


 Research Article

# Fostering Global Citizenship through ESD in Higher Education: A Study of International Student Mobility and Sustainability Awareness

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## Abstract

This study investigates the intricate relationship between international student mobility and sustainability awareness within the context of higher education, emphasizing the role of Education for Sustainable Development (ESD) in fostering global citizenship. By employing a mixed-methods approach, we surveyed 300 international students from 20 different countries and conducted semi-structured interviews with 20 faculty members across 10 universities. Our findings indicate that international student mobility can significantly enhance sustainability awareness but primarily when ESD principles are effectively integrated into academic curricula. Specifically, students who engaged in programs infused with ESD reported a deeper understanding of sustainability issues and a stronger commitment to global citizenship. The study further reveals that faculty development plays a crucial role in promoting ESD within higher education settings, as instructors equipped with enhanced knowledge and skills in sustainability education are better positioned to transform curricula in meaningful ways. Additionally, institutional policies and frameworks are essential to creating an environment conducive to ESD, ensuring that programs prioritize global citizenship alongside academic performance. By drawing connections between mobility, sustainability awareness, and educational practices, this research underscores the necessity for universities to adopt strategic initiatives and collaborative efforts aimed at embedding sustainability into higher education curricula. In conclusion, this study offers valuable insights for policymakers, educators, and institutions, highlighting the imperative to strengthen ESD practices to cultivate a generation of informed global citizens. The implications of our findings aim to inspire actionable steps toward integrating sustainability within higher education, ultimately promoting a more equitable and sustainable future.

**Keywords:** Education for Sustainable Development (ESD), Global Citizenship, Higher Education, International Student Mobility, Sustainability Awareness

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## 1. INTRODUCTION

Higher education has a critical role to play in preparing students for global citizenship, which requires an understanding of the interconnectedness of local and global issues (Etzkorn & Reese, 2022). According to Rieckmann (2022), Education for Sustainable Development (ESD) is an important framework for promoting sustainability literacy, critical thinking, and problem-solving skills (Manokore et al., 2022). However, the integration of ESD into higher education curricula remains a challenge, particularly in the context of international student mobility. This study aims to investigate the relationship between international student mobility and sustainability awareness in higher education, focusing on fostering global citizenship through ESD.

## 1.1. Literature Review

### 1.1.1. Conceptualizing Global Citizenship

Global citizenship and its relevance to higher education are vital. Global citizenship refers to the attitude and behavior of individuals who recognize their shared humanity and the interconnectedness of the world, and who take responsibility for their actions and their impact on the planet and its inhabitants (Misiaszek, 2015). It involves recognizing the rights and dignity of all people, regardless of their nationality, culture, religion, or social status. Higher education institutions play a crucial role in shaping global citizens by providing students with the knowledge, skills, and values necessary to navigate an increasingly complex and interconnected world. Higher education institutions can foster global citizenship through:

- Higher education institutions can promote global citizenship by internationalizing their curricula, research, and student exchanges (Gaitan-Aguilar et al., 2024; Guimaraes & Finardi, 2021). This can help students develop a broader understanding of global issues and cultures.
- Higher education institutions can incorporate interdisciplinary approaches to learning, combining subjects such as environmental science, economics, politics, and sociology to address global challenges.
- Service-learning projects can provide students with opportunities to engage in community-based activities that address global issues, such as poverty, inequality, and environmental degradation (Mtawa & Wilson-Strydom, 2018).
- Higher education institutions can promote cultural competence by providing students with opportunities to learn about different cultures and languages, and by incorporating diverse perspectives into curricula.
- Higher education institutions can offer courses and programs that focus specifically on global citizenship, covering topics such as human rights, sustainable development, and global governance (Oxley & Morris, 2013).
- Higher education institutions can provide students with opportunities to develop leadership skills, including leadership in global citizenship initiatives and projects.
- Higher education institutions can establish partnerships with institutions from other countries to promote global collaboration, research, and exchange.
- Higher education institutions can engage with local communities to promote global citizenship through community-based projects and initiatives (Bosio, 2024; Helm et al., 2024; Wei et al., 2024; Minnix & Minnix, 2028).

By fostering global citizenship in higher education, institutions can prepare students to become active participants in addressing global challenges and promoting sustainable development.

### *The Role of Education in Promoting Global Citizenship*

Education plays a crucial role in promoting global citizenship by providing students with the knowledge, skills, and values necessary to navigate an increasingly complex and interconnected world. Education can promote global citizenship through cultural competence, global awareness, critical thinking, emotional intelligence, service learning, global citizenship education, interdisciplinary approaches, experiential learning, institutional support, assessment, and evaluation.

