACHER EDUCATION INSTITUTIONS IN THE PHILIPPINES: A COLLABORATIVE TRANSFORMATION PROCESS

Jestoni BABIA, University San Jose – Recoletos, the Philippines

The global framework for ESD implementation from 2020 to 2030 is Education for Sustainable Development (ESD) Towards Realizing the SDGs. The United Nations Educational, Scientific, and Cultural Organization (UNESCO) has advanced ESD for 2030 based on the lessons learned from the Global Action Programme (GAP) on ESD in response to the growing emphasis on ESD to encourage the contribution of learning content to humanity's survival and prosperity. Furthermore, through transformative education, UNESCO seeks to orient and transform societies. Higher Education Institutions (HEIs) must provide students with the necessary information, attitudes, and competencies in order to reach the GAP for ESD. ESD approaches should be widely adopted at Philippine HEIs to solve economic, political, environmental, and social issues, particularly following the pandemic's detrimental effects. Since 2017, the University of San Jose-Recoletos (USJ-R) has been consistent in its support of transdisciplinary and transformative programs for unwavering commitment and innovation in learning to real evidence of sustainable growth among its students and community. USJ-R demonstrates the establishment of the ESD Promotion Center, which will aid in the achievement of the "Ambisyon Natin 2040" and the 2030 ESD target. The ESD Center interacts with various institutions, including UNESCO Bangkok and UNESCO Japan, as well as SEAMEO ESD Fellows at three HEIs in the Philippines, namely Cebu Normal University (CNU), Cebu Technological University (CTU), and Philippine Normal University-Visayas (PNU). To enable community master trainers in HEIs to carry out their community-based ESD work, the framework employs the six-priority action ESD principles and a participatory methodology. A series of ESD-based activities were carried out, including the Climate Change Education Summit among Visayas Region Centers of Excellence and Development, which exchanged vital research for climate change initiatives, notably in Teacher Education Institutions. Following the training of community master trainers to incorporate ESD into their respective community outreach programs, monitoring,

evaluation, and research revealed that ESD implementation in the Philippines is currently at an average level, and that projects and curriculum initiatives must place a strong emphasis on beneficiary transformation through careful planning, monitoring, and evaluation. Student participation in HEIs must also be increased through Curriculum Quality Audit (CQA), in which ESD competencies, including the aims and standards of the 17 Sustainable Development Goals (SDGs), will be explicitly incorporated and mapped in the curriculum. This work should be replicated in the future with a focus on sustainability competencies integration in the curriculum and transformation research, monitoring and evaluation of ESD-based studies, and recommended strategies for a wide range of coverage influence and utilization, particularly for HEIs.

Keywords: Education for sustainable development, Curriculum development, Curriculum quality Audit and higher education institutions in the Philippines

STRENGTHENING QUALITY AND RELEVANCE IN TEACHER EDUCATION THROUGH INTEGRATING INTERDISCIPLINARY APPROACHES ON ESD

Robert J. DIDHAM, Inland Norway University of Applied Sciences, Norway

Over the past 6 years, the teacher education program at INN University has undertaken a number of efforts to integrate and strengthen approaches on interdisciplinary education throughout its courses and curriculum. This has focused on addressing three overarching themes framed in the Norwegian curriculum: sustainable development, citizenship and democracy, and public health and life skills. These three themes are framed in the core curriculum alongside the values and principles of the curriculum. «These three interdisciplinary topics in the curriculum are based on prevailing societal challenges which demand engagement and effort from individuals and local communities, nationally and globally». The efforts to strengthen interdisciplinary approaches in teacher education are linked directly to our overall goals to improve the quality and relevance of education; to better prepare are students for their future roles as teachers, and for their teaching to develop the skills and competencies in learners to engage with and address complex, real-world challenges like sustainable development. This project has implemented many innovative models and methods for active, interdisciplinary learning. It has also worked with the administrative procedures, the strategies and study plans, and it has engaged in capacity building with our teacher educators. In addition, the interdisciplinary work is helping to strengthen bridge between teacher education and schools, and we have developed active partnerships with our partner schools to further the work on interdisciplinary education during the student teacher's praxis period.

Keywords: Teacher education, Interdisciplinary approaches, Education for sustainable development, Quality and relevance

4. Research Presentations

MULTICULTURAL TEACHER EDUCATION ON ESD FOR 2030 REFLECTING THE SITUATION OF THE IMMIGRANT BACKGROUND STUDENTS

Tomonori ICHINOSE, Miyagi University of Education, Japan

The current crisis in Ukraine has created the greatest refugee surge to OECD countries. In March 2022, the United Nations estimated that nearly one Ukrainian students per second had become a refugee.

OECD (2015) has shown the performance gap between first-generation immigrant students and students without an immigrant background tends to be wider in reading than in mathematics or problem solving. This suggests that language barriers to text comprehension may be key in explaining performance differences between these two groups of students.

Silveira, F. (2019) has examined achievement from the 2015 PISA (Programme for International Student Assessment) in 41 high-income countries. The authors use within- and cross-level interactions to examine (1) the relationship between immigrant status and academic achievement, (2) the moderating effect of student socioeconomic status on achievement, and (3) how country-level foreign-born population affects both immigrant and native-born students' performance.

Although the academic performance of immigrant students globally is moderated by socioeconomic status, at country level a larger immigrant population affects the academic performance of both immigrant and native-born students. Nonetheless, language barriers may lead to performance differences between these student groups. In Japan, academic performance data have not been analyzed alongside student immigration status data.

