

## **Integrating Sustainability Education Into Higher Institutions**

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**ABSTRACT:** *It is widely accepted that higher education institutions have potential to play a crucial role in inspiring and motivating students to embrace the sustainability challenges face by contemporary societies. As a final stopping point for young adults before they enter the workforce, higher institutions has an important role in ensuring that the next generation of workers is up to the growing challenges of an increasingly sustainability problems. All students studying in higher institution should be equipped with sufficient knowledge to deal with sustainability. Education in higher institutions should not only emphasize the needed skills and knowledge, it must also instill the commitment of students toward sustainability. The objective of sustainability education basically to encourage students to reflect on the kind of sustanaibility issues that they might encounter, so that they will be sensitive to situations that include an sustainability component. If students are sensetive to sustainability issues, then the students is likely to use moral dimensions in resolving the sustainability dilemma, rather than take a heuristic approach susch as profit maximisation.*

**Keywords:** *Education, Higher Institutions, Sustainability.*

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### **I. INTRODUCTION**

As awareness of global environmental issues increases, the concept of sustainability is receiving increased attention. Many educational institutions have begun to augment their focus on sustainable practices on campus grounds as well as in the curriculum. In order for future generations can benefit from the resources currently available, education must equip students with the knowledge, skills, values, and perspectives necessary in order to achieve sustainable development (Sterling, 2004). As stated by UNESCO (2002) education will shape tomorrow's world. Education is the most effective way for society to face the challenges of the future. Education should be an important part in creating a good relationship between humans and the environment. Higher education can contribute towards the transformative shift in thinking and action required by society to work towards sustainability (Cortese, 2003). Stenzel (2010) stated that sustainability is not just a hype, or buzzword, it is vital for the existence of our earth. Because there are so many global issues that are affecting human community, the economy, and the planet, it is becoming more urgent to learn how to combat these issues at a local level. Gadotti (2010) suggested that higher education must reorient curriculum and teaching methodology toward sustainability because the current education practices are guiding students toward unsustainable means of living.

Education programs in higher education have been criticized for their perpetuation of a view of the world in which economics and the profit motive dominate decision-making, while social and environmental issues have been secondary consideration. Studies from around the world address the lack of knowledge and overall importance of sustainability among students and faculty members (Sydow, 2012). Many researchers have investigated the level of knowledge among students and faculty on sustainable, and found that they poor knowledge and understanding of sustainability issues and concepts (Ruy & Brody, 2006). Sydow (2012) found that many students and faculty only see sustainability as an act of 'being green,' and not a way of living. Realising the lack of sustainability education, this paper suggests that the direction of education in higher institution should be on moral development and values in developing sustainability education. Moral values are particularly pertinent as a foundation of any profession. Yacoo (2013) states that education in this modern world not only gives students a sound intellectual, but also must respond to and satisfy their social, and emotional needs. Sustainability education assumed the role of general education courses that are delivering students to have the personal ability. Students are expected to put themselves as members of society are inseparable from the community and the ability to have a social responsibility. The responsibility was realized with the participation of students in solving environmental problems in society accordance with the knowledge they have. Sustainability education is meant to prepare students to face the application of the concept of sustainability. In addition, the education also enhances the sense of responsibility of students to social and environmental factors.

Furthermore, sustainability education has objectives include developing awareness of students about of environment as well as individual and social beings in public life. This goal is particularly necessary to realize, look at this era of globalization, many people who do not care about social and environmental problems in

public life. This simple knowledge is very worth noting because it is fundamental to the life of society. Sustainability education be an alternative to the instrument or tool in solving environmental problems in social life. As we know, the function of sustainability education is an effort that is expected to provide basic knowledge and general understanding of the concepts that were developed to assess environmental phenomena in order responsiveness, perception, and reasoning of students in the face of environment can be improved so that the sensitivity students on the sustainability becomes greater.