Education can help students develop cultural competence by providing them with opportunities to learn about different cultures and languages, and by incorporating diverse perspectives into curricula (Banks, 2015). Education can help students develop global awareness by providing them with information about global issues, such as poverty, inequality, and environmental degradation. According to Chen et al., (2022), education can help students develop critical thinking skills by encouraging them to analyze and evaluate information from different perspectives and providing them with opportunities to engage in discussions and debates. Students can develop emotional intelligence by providing them with opportunities to develop empathy, self-awareness, and social skills. Education can provide students with opportunities to engage in service-learning projects that address global issues, such as poverty, inequality, and environmental degradation. Education can provide students with explicit instruction on global citizenship, including human rights, sustainable development, and global governance (Goren and Yemini, 2017). Education can incorporate interdisciplinary approaches to learning, combining subjects such as environmental science, economics, politics, and sociology to address global challenges. Education can provide students with

experiential learning opportunities, such as study abroad programs, internships, and volunteer work, which allow them to apply their knowledge and skills in real-world settings. Education institutions can provide institutional support for global citizenship by providing resources and incentives for students to engage in global citizenship activities. Education institutions can assess and evaluate the impact of global citizenship education on student outcomes, such as increased empathy, critical thinking, and cultural competence (AbuKhousa, 2024; Andriani, 2024; Aktas et al., 2017).

### ***Benefits of Global Citizenship Education***

There are several benefits of global citizenship education and these include:

- Improvement on cross-cultural understanding by providing students with opportunities to learn about different cultures and languages.
- Increase in empathy by providing students with opportunities to develop emotional intelligence and understand different perspectives.
- Students can develop critical thinking skills by encouraging them to analyze and evaluate information from different perspectives.
- Students can develop problem-solving skills by providing them with opportunities to engage in discussions and debates about global issues.
- Global citizenship education can increase students' sense of responsibility by providing them with opportunities to engage in service-learning projects and volunteer work (Budiharso et al., 2024; Chiba et al., 2021; Rose & Sayed, 2024).

Despite the benefits mentioned, one cannot ignore the fact that there are several challenges to global citizenship education. The challenges of global citizenship education include limited resources can make it difficult for education institutions to provide comprehensive global citizenship education. Curriculum limitations can make it difficult for educational institutions to incorporate global citizenship education into their programs. Teaching limitations can make it difficult for educators to effectively teach global citizenship education. Assessment limitations can make it difficult for educational institutions to assess the impact of global citizenship education on student outcomes. By recognizing the role of education in promoting global citizenship, educators can work to overcome these challenges and provide students with the knowledge, skills, and values necessary to become active participants in addressing global challenges.

### ***The Importance of Global Citizenship in Addressing Global Challenges***

Global citizenship is crucial in addressing global challenges in the context of higher education (Gaitan-Aguilar et al., 2024). Global citizenship is crucial in addressing global challenges because it recognizes that individuals are interconnected and interdependent and that individual actions have a ripple effect on the world. Global citizenship encourages individuals to take responsibility for their actions and to work together to address global challenges. Some of the most pressing global challenges that require global citizenship to address include climate change, poverty and inequality, human rights, global health, and economic inequality. Climate change is a global problem that requires a collective response. Global citizenship encourages individuals to take action to reduce their carbon footprint and to advocate for climate change policies. Poverty and inequality are global issues that require a global response. Global citizenship encourages individuals to take action to address poverty and inequality by advocating for policies and programs that promote economic development and social justice. Human rights are a fundamental aspect of global citizenship. Global citizenship encourages individuals to advocate for human rights and to hold governments and institutions accountable for protecting human rights. Global health is a critical issue that requires global cooperation. Global citizenship encourages individuals to take action to promote global health by advocating for policies and programs that promote access to healthcare and disease prevention (Santini and Smith, 2022). Economic inequality is a global issue that requires a global response. Global citizenship encourages individuals to take action to address economic inequality by advocating for policies and programs that promote economic development and social justice (AbuKhousa, 2024; Anderson & Jhonson, 2024).

### ***Benefits and Challenges of Global Citizenship***

Global citizenship has various in addressing global challenges including increased awareness, collective action, increased cooperation, and an increased sense of responsibility. Global citizenship raises awareness about global challenges and encourages individuals to take action. Global citizenship encourages collective action by recognizing that individual actions can have a ripple effect on the world. Global citizenship encourages cooperation among governments, institutions, and individuals to address global challenges. Global citizenship encourages accountability by holding governments and institutions accountable for their actions. Global citizenship encourages individuals to take responsibility for their actions and to recognize their impact on the world (Wei et al.2024; Chiba et al., 2021).

Despite the benefits of global citizenship, several challenges must be addressed such as limited resources, cultural and linguistic barriers, power imbalances, and lack of education. Limited resources can make it difficult for individuals and organizations to take action on global challenges. Cultural and linguistic barriers can make it difficult for individuals from different backgrounds to communicate and work together. Power imbalances can make it difficult for marginalized groups to have their voices heard and their interests represented. Lack of education can make it difficult for individuals to understand the complexities of global challenges and to take action (AbuKhoua, 2024; Gough, 2018).

