

Conceptualizing Green Education Awareness in Primary School to Promote Sustainability

Conceptualización de la concientización sobre educación verde en la escuela primaria para promover la sostenibilidad

Nor Lela Ahmad*

MARA University of Technology - Malaysia
norlela7676@gmail.com

Faridah Hassan*

MARA University of Technology - Malaysia
faridah_hh@yahoo.com

Masrur Mohd Khir*

MARA University of Technology - Malaysia
masrurm@gmail.com

Sharifah Fazirah Syed Ahmad*

MARA University of Technology - Malaysia
fazirah@puncakalam.uitm.edu.my

Ramita Abdul Rahim*

MARA University of Technology - Malaysia
framitarahim@gmail.com

ABSTRACT

This research aims to make environmental awareness and action an intrinsic part of life at school. This should include the students, teachers, non-teaching staff, and parents, as well as the Local Authority, the media, and local business. Green education endeavors to extend learning beyond the classroom and develop responsible attitudes and commitment. Schools consume enormous quantities of paper and energy, produce tons of waste and carbon emissions, and rarely purchase environmentally friendly products. Schools use cleaners and pesticides with neurological and reproductive toxins, which are dangerous. Poor indoor air quality and nutrition at school are linked to soaring asthma and childhood obesity rates. Research now shows that greener, sustainable school environments can save money and resources, expand learning, and improve health. And ultimately, sustainable schools teach children to become good environmental citizens and will empower them to make a difference in the environment.

Keywords: education, environment, green education, green awareness, sustainability learning

*Faculty of Business and Management, MARA University of Technology, Malaysia

Recibido: 09/02/2019 Aceptado: 02/04/2019

RESUMEN

Esta investigación tiene como objetivo hacer de la conciencia y la acción ambiental una parte intrínseca de la vida en la escuela. Esto debe incluir a los estudiantes, maestros, personal no docente y padres, así como a la Autoridad Local, los medios de comunicación y los negocios locales. La educación verde se esfuerza por extender el aprendizaje más allá del aula y desarrollar actitudes y compromisos responsables. Las escuelas consumen enormes cantidades de papel y energía, producen toneladas de residuos y emisiones de carbono, y rara vez compran productos ecológicos. Las escuelas usan limpiadores y pesticidas con toxinas neurológicas y reproductivas, que son peligrosas. La mala calidad del aire interior y la nutrición en la escuela están vinculadas a las elevadas tasas de asma y obesidad infantil. La investigación ahora muestra que los entornos escolares más verdes y sostenibles pueden ahorrar dinero y recursos, ampliar el aprendizaje y mejorar la salud. Y, en última instancia, las escuelas sostenibles enseñan a los niños a convertirse en buenos ciudadanos del medio ambiente y los capacitarán para hacer una diferencia en el medio ambiente.

Palabras clave: educación, medio ambiente, educación verde, conciencia verde, aprendizaje sostenible.

Introduction

Global environmental change touches upon every aspect of human existence such as health, diet, leisure, quality of life, every day practices; production, consumption, education, research, politics, and societal values. All students deserve the opportunity to be educated in healthy environments that are conducive to learning and support their dreams for a brighter future. In order for sustainability to be integrated into a school's long-term operational and educational practices, organizational change is required. Organizational change (accepting a new vision for the organization, establishing new practices and policies, changing responsibilities and roles of members, etc.) is incredibly difficult. This knowledge should be adopted to ensure a more ecologically literate and environmentally sensitive generation will follow and ultimately the environmental problems that threaten our existence will be solved. The development of a green education curriculum tailor made for the school system will contribute to the body of knowledge for environmental conservation and sustainability development.

The current level of environmental destruction is unique in the history of humanity, and that if it is left to continue at the current rate, our generation will experience the initial phases of a trend that seriously risks destroying the very fabric of our lives. This research aims to integrate sustainability into school facilities, programs, and organizational culture beginning with developing the content for green education.

School greening is quickly becoming more than a trend. It is now the method of choice for providing healthy, comfortable and productive learning environments while saving energy, resources and money (Watson, 2012). School greening is also playing a very important role in preparing the youth of today for the green jobs of tomorrow by teaching children to become environmental citizens (Gadotti, 2010). Environmental education is critical to a Green Education initiative and future generations. Programs of study that focus on the environment and sustainability should involve the children in greening their school (Cole, 2014). Promoting environmental education through hands-on projects, with measurable results will help students' develop strong civic skills, environmental stewardship and workforce preparedness (Fisher & McAdams, 2015).