However, in 2021 National survey on academic performance incorporate the question item about condition of speaking Japanese at home.

Therefore, this research assessed the performance of national language (Japanese) and mathematics of immigrant and native-born students based on the result of national survey on academic performance. This research also intends to assesses immigrant background (socioeconomic status: SES) and its effect on academic performance.

	Speaking Japanese at home	Elementary 6 th grade	Junior High school 3 rd grade
Group 1	Always speaking	855,659(85.1%)	832,223(89.1%)
Group 2	Almost speaking	119,304(11.9%)	66,408(7.1%)
Group 3	Sometimes speaking	25,442(2.5%)	23,948(2.6%)
Group 4	Never speaking	4,151(0.4%)	5,853(0.6%)
	Others	832	246
	No answer	625	4,638
Total		1,006,013	933,316

Chart : National Academic Performance and Learning Situation Survey“How often do you speak Japanese at home?”

The number of correct answers given by native-born students for national language Multicultural

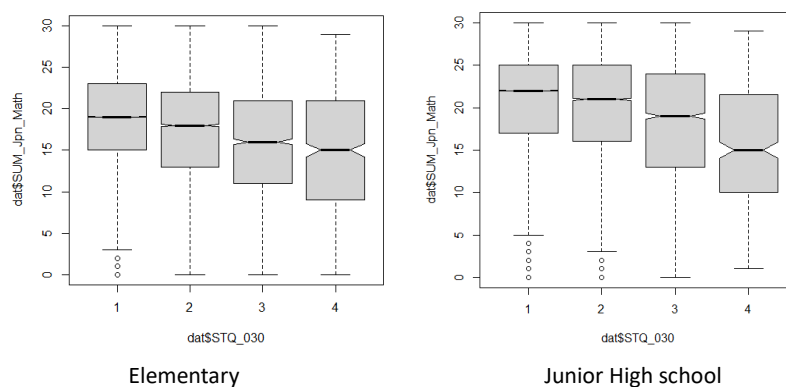


Figure: The number of correct answers for national language and mathematics; Source: Author

Teacher Education and mathematics was significantly higher than those given by students who sometimes or never speak Japanese at home. There was also a significant difference between the preference of students who always or almost always, and students who sometimes or never speak Japanese at home, in terms of national language. In mathematics, there is almost no difference between Group1 always speaking and Group2 almost speaking. No correlation was found between speaking Japanese at home and not speaking Japanese with SES.

Reference:

Banks and Banks, eds. (2019). Multicultural Education: Issues and Perspective, John Wiley & Sons.

OECD (2015). Helping immigrant students to succeed at school—and beyond. <https://www.oecd.org/education/Helping-immigrant-students-to-succeed-at-school-and-beyond.pdf>

Silveira, F., Dufur, M.F., Jarvis, J.A., and Rowley, K.J. (2019.) The Influence of Foreign-born Population on Immigrant and Native-born Students' Academic Achievement, *Sociological Research for a Dynamic World* Volume 5: 1–19. Volume 5: 1–19. DOI: 10.1177/2378023119845252

Keywords: Immigrant background students, Academic performance, Socioeconomic status, Multicultural teacher education, Social Justice

NURSERIES OF PLANT BIODIVERSITY AND THE SEEDS FOR SUSTAINABILITY IN A SEMINATURAL ENVIRONMENT IN OKAYAMA

Taro HARADA, Okayama University, Japan

Applied Biology, one of the major secondary science education courses in the School of Education, Okayama University, has been provided with intensive opportunities for biological field observations. In class B, students have learned not only about the morphology and ecology of plants, but they have also studied biodiversity in a seminatural environment in Okayama Prefecture. In rural areas, various kinds of weeds are found, some of which are globally invasive or alien species. Agricultural crop plants, including rice and peaches, and garden trees are also grown in abundance; many of these originate overseas. Artificial water environments, such as ponds, irrigation channels, and paddy fields, have been managed for rice cultivation; they function as habitats for four different types of aquatic plants (submerged, emergent, floating leaved, and free-floating) and many native or invasive alien animals. Hiigoike Wetland in Soja City was constructed in the 1990s by transplanting natural wetland soil surfaces endangered by highway construction. Students have learned that this seminatural wetland biotope successfully provides citizens and school students with a place to engage in environmental conservation activities and examine native wetland species and the ecosystem. In Handayama Forest, located near Okayama University's Tsushima Campus, a typical secondary warm-temperate laurel forest has formed. Native trees forming cones (gymnosperms) or acorns (angiosperms) and shrubs, some of which are given a scientific name containing japonica or japonicum, exhibit the stratification and succession of the forest. In addition, some kinds of ferns and mosses can be observed. Leaf morphology is one of the key points for identification of plant species from these diverse taxa. To verify the effects of these experiences on students' consciousness regarding sustainability, the short version of the sustainability consciousness questionnaire (SCQ-S) developed by Gericke et al. (2019) was introduced with the five-point scale. While most of the students majoring in natural science recognized the importance of biodiversity preservation in the preliminary question, changes in their consciousness tended to appear in some of the other items in the post questions. It was suggested from students' answers to the descriptive questions that their recognition of native and alien species had been updated and other experiences may also have influenced such changes. The trial partially showed the potential usefulness of the SCQ. Field observations of local plant biodiversity may cause one to reflect on knowledge regarding the relationships between the natural environment and humans. Further facilitation is expected to alter students' behavior toward the achievement of SDGs from scientific and global viewpoints.

Keywords: Plant biodiversity, Native/alien species, Rural area, Wetland, Forest