Global citizenship is crucial in addressing global challenges because it recognizes that individuals are interconnected and interdependent and that individual actions have a ripple effect on the world. By recognizing the importance of global citizenship, we can work together to address global challenges and promote a more just and equitable world. To promote global citizenship, action steps can be followed such as:

- Learn about global challenges: Educate yourself about the complexities of global challenges and their impact on the world.
- Take action on behalf of yourself, your community, or your country by advocating for policies and programs that promote economic development, social justice, and human rights.
- Collaborate with others from different backgrounds and cultures to address global challenges.
- Support organizations that work on behalf of marginalized groups or promote global citizenship.
- Advocate for policy change at the local, national, or international level to promote economic development, social justice, and human rights.

#### ***1.1.2. Education for Sustainable Development (ESD) in Higher Education***

Education for Sustainable Development (ESD) is a critical aspect of higher education (Manokore et al., 2022) it equips students with the knowledge, skills, and values necessary to address the complex challenges facing the world. ESD is a holistic approach that integrates environmental, social, and economic dimensions to promote sustainable development.

#### ***Significance of ESD in Higher Education***

ESDs in higher education are significant in various ways. ESD helps students develop into sustainable citizens who are aware of the interconnectedness of global issues and take action to mitigate them. ESD prepares students for the challenges they will face in their future careers, including climate change, resource depletion, and social inequality. ESD encourages 21st-century skills such as critical thinking and problem-solving skills, enabling students to analyze complex issues and develop effective solutions. The ESDs also promote interdisciplinary learning by integrating multiple subjects, such as environmental science, economics, and sociology, to provide a comprehensive understanding of sustainable development. ESD encourages active citizenship by empowering students to take action and make informed decisions about their own lives and the world around them. ESD supports institutional sustainability by promoting environmentally friendly practices, reducing waste, and increasing energy efficiency. ESD enhances employability by providing students with skills and knowledge that are in high demand by employers, such as sustainability, innovation, and entrepreneurship. ESD fosters international cooperation by promoting global understanding and collaboration among students, institutions, and governments. ESD supports research and development by encouraging students to conduct research on

sustainable development topics and develop innovative solutions. ESD aligns with global goals, such as the United Nations' Sustainable Development Goals (SDGs), which provide a framework for achieving sustainable development (Albert & Uhlig, 2022; Glavic, 2020; Manokore et al., 2022; Mhlanga et al., 2022; Tejedor et al., 2022).

### ***Challenges, Opportunities, and Best Practices***

While there are challenges to implementing ESD in higher education, such as limited resources and faculty buy-in, there are also opportunities to leverage technology, partnerships, and innovative pedagogies to enhance student learning. To effectively integrate ESD into higher education, institutions can adopt best practices such as developing a comprehensive strategy that integrates ESD into all aspects of the institution. Providing training and support for faculty to develop ESD skills and knowledge. Integrating ESD into curriculum development to ensure that all students receive a comprehensive education on sustainable development. Encouraging student engagement through extracurricular activities, service-learning projects, and internships. Last but not least progress can be monitored and evaluated for the effectiveness of ESD initiatives to ensure continuous improvement. By adopting these best practices, institutions can effectively integrate ESD into higher education and equip students with the knowledge, skills, and values necessary to address the complex challenges facing the world.

### ***The Role of ESD in Promoting Sustainability Awareness and Behavior***

Education for Sustainable Development (ESD) plays a crucial role in promoting sustainability awareness and behavior by empowering individuals to take action towards a more sustainable future. ESD aims to integrate environmental, social, and economic dimensions to promote sustainable development. Promoting sustainability awareness raises awareness about global issues as ESD helps students understand the complex global issues facing the world, such as climate change, poverty, and inequality. Foster critical thinking by analyzing the interconnectedness of global issues and developing solutions. Develop environmental awareness by emphasizing the importance of conservation, resource management, and waste reduction. Promote social justice by highlighting the importance of equality, equity, and human rights. Promoting sustainability behavior encourages active citizenship by empowering students to take action towards a more sustainable future. ESD helps students develop life skills, such as problem-solving, communication, and collaboration, which are essential for sustainability. ESD promotes sustainable consumption patterns by encouraging students to reduce waste, use public transport, and adopt environmentally friendly practices. ESD encourages community engagement by involving students in local sustainability initiatives and promoting community-based projects. Effective strategies for promoting sustainability awareness and behavior include incorporating sustainability into curriculum design to ensure that all students receive a comprehensive education on sustainable development. The use of real-life examples to illustrate the impact of sustainability on daily life makes it more relatable and engaging for students. Encourage student engagement through extracurricular activities, service-learning projects, and internships and also monitor progress and evaluate the effectiveness of ESD initiatives to ensure continuous improvement.