This paper is designed to explore potential means of incorporating sustainability into formal architectural education. This study suggests that the sustainability education can provide some insights into the process of developing sustainable world. The incorporation of sustainability education in higher education serves several purposes. First, it prepares students for work in sustainability-focused professions, fosters environmentally responsible behavior in individuals. Second, sustainability education is a framework and approach to education that is meant to prepare students to engage in and work toward solutions for the world's most pressing ecological, social, and economic problems (Sterling, 2004). Education for sustainability develops the knowledge, skills and values necessary for students to act in ways that contribute to more sustainable patterns of living.

## **II. SUSTAINABILITY EDUCATION**

### **2.1 Defining Sustainability**

Sustainability is a complex construct with roots in both the concern for intergenerational equity held by numerous ancient cultures and the balance of resource use and regeneration within the field of ecology. Today, the term is used in a broader context often referring to “a balance among various human systems that influence and are influenced by the natural environment” (Nolet, 2009). In ecology, sustainability describes how biological species survive. For the environment, it is assessing whether or not project outputs can be produced without permanent and unacceptable changes in the environment. For humans, it is our long-term physical and cultural well-being. For mechanical systems and structures, it is maximizing reliability while conserving required resources and reducing waste (Driscoll et al., 2013). Definition of sustainability adopted by the United Nations in its Agenda for Development (Kuhlman, 2010): “Development is a multidimensional undertaking to achieve a higher quality of life for all people. Economic development, social development and environmental protection are interdependent and mutually reinforcing components of sustainable development”. Thus, based on the previous definitions, sustainability are associated with the three dimensions of social, economic and environmental. It is similar with three dimensions of the sustainability concept of the so-called triple bottom line which also have the same meaning as profit, planet and people.

### **1.2. The Importance of Sustainability Education in Higher Institution**

The increasing pressure on the earth's resources due to population growth requires that development and resource use be managed to maintain a sustainable environment so as to preserve or enhance human well-being. Wiek et al. (2011) found that sea-level, desertification, poverty, lack of education, and other complexities result from dynamic cause and effect chains from local to global inadequacies in sustainability. Haugh and Talwar (2010) found a specific need for education to expand on the basic principles of sustainability, and recommended that practitioners incorporate sustainability into teaching and learning activities with the purpose of increasing awareness and knowledge of sustainability. Education for sustainability develops the knowledge, skills, values and world views necessary for people to act in ways that contribute to more sustainable patterns of living (Effeney & Davis, 2013). Thus, the importance of sustainability education to ensure that future generations respond correctly or quickly enough when confronted with sustainability problems.

There are three reasons why there is a need for sustainability education for all students enrolled in institutions of higher education. First, Institutions of higher education are in many ways responsible for the education of our future leaders. Their graduates will be leaders of countries, corporations, religious institutions, art thought, science, engineering. The task of sustainability education is educating the future leaders of our world about sustainability issues and teaching them how to live and work in a sustainable manner. Second, sustainability education help the students to build personal fortitude to make a right decision related to social and environmental problems. Third, the rash of recent environmental cases has placed enormous pressure on the higher institution to integrate sustainability education in their curriculum. Students must understand that “maintain environment is not optional” because higher institutions equip them with behavioral patterns of good moral decisions. This helps them in making reasoned sound decisions in their future. This argument is consistent my proposed quotes which states “Students without sustainability education is a wild beast loosed upon this world”.