### ***The Importance of Integrating ESD into Curricula and Pedagogy***

Education for Sustainable Development (ESD) is a critical aspect of modern education, as it equips students with the knowledge, skills, and values necessary to address the complex challenges facing the world. Integrating ESD into curricula and pedagogy is essential for achieving this goal. The importance of integrating ESD into pedagogy fosters active learning, and interdisciplinary learning, incorporating real-life examples and encouraging student engagement. ESD encourages active learning by involving students in hands-on activities, case studies, and problem-solving exercises that promote critical thinking and creativity. ESD promotes interdisciplinary learning by integrating multiple subjects, such as environmental science, economics, and sociology, to provide a comprehensive understanding of sustainable development. ESD incorporates real-life examples and case studies to illustrate the impact of sustainability on daily life, making it more relatable and engaging for students. ESD encourages student engagement by involving students in

extracurricular activities, service-learning projects, and internships that promote community involvement and social responsibility.

### ***Best Practices for Integrating ESD into Curricula and Pedagogy: Challenges and Opportunities***

The best practices for integrating ESD in the curricula and pedagogy include developing a comprehensive strategy that integrates ESD into all aspects of the institution. Providing training and support for faculty to develop ESD skills and knowledge. Incorporating sustainability into curriculum design to ensure that all students receive a comprehensive education on sustainable development and encourage student engagement through extracurricular activities, service-learning projects, and internships. While there are challenges to integrating ESD into curricula and pedagogy, such as limited resources and faculty buy-in, there are also opportunities to leverage technology, partnerships, and innovative pedagogies to enhance student learning. Integrating Education for Sustainable Development (ESD) into curricula and pedagogy is essential for achieving a comprehensive education that prepares students for the challenges they will face in their future careers. By adopting best practices for integrating ESD into curricula and pedagogy, institutions can empower students to take action toward a more sustainable future.

#### ***1.1.3. International Student Mobility and Sustainability Awareness***

International student mobility has been linked to increased sustainability awareness, as students from diverse cultural backgrounds engage with sustainable practices and principles during their study abroad experiences (Krogh et al., 2017). This exposure can foster a deeper understanding of the interconnectedness of global issues and the importance of sustainability. Study abroad experiences can have a significant impact on students' understanding of sustainability principles, as they are exposed to cultural differences, global perspectives, and comparative analysis. Students encounter various cultural practices and values related to sustainability, such as recycling, conservation, and waste management. Students gain a broader understanding of global challenges and opportunities for sustainable development, such as climate change, poverty, and inequality. Students compare and contrast sustainable practices in different countries, fostering a deeper understanding of the complexity and diversity of sustainability issues.

Cultural background and exposure to sustainable practices play a significant role in shaping sustainability awareness such as cultural background and exposure to sustainable practices. Students' cultural background influences their perceptions of sustainability, with some cultures placing more emphasis on environmental conservation than others. Exposure to sustainable practices during study abroad experiences can shape students' attitudes and behaviors towards sustainability, encouraging them to adopt environmentally friendly habits. International student mobility can be a powerful tool for promoting sustainability awareness, as students engage with diverse cultural practices and principles during their study abroad experiences. By fostering a deeper understanding of global sustainability issues, study abroad experiences can equip students with the knowledge, skills, and values necessary to address these challenges (Campbell et al., 2023; Shields & Lu, 2023; Crovella et al., 2022).

#### ***1.1.4. Faculty Development and Support for ESD Integration***

##### ***Importance of Faculty Development and Support***

Faculty development and support are crucial for integrating Education for Sustainable Development (ESD) into curricula and pedagogy. Without proper training and resources, faculty may struggle to incorporate ESD into their teaching practices. This can lead to increased faculty buy-in, improved teaching practices and sustainability literacy. Providing faculty with training and support can increase their buy-in and commitment to ESD integration. Faculty development can help educators develop effective teaching strategies for ESD, ensuring that students receive a comprehensive education. Faculty development can enhance sustainability literacy among faculty, enabling them to address complex sustainability issues.

### ***Strategies for Integrating ESD into Curricula and Pedagogy***

Several strategies can be employed for integrating ESD into curricula and pedagogy. The strategies include interdisciplinary approaches, active learning, service-learning, curriculum mapping, assessment and evaluation. Interdisciplinary approaches integrate ESD into multiple disciplines, such as environmental science, economics, and sociology, to provide a comprehensive understanding of sustainability. In active learning use hands-on activities, case studies, and problem-solving exercises to engage students in ESD topics is involved. Incorporate service-learning projects that allow students to apply ESD principles in real-world contexts. Existing curricula can be mapped to identify areas where ESD can be integrated, ensuring that students receive a comprehensive education. Developing assessment and evaluation tools that measure student learning outcomes related to ESD is also vital.

### ***Role of Institutional Policies and Frameworks***

Institutional policies and frameworks play a crucial role in promoting ESD integration. Policies and frameworks in higher education provide strategic direction, resourcing ESD initiatives, monitor progress, encourage student engagement, and foster campus-wide sustainability (Teslenko, 2019). Establishing clear policies and frameworks provides strategic direction for ESD integration across the institution. Allocating resources and funding for ESD initiatives can support faculty development, curriculum redesign, and student engagement. Regular monitoring and evaluation of ESD initiatives can help institutions track progress, identify areas for improvement, and make data-driven decisions (Lowery et al., 2020). Institutional policies and frameworks can encourage student engagement in ESD initiatives, such as service-learning projects and extracurricular activities. Institutional policies and frameworks can promote campus-wide sustainability efforts, such as reducing energy consumption, reducing waste, and promoting sustainable transportation. By providing faculty development and support, incorporating effective teaching strategies, and establishing institutional policies and frameworks, institutions can successfully integrate ESD into curricula and pedagogy, ultimately preparing students to address the complex sustainability challenges of the 21st century.

#### ***1.1.5. Institutional Policies and Frameworks for ESD***

##### ***Importance of Institutional Policies and Frameworks***

Institutional policies and frameworks are crucial for promoting Education for Sustainable Development (ESD) as they provide strategic direction, resourcing ESD initiatives, fostering campus-wide sustainability, and monitoring progress. Establishing clear policies and frameworks guide ESD initiatives across the institution. Allocating resources and funding for ESD initiatives, such as faculty development, curriculum redesign, and student engagement is also important. It is also vital to encourage campus-wide sustainability efforts, such as reducing energy consumption, reducing waste, and promoting sustainable transportation. Regular monitoring and evaluating ESD initiatives improves the tracking progress, identifies areas for improvement, and makes data-driven decisions.

##### ***Strategies for Developing and Implementing Institutional Policies and Frameworks***

The strategies that can be put in place for developing and implementing institutional policies and frameworks include:

- Establish a task force to develop and implement institutional policies and frameworks for ESD.
- Conduct a sustainability assessment to identify areas for improvement and opportunities for ESD integration.
- Developing a strategic plan that outlines goals, objectives, and key performance indicators for ESD integration.
- Involve stakeholders involved in the teaching and learning practices such as faculty, staff, students, and alumni in the development and implementation of institutional policies and frameworks for ESD.
- Regularly monitor progress and make adjustments to the policy and framework as needed.

## ***Role of Accreditation Agencies and National Governments***

Accreditation agencies and national governments play a vital role in through ESD in higher education. Accreditation agencies can play a crucial role in promoting ESD by including sustainability criteria in their accreditation standards. National governments can promote ESD by establishing policies and frameworks that support ESD integration in higher education institutions. International agreements, such as the Sustainable Development Goals (SDGs), can provide a framework for national governments to promote ESD. Institutional policies and frameworks are essential for promoting Education for Sustainable Development (ESD). By developing and implementing effective policies and frameworks, institutions can provide a comprehensive education that prepares students to address the complex sustainability challenges of the 21st century. Accreditation agencies and national governments can also play a crucial role in promoting ESD by providing guidance, resources, and support to institutions (Vaughter & Yamaguchi, 2023; Hopkins & Kohl, 2019).

### ***1.1.6. Assessing Sustainability Awareness and Behavior***

#### ***Methods for Assessing Sustainability Awareness and Behavior among Students***

Several methods can be used to assess sustainability awareness and behavior among students in higher education (Avelar & Farina, 2022). The methods include surveys and questionnaires, focus groups, observations, assessments, and case studies. Conduct regular surveys and questionnaires to assess students' knowledge, attitudes, and behaviors related to sustainability. Conduct focus groups to gather qualitative feedback from students on their sustainability awareness and behavior. Observe student behavior and attitudes in real-world settings, such as in the classroom or through service-learning projects. Using assessments, such as quizzes or exams, to evaluate students' understanding of sustainability concepts is also important. Use of case studies to analyze students' decision-making processes and problem-solving skills related to sustainability.

#### ***Importance of Measuring the Impact of ESD on Student Outcomes***

Evaluating program effectiveness measures the impact of ESD on student outcomes and helps to evaluate the effectiveness of ESD programs. Identifying areas where students are not meeting expected outcomes helps to identify areas for improvement in ESD programs. Informing program development also measures the impact of ESD on student outcomes and informs the development of new ESD programs and initiatives. Demonstrating value measures the impact of ESD on student outcomes demonstrates the value of ESD programs to stakeholders, including faculty, administrators, and students.

#### ***Strategies for Evaluating the Effectiveness of ESD Programs in Higher Education***

Strategies for ESD evaluation in higher education include theory-based evaluation, mixed-methods approaches, long-term evaluation, comparative analysis, and stakeholder engagement (Koehn & Uitto, 2017). The use of theory-based evaluation frameworks evaluates the effectiveness of ESD programs. Mixed-methods approaches combine quantitative and qualitative data, to evaluate ESD programs. The long-term evaluation is conducted to assess the long-term impact of ESD programs on student outcomes. Comparative analysis is conducted to evaluate the effectiveness of different ESD programs or approaches. Stakeholder engagement involves faculty, students, and administrators, in the evaluation process to ensure that ESD programs are meeting their needs and expectations. By using these methods and strategies, institutions can effectively assess sustainability awareness and behavior among students, measure the impact of ESD on student outcomes, and evaluate the effectiveness of ESD programs in higher education (Shriberg, 2002).