### **1.3. The Effect of Sustainability Education on Students' Behavior**

Sustainability education has a significant influence on the way students conduct in their lives. Sustainability education initiatives do not equip individuals with the technical knowledge needed to make

complex sustainability decisions; however, the initiatives greatly affect awareness. It is hypothesized, then, that in most circumstances higher levels of awareness will lead to better sustainability behavior and ultimately sustainability development. One of the primary goals of environmental education is increasing participation in pro environmental behaviors (Hovardas & Korfiatis, 2012). While many environmental education programs have been shown to increase knowledge and even increase the intention to behave in a pro-environmental manner (Hovardas & Korfiatis, 2012). The aim of sustainability education not only to equip students general knowledge but also current issues in sustainability such as the complexity of behaviors and decisions in a future-oriented, global perspective of responsibility. Spepherd (2008) states that in sustainability education graduates need to: (1) know about sustainability issues, (2) have the skills to act sustainably if they wish to, (3) have the personal and emotional attributes that require them to behave sustainably. Thus in order to have an impact on students' behavior, the sustainability education should equip the students with knowledge and understanding, skills, attributes. The paper emphasizes that sustainability education can influence behavior. With a good understanding of sustainability, students will be able to make sustainability well in order to reach the desired social and environmental prosperity benefits were great for all people. The effect of sustainability education on behavior and sustainability development can be seen in Figure 1.



**Figure 1.**The Effect of Sustainability Education on Behavior

### III. ISSUES IN SUSTAINABILITY EDUCATION

There are very few empirical studies to support the implementation of sustainability initiatives and those that do exist offer only very limited empirical data (Somerville & Green, 2011). From the literature available, most scholars believe that sustainability should be taught in curricula, however the issue is being to integrate sustainability into higher institution curriculum. This paper addresses four important issues faced by higher institutions in integrating sustainability: (1) What is the model of sustainability education, (2) What is the curriculum content?, (3) What is the learning approach?, (4) who should teach sustainability ?

#### What is the model of sustainability education

The models in higher sustainability education which have been proposed are: classroom-based programs (Buckley, 2014; Clark, 2013), game-based education (Antaya, 2015; Sloan et al., 2013), community-based programs or place-based programs (Somerville & Green, 2012; Hacker et al., 2012; Bowling, 2011; Stone, 2008). Classroom based programs is a form of teaching which takes place in a classroom environment. It usually consists of going into a class once a week at a set time for a set duration. The classroom environment provides the important "human touch," which is often missing in technology-based class. Game based learning (GBL) is a type of game play that has defined learning outcomes. Generally, game based learning is designed to balance subject matter with game play and the ability of the player to retain and apply said subject matter to the real world. Games used in GBL have been classified many different ways, however tend to fall into one or more of the following genres: action, adventure, fighting, role-playing, simulations, sports, and strategy (Prensky, 2003). Game-based activities, allows students to relate to the material in a more emotional way than may be achieved through discussion alone. Such a process can challenge students' frames of reference and enhance their critical thinking capabilities, thus contributing to the process of transformative learning (Fear, et al. 2006). The Game Design Module addressed methods for assessing student mastery of course content with student-developed games indicated that using board game design improved student performance and increased student satisfaction (Antaya, 2015)

Community-based learning is one strategy to promote renewed relationships between human and ecological systems. Community-based learning refers to a wide variety of instructional methods and programs that educators use to connect what is being taught in schools to their surrounding communities, including local institutions, and natural environments. Community-based learning is also motivated by the belief that all communities have intrinsic educational assets and resources that educators can use to enhance learning experiences for students. Place or community based education embodies an educational philosophy that encourages educators to link students to their local places—both natural environments and human communities—in order to learn fundamental concepts as well as to facilitate student and community well-being (Stone, 2008). Sustainability education literature emphasizes the necessity of experiential learning in the community in order to create effective, meaningful education for sustainability (Sobel, 2004; Sterling, 2004). Community-based learning are well supported as educational techniques for preparing students to engage most effectively in their communities and participate in democracy (Bowling, 2011; Colby et al., 2003).