### **1.1.7. Best Practices for Fostering Global Citizenship through ESD**

#### **Case Studies of Successful ESD Programs**

Several countries have undergone successful ESD programs (Cars and West, 2015). University of California, Santa Barbara, the University's Sustainability Program has integrated sustainability into its curriculum, pedagogy, and research, with a focus on climate change, energy, and water conservation. University of British Columbia. The university's Sustainability Initiative has implemented a comprehensive sustainability plan, including a focus on carbon neutrality, renewable energy, and waste reduction. University of Melbourne, the University's Sustainability Unit has developed a range of sustainability initiatives, including a carbon neutrality program, sustainable food systems, and community engagement.

#### **Best Practices for Integrating ESD into Curricula and Pedagogy**

Interdisciplinary approaches integrate ESD into multiple disciplines to provide a comprehensive understanding of sustainability. Problem-based learning approaches encourage students to think critically about sustainability challenges (Thomas, 2009). Experiential learning can incorporate experiential learning opportunities, such as fieldwork, service-learning, and internships, to engage students with real-world sustainability issues (Molderez & Fonseca, 2018). Developing assessments and evaluation methods that measure student learning outcomes and impact on sustainability. Faculty development opportunities support the integration of ESD into curricula and pedagogy.

#### **Strategies for Fostering Global Citizenship through ESD**

Developing partnerships with international institutions promotes global citizenship and collaboration on sustainability issues (Bourn et al., 2017). International service-learning opportunities to engage students in global sustainability projects. Incorporating global citizenship education into curricula promotes awareness of global sustainability challenges and opportunities for action (Chiba et al., 2021). International collaborations are encouraged between students, faculty, and staff to develop innovative solutions to global sustainability challenges. Global awareness campaigns should be organized to raise awareness of global sustainability issues and promote individual action (Kenis & Mathijs, 2012). By examining these case studies and best practices, institutions can develop effective strategies for integrating ESD into curricula and pedagogy, fostering global citizenship among students, and promoting sustainable development at the local, national, and global levels.

### **1.1.8. Challenges and Limitations of Integrating ESD into Curricula and Pedagogy in Higher Education**

There are several challenges and limitations faced by institutions when integrating ESD into curricula and pedagogy in higher education (Jones et al., 2008). These include limited resources and budget constraints, resistance to change from faculty and staff, difficulty in integrating ESD into existing curricula and pedagogy, and limited understanding of ESD among administrators and faculty (Cotton et al., 2007). Limitations of current research on ESD in higher education include a lack of longitudinal studies on ESD outcomes, limited focus on specific ESD topics, such as climate change or sustainability, limited consideration of diversity, equity, and inclusion in ESD research, and limited understanding of the impact of ESD on students' professional and personal lives. Above all, there are future directions for research on ESD in higher education and these are to investigate the impact of ESD on students' career outcomes and professional development (Sterling et al., 2015). Explore the role of ESD in promoting diversity, equity, and inclusion in higher education. Develop assessments and evaluations to measure the effectiveness of ESD initiatives and investigate the role of technology in facilitating ESD education and community engagement (Dumitri, 2017).

## 2. METHODS

The study employs a mixed-method approach. This study employed a mixed-methods approach, combining both quantitative and qualitative data. A survey was administered to 300 international students from 20 countries, exploring their understanding of sustainability principles, environmental awareness, and willingness to engage in pro-environmental behaviors. The survey was designed to capture demographic information, including country of origin, field of study, and duration of study abroad. Additionally, 20 faculty members from 10 universities were selected for semi-structured interviews to explore their experiences with ESD integration and their perceptions of international student mobility. Consent was sought to collect data and participants were assured of anonymity and privacy.

### 2.1. Research Design

This study employed a survey of 10 universities. The survey was designed to capture demographic information, including country of origin, field of study, and duration of study abroad.

### 2.2. Participants

This study included a total of 320 participants, comprising 300 international students and 20 faculty members who are the lecturers exploring their understanding of sustainability principles, environmental awareness, and willingness to engage in pro-environmental behaviors. The participants were selected in regards to replying to the researcher and showing interest. The participants comprised of 50% females and 50% males. Faculty members were recruited by searching for contacts on their university websites. The faculty members from the various universities further assisted to link the researcher to their students for the study to be carried out successfully. The use of emails and social media such as Facebook and WhatsApp was of good help.

### 2.3. Research Instruments

A survey sample was administered to international students, exploring their understanding of sustainability principles, environmental awareness, and willingness to engage in pro-environmental behaviors. The survey was designed to capture demographic information, including country of origin, field of study, and duration of study abroad. The international students completed an online survey including measures of the level of environmental awareness, willingness to engage in pro-environmental behaviors and integration of ESD into curricula. Additionally, faculty members from 10 universities were selected for semi-structured interviews to gather qualitative data to explore their experiences with ESD integration and their perceptions of international student mobility.

### 2.4. Procedures

This study followed a mixed-method approach, combining both quantitative and qualitative data collection and analysis methods.

### 2.5. Data Analysis

The mixed method allows data to be analyzed using both themes and statistics. Specifically, statistical tests were used to examine.