### **What are the curriculum contents?**

Course content refers to the choice of topics and sequencing of course content, the choice of topics should always support the learning objectives for the sustainability course. Issues of sustainability are incorporated into courses in a wide range of disciplines, with the intent of fostering interdisciplinary thinking and problem-solving skills. While the approach to organizational design may vary, there appears to be some consensus on the core concepts that a sustainability program should address in terms of curricular content, it should focus on societal, environmental and economic aspects of maintaining a natural balance (Sydow, 2012; Charron, 2013) and understanding the interconnectedness of social, environmental, and economic systems (Tilbury 1995). Nolet (2009) as cited by Perry (2013) proposed nine themes of sustainability literacy: stewardship, respect for limits, systems thinking and interdependence, economic restructuring, social justice and fair distribution, intergenerational perspective, global citizenship, importance of local place.

### **What is the learning method?**

There are a number of teaching and learning methods that are likely suitable in teaching sustainability, namely case studies, simulation, experiential. A case study is an in-depth examination, often undertaken over time, of a single sustainability case – such as a policy, programme, intervention site, implementation process. Case studies allow students to tackle problems set in realistic environments in the classroom using their cognitive and intuitive skills complemented with their verbal and learned skills. Case studies show promise in providing a link between methods and their applications. Case studies can show how methods assist in a decision process involving design, operations, and sustainability issues.

Simulation is activities and projects that simulate real-life situations and encourage students to participate. It can help develop focused thinking around sustainable development issues, and can contribute to the formation of students' own attitudes and the social norms that they find acceptable. Such activities include role plays, debating, mock trials and gaming, and they can be used across a range of disciplinary and interdisciplinary contexts to help students develop appropriate professional behaviors. Simulation activities can help students understand contested arguments (such as the theoretical, cultural and political debate on globalisation), explore environmental activism and political engagement, and appraise the impact of decisions. Experiential, interactive, or participatory activities enable students to engage with sustainability issues at a number of levels, not only in relation to their discipline, but also in terms of reflecting on their own values, attitudes and accepted social norms (QAA, 2014). Experiential approach seems to be the common denominator between the overlapping and closely related fields of environmental education (Palmer, 1998). Georgopoulos et al. (2011) found that sustainability and experiential education are blended together then this can generate active citizens of the future.

### **Who should teach sustainability?**

Implementing sustainable operations and integrating sustainability into the curriculum of colleges and universities requires an inter-disciplinary, collaborative and community-wide effort. No one person can possibly manage such a broad-based change process. Sustainability education involves variety of foundational disciplines (e.g., geography, environmental science, ecology, economics, political science, and sociology) that span academic divisions across natural and social sciences and the arts and humanities. Interdisciplinary teaching and learning, frequently cited as a critical element of effective sustainability curriculum, is a challenge for faculty who are primarily trained to work only within their own discipline (Iacino, 2011). Inter-disciplinary team teaching is good way to make connections between disciplines such as those required to solve complex modern global problems (Sherren, 2008; Sibbel, 2009).

Sustainability education is interdisciplinary. No one discipline can claim sustainability education for its own, but all disciplines can contribute to education (UNESCO, 2005). Most scholars support the notion that an interdisciplinary or holistic approach to sustainability is important to both sustainability education and sustainability practice. Furthermore, sustainability education is a subject that involves not only sustainability knowledge but also faith and values. Thus inter-disciplinary team teaching which comprise persons who may represent different areas of subject expertise are the most appropriate team to teach sustainability.

## **IV. CONCLUSION**

The end goal of sustainability education would be to increase awareness of students in higher institutions about the importance of balancing decision-making between the impacts on people and on the environment, while also maintaining long-term profitability. In teaching sustainability, there is no singular or perfect operational model for a campus sustainability education program. The establishment of existing program models in higher education has customarily been driven by a number of factors. These include the availability of resources such as internal or external funding, time, space, staffing, and level of staff expert. As this is still a

relatively new field, models also have been determined by trial and error methods and experiments, rather than by well-documented evidence-based practices. However, the ideal solution might be use a mixture of the above models or methods. This will provide a more comprehensive approach that enables the students to build an inner strength which forces them to make the right sustainability decision which bring benefit for all people.

## REFERENCES

- [1] Andersson K, Burns M, Bursztyn M, Douglas AH, Laudati A, Matus K, McNie E., The Ruffolo curriculum on sustainability science: Edition. CID Graduate Student and Research Fellow Working Paper No. 32. Center for International Development at Harvard University, December, 2008.
- [2] Antaya, Claire Louie, Integrating Sustainability Grand Challenges and Active, Experiential Learning into Undergraduate Engineering Education, *Dissertation*, Arizona State University, 2015.
- [3] Buckley, Jessica Belue. Backing Away From The Cliff?: A Theory of Education for Sustainability in The Postsecondary Classroom, *Dissertation*, University of Maryland, 2014.
- [4] Bowling, Emily Erin., Coupled Pedagogy: A Study of Sustainability Education and Community-Based Learning in the Senior Capstone Program at Portland State University, *Thesis*, Portland State University, 2011.
- [5] Charron, Remi., Education for Sustainability: A Moral Framework, *Thesis*, University of Alberta, 2013.
- [6] Clark, Kristen E., Ecological Intelligence and Sustainability Education in Special Education, *Multicultural Education*, Fall 2013, 38-45
- [7] Colby, A., Ehrlich, T., Beaumont, E., & Stephens, J., Educating citizens: Preparing America's undergraduates for lives of moral and civic responsibility. San Francisco: Jossey-Bass, 2003.
- [8] Cortese, A.D., The Critical Role of Higher Education in Creating a Sustainable Future. *Planning for Higher Education*, 31(3), 2003, 15-22.
- [9] Driscoll Elizabeth, Clare L. Comm, Dennis F. X. Mathaise. A Lesson Plan For Sustainability In Higher Education. *American Journal of Business Education*, March/April, 2013, Volume 6, Number 2
- [10] Effeneey, Gerard, and Julie Davis. Education for Sustainability: A Case Study of Preservice Primary Teachers' Knowledge and Efficacy, *Australian Journal of Teacher Education*, 8(5), 2013, 32-46
- [11] Fear, F., Rosaen, C., Bawden, R., & Foster-Fishman, P., Coming to critical engagement: An auto ethnographic exploration. Lanham, MD: University Press of America, 2006.
- [12] Gadotti, M. (2010). Reorienting Education Practices Towards Sustainability. *Journal of Education for Sustainable Development* 4, 203-211.
- [13] Georgopoulos, Alexandros, Maria Birbili, Anastasia Dimitriou, Environmental Education (EE) and Experiential Education: A Promising "Marriage" for Greek Pre-School Teachers, *Creative Education*, 2(2), 201, 114-120.
- [14] Hacker, Karen, Shalini A. Tendulkar, Catlin Rideout, Nazmim Bhuiya, Chau Trinh-Shevrin, Clara P. Savage, Milagro Grullon, Hal Strelnick, , Carolyn Leung, Ann DiGirolamo, Community Capacity Building and Sustainability: Outcomes of Community-Based Participatory Research, Community Capacity Building and Sustainability, *Progress in Community Health Partnerships*, Vol 6.3, 2012, 349-360
- [15] Haugh, H. M., & Talwar, A., How Do Corporations Embed Sustainability Across The Organization?, *Academy of Management Learning and Education* 9 (3), 2010, 384-396.
- [16] Hovardas, T., & Korfiatis, K., Effects of an Environmental Education Course on Consensus Estimates for Proenvironmental Intentions. *Environment and Behavior*, 44(6), 2012, 760-784.
- [17] Iacino, Jennifer Christina., Sustainable Collaborations: A Grounded Theory Of Faculty Development For Interdisciplinary Team-Teaching, *Dissertation*, The Florida State University, 2011.
- [18] Kuhlman, T., & Farrington, J., What is Sustainability? *Sustainability*, 2, 2010, 2436-3448.
- [19] Medrick, R., A Pedagogy for Sustainability Education. *Journal of Sustainability Education*, 5, 203, 1-3