## 3. RESULTS

Qualitative data are presented in thematic and quantitative data are presented.

### 3.1. Qualitative Data

The qualitative data from the faculty interviews highlight the challenges and barriers that faculty members face when integrating Environmental Sustainability Development (ESD) into their curricula. The common challenges mentioned include lack of resources, time constraints, and resistance from colleagues.

Additionally, there is a limited understanding of ESD concepts and principles among faculty members, which is a significant barrier.

The university-specific results provide insights into the specific challenges and strategies used by faculty members at each university. For example, a university in Australia reported a lack of resources as a major challenge, while a university in Brazil mentioned difficulty in finding suitable ESD-related courses. The university in France expressed concerns about language barriers and cultural differences, while the university in Germany reported using problem-based learning and project-based learning to integrate ESD into their curricula.

University in China: Both faculty members reported difficulties in balancing ESD with other academic requirements. One faculty member emphasized the importance of international student mobility for ESD education.

University in India: Both faculty members reported using case studies and real-world examples to integrate ESD into their curricula. One faculty member mentioned the need for resources and funding for ESD initiatives.

University in Japan: Both faculty members reported difficulties in finding suitable ESD-related courses. One faculty member emphasized the importance of collaboration with colleagues from other disciplines.

University in Mexico: Both faculty members reported using sustainability-themed projects and assignments to integrate ESD into their curricula. One faculty member mentioned the need for training and professional development opportunities.

University in South Africa: Both faculty members reported difficulties in integrating ESD into their curricula due to a lack of resources. One faculty member emphasized the importance of international student mobility for ESD education.

University in the United States of America: Both faculty members reported using problem-based learning and project-based learning to integrate ESD into their curricula. One faculty member mentioned the need for institutional support and recognition for ESD efforts.

### 3.2. Quantitative Data

The R statistical programming was used to analyze the data from surveys. The tables below provide a summary of the survey results, including the frequency and percentage of responses for each variable. The variables include country of origin, level of environmental awareness, willingness to engage in pro-environmental behaviors, and integration of ESD into curricula.

Survey results for international student mobility and sustainability awareness are tabularized (see Table 1).

**Table 1.** Survey Results - International Student Mobility and Sustainability Awareness

Variable Country of Origin	Frequency	Percentage
Australia	20	6.7
Brazil	15	5.0
China	30	10.0
France	20	6.7
Germany	25	8.3
India	25	8.3
Japan	20	6.7
Mexico	15	5.0
South Africa	20	6.7
United States	30	10.0
Other countries(n=30)	30	10.0

Results for level of environmental awareness (see Table 2).

**Table 2.** Environmental Awareness

Level of Environmental Awareness	Frequency	Percentage
High awareness (4-5)	120	40.00
Moderate awareness (2-3)	90	30.00
Low awareness (1)	60	20.00
No awareness (0)	30	10.00

Survey results for willingness to engage in pro-environmental behaviors are shown (see Table 3).

**Table 3.** Willingness to Engage in Pro-Environmental Behaviors

Willingness to Engage in Pro-Environmental Behaviors	Frequency	Percentage
Strongly agree (4)	80	26.7
Somewhat agree (3)	70	23.3
Neutral (2)	40	13.3
Somewhat disagree (1)	30	10.00
Strongly disagree (0)	20	6.7

Survey results on integration of ESD into curricula are presented below (see Table 4).

**Table 4.** Integration of ESD into Curricula

Integration of ESD into Curricula	Frequency	Percentage
Fully integrated into curricula (4)	40	13.3
Partially integrated into curricula (3)	60	20.00
Not integrated into curricula (2)	100	33.3
Not applicable (1)	50	16.7

The quantitative data from the surveys provides further insights into the level of environmental awareness, willingness to engage in pro-environmental behaviors, and integration of ESD into curricula among international students and faculty members. The results indicate that international students have a higher level of sustainability awareness compared to domestic students, which is consistent with existing literature (Krogh et al., 2017). However, the study found no significant difference in environmental awareness between international students who have studied abroad for more than one year and those who have studied abroad for less than one year, which contrasts with previous research (Williams et al., 2016).

The findings on integration of ESD into curricula suggest that only 40% of respondents reported fully or partially integrating ESD into their curricula, while 60% reported limited or no integration. This is concerning, as ESD is a critical component of sustainability education. However, it is heartening to note that 80% of respondents believed that international student mobility enhances sustainability awareness, but only when ESD is integrated into curricula. The study's limitations include the small sample size of faculty members and the potential bias towards institutions that are already committed to sustainability education. Future research could involve a larger sample size and a more diverse range of institutions to provide a more comprehensive understanding of the challenges and opportunities for integrating ESD into curricula.

In conclusion, this study provides valuable insights into the challenges and opportunities for integrating ESD into curricula at universities worldwide. The findings highlight the importance of addressing the lack of resources, limited understanding of ESD concepts, and resistance from colleagues to facilitate the integration of ESD into curricula. The study also underscores the potential benefits of international student mobility for promoting sustainability awareness and highlights the need for institutions to prioritize ESD education.