- [20] Mok Soon Sang., Ilmu Pendidikan untuk KPLI (Komponen 3: Profesionalisme Keguruan) Sekolah Rendah, (Subang) J aya: Kumpulan Budiman Sdn. Bhd, 2004)
- [21] Nolet, V., Preparing sustainability-literate teachers. *Teachers College Record*, 111(2), 2009, 409-442.
- [22] Perry, Robin K., A Case for Sustainability Pedagogical Content Knowledge in Multicultural Teacher Education, *Multicultural Education*, 21.1 (Fall), 2013, 46-51
- [23] Prensky, M., Digital Game-Based Learning. *Computer in Entertainment (CIE)*, 1(1), 2003, 21-21.
- [24] QAA., Education For Sustainable Development: Guidance for UK Higher Education Providers, The Quality Assurance Agency for Higher Education, 2014
- [25] Redman, Erin., Development, Implementation, and Evaluation of Sustainability Education through the Integration of Behavioral Science into Pedagogy and Practice, *Dissertation*, Arizona State University, 2013.
- [26] Ruy, H.-C., & Brody, S. D., Examining the Impacts of a Graduate Course on Sustainable Development Using Ecological Footprint Analysis. *International Journal of Sustainability in Higher Education*, 7, 2006, 158-175.
- [27] Sydow Brooke C., Sustainability Design In Higher Education: Curriculum, Teaching Methods and Program Integration, *Dissertation*, University of South Dakota, 2012
- [28] Sobel, D., *Place-Based Education: Connecting Classrooms and Communities* (Great Barrington, MA: The Orion Society, 2004)
- [29] Sterling, S., *Sustainable education: Revisioning learning and change*. Schumacher Briefings no. 6. Devon: Green Books. Ltd.
- [30] Sloan, Thomas, Federico Davila, & Eleanor Malbon Fenner. (2013). Student-Facilitators as University Tutors: An Effective Approach to Sustainability Education, *Australian Journal of Environmental Education*, vol. 29(1), 2004, 80-96.
- [31] Sherren, K., A history of the future of higher education for sustainable development. *Environmental Education Research*, 14(3), 2008, 238-256.
- [32] Sibbel, A., Pathways Towards Sustainability Through Higher Education. *International Journal of Sustainability in Higher Education*, 10(1), 2009, 68-82.
- [33] Somerville, M., & Green, M., A Pedagogy of 'Organised Chaos': Ecological Learning In Primary Schools. *Children Youth and Environment*, 20 (1), 2011, 14-34.
- [34] Stenzel, P. L., Sustainability, The Triple Bottom Line, And The Global Reporting Initiative. *Global Edge Business Review*, (4)6, 2010, 1-2.
- [35] Stone, Laura R. Henry, Participatory Action Research: Place-Based Education and Community Food Systems In Interior Alaska, *Dissertation*, University of Alaska Fairbanks, 2008.

- [36] Shephard, K. (2008). Higher Education For Sustainability: Seeking Affective Learning Outcomes. *International Journal of Sustainability in Higher Education*, 9(1), 2008, 87–98.
- [37] Tilbury D, Environmental Education For Sustainability: Defining The New Focus of Environmental Education in the 1990s. *Environ Educ Res* 1(2), 1995, 195–212
- [38] UNESCO, Education for Sustainability, From Rio to Johannesburg: Lessons Learnt from a Decade of Commitment. *Report Presented at the Johannesburg World Summit for Sustainable Development*, (Paris: UNESCO, 2002)
- [39] UNESCO, Report by the Director-General on the United Nations Decade of Education for Sustainable Development: International implementation scheme and UNESCO's contribution to the implementation of the Decade. (Paris: UNESCO, 2005)
- [40] Wiek A, Withycombe L, Redman CL., Key Competencies in Sustainability: A Reference Framework For Academic Program Development. *Sustain Sci* 6(2), 2011, 203–218