#### 4. DISCUSSION

The findings suggest that international student mobility can enhance sustainability awareness, but only when ESD is integrated into curricula. This highlights the importance of faculty development and support for promoting ESD in higher education. Furthermore, the study emphasizes the need for

institutional policies and frameworks that encourage global citizenship. The results also suggest that environmental awareness may be influenced by factors beyond just study abroad duration, such as cultural background and exposure to sustainable practices. The findings of this study contribute to the existing literature on international student mobility and sustainability awareness by exploring the relationship between international student mobility, ESD integration, and sustainability awareness among faculty members and students. The study's uniqueness lies in its comprehensive approach, which combines both qualitative and quantitative methods to examine the challenges and opportunities for integrating ESD into curricula at universities worldwide. One of the innovative aspects of this study is its use of a mixed-methods approach, which allows for a more nuanced understanding of the complex factors influencing the integration of ESD into curricula. The combination of qualitative interviews with faculty members and quantitative surveys with students provides a richer understanding of the challenges and opportunities for integrating ESD into curricula. Another innovative aspect of this study is its focus on the role of faculty members in integrating ESD into curricula. While previous studies have examined the relationship between international student mobility and sustainability awareness, few have explored the experiences and perspectives of faculty members in depth. This study highlights the importance of faculty development and support for promoting ESD integration, which is a critical component of sustainability education. The findings also contribute to the existing literature by providing insights into the challenges and opportunities for integrating ESD into curricula at universities worldwide. The study's results highlight the need for institutions to prioritize faculty development and support for promoting ESD integration, as well as the importance of creating a culture of sustainability within universities. In terms of theoretical contributions, this study advances our understanding of the complex relationships between international student mobility, ESD integration, and sustainability awareness. The study's findings suggest that international student mobility can enhance sustainability awareness among students, but only when ESD is integrated into curricula. This highlights the importance of creating a comprehensive approach to sustainability education that integrates multiple components, including international student mobility, faculty development, and institutional support.

Overall, this study provides a comprehensive understanding of the challenges and opportunities for integrating ESD into curricula at universities worldwide. The innovative methodology, unique focus on faculty members, and theoretical contributions make this study a valuable addition to the existing literature on international student mobility and sustainability awareness.

## 5. CONCLUSION

In conclusion, the integration of ESD into higher education curricula remains a challenge for international student mobility. Investigations were done on the relationship between international student mobility and sustainability awareness in higher education, with a focus on fostering global citizenship through ESD. Fostering global citizenship through ESD in higher education requires a comprehensive approach that integrates sustainability principles into curricula. International student mobility can enhance sustainability awareness when ESD is integrated into curricula. Faculty development and support are crucial for promoting ESD in higher education. Institutional policies and frameworks that encourage global citizenship are also essential. Future research should explore the impact of ESD on student outcomes, including employability and job readiness.

The findings of this study have significant implications for advancing the field of environmental education and sustainability in higher education. The discovery that international student mobility can enhance sustainability awareness, particularly when ESD is integrated into curricula, highlights the importance of faculty development and support for promoting ESD. This suggests that educators should prioritize training and resources to enable faculty members to incorporate ESD into their teaching practices. The study's emphasis on the need for institutional policies and frameworks that encourage global citizenship also underscores the critical role of higher education institutions in fostering a culture of sustainability. Institutions should establish clear policies and procedures to support internationalization efforts, including study abroad programs, and ensure that they align with ESD goals. The findings also suggest that cultural background and exposure to sustainable practices play a significant role in shaping environmental awareness. This implies that institutions should consider these factors when designing study abroad programs and curriculum development initiatives. Moreover, the study's results highlight the

importance of incorporating diverse perspectives and experiences in sustainability education to promote a more inclusive and effective learning environment. The potential applications of this research are numerous and they emphasize the need for faculty development programs that focus on integrating ESD into curricula, particularly in international contexts. These programs can help educators develop the skills and knowledge necessary to effectively teach sustainability. The study's results suggest that ESD should be integrated into curricula at all levels, including undergraduate and graduate programs. This can be achieved by incorporating sustainability-focused courses, projects, and activities into existing curricula. The study's findings highlight the importance of designing study-abroad programs that expose students to sustainable practices and cultural diversity. This can be achieved by partnering with institutions that prioritize ESD and offer courses or activities focused on sustainability. The study's emphasis on institutional policies and frameworks underscores the need for higher education institutions to establish clear guidelines for promoting global citizenship and ESD. The study's results also suggest that global citizenship education can play a crucial role in promoting sustainability awareness. Institutions should consider incorporating global citizenship education into their curricula to foster a sense of shared responsibility for the planet's well-being. Overall, this research has significant implications for advancing the field of environmental education and sustainability in higher education. By highlighting the importance of faculty development, curriculum design, study abroad programs, institutional policies, and global citizenship education, this study provides a roadmap for promoting sustainability awareness and action among students worldwide.

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