The purpose of education programs is to provide individuals with knowledge and skills to achieve this efficiently and legally (Winter & Cotton, 2012). In doing so, educators can also build capabilities to conduct ourselves ethically and to select options that contribute towards long-term sustainability (Lugg, 2007). Accordingly, in 2002, the UN established the Decade of Education for Sustainable Development (DESD) for the period 2005 to 2014 and appointed UNESCO (UNESCO, 2005) to integrate sustainability development into all academic subjects, via a holistic inter- and trans-disciplinary approach with a clear focus on values and ethics (UNESCO, 2007). The term Education for Sustainability (EfS) is used interchangeably with Education for Sustainable Development (ESD) and where sustain- ability is

interpreted as “both a process and a broad direction” (Sidiropoulos, 2014) a notion that is situated within the context of an individual, organisational and community perspective. Each person or group interprets sustainability through their own value lens, so messages promoting sustainability need to be positioned according to the receptivity (value driver). Sustainability is a value, a space, a skillset and a mindset and EfS is focussed on providing individuals with “knowledge, skills and understanding necessary to make decisions based upon their full environmental, social and economic implications” and to create sustainable alternatives as individuals (Schelly, Cross, Franzen, Hall, & Reeve, 2012).

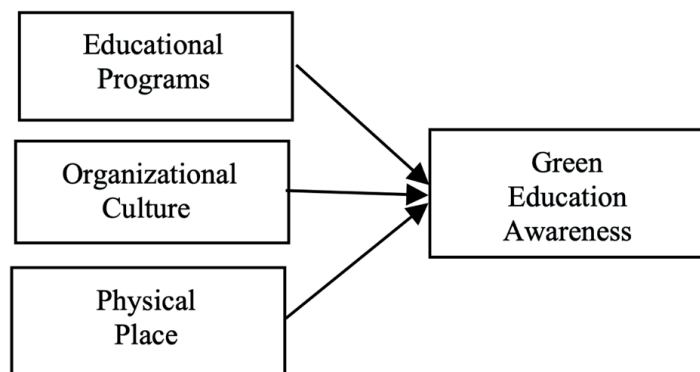


Figure 1: Framework for Green Education Awareness in Primary School

Schools can provide a healthy environment for students and staff, while promoting ecological sustainability, by using alternatives to toxic chemicals, pursuing green building and maintenance practices, changing their resource consumption patterns, serving nutritious food, and teaching students to be stewards of their communities, the earth and its resources (Wolsink, 2015). Schools are far behind many other sectors of society in recycling. Waste from schools, primarily food and paper represents about 4 percent of the municipal waste stream (Wiek, Withycombe, & Redman, 2011). Many schools do not recycle and fewer still purchase recycled or “green” products.

There is a tremendous opportunity and a grand teachable moment for children to learn about ecological sustainability, environmental health, nutrition, personal responsibility, and leadership through their hands—on participation in making their own schools healthier, more efficient, sustainable, and pleasant centers for learning (Xiong et al., 2013). Environmental awareness aims to change the values in school children. Values have been considered as needs, personality types, motivations, goals, utilities, attitudes, interests, and nonexistent mental entities. Values can be regarded as the principles that dictate what’s important to us as individuals and how we choose to use our resources (Sidiropoulos, 2014).

Previous literature suggests that environmental education should be an interdisciplinary course of study with an integrative pedagogical approach (Rowe, 2002). The term “sustainability” gains traction within a diversity of programs and operations, it is important to understand the fuller aspects of sustainability – environmental; community, equity and participation; innovation, design and systems; and eco-efficiency and financial/economic concerns. Providing students with a robust perspective of sustainability aids in their understanding of a complex term and problem-solving tool.

We attach value and dedicate resources to whatever creates benefits for ourselves or for other valued persons or things and generally do not value those things that create benefits for non-valued others or the natural environment, least of all if they come at some irrecoverable cost to us (Fisher & McAdams, 2015). Value also represents the use of our resources: we define it, create it, measure it, brand it, trade it, accrete it and store it. Environmental education also fosters the development of the skills students need to be successful, 21st-century citizens, including critical, creative, and problem solving thinking; effective written, oral, and digital communication; and constructive citizenship that nurtures young leaders who can make a difference in their communities (Wiek et al., 2011).

Some of the benefits of green education that this study aims to achieve at school are:

1. Conserves energy and natural resources
2. Saves taxpayer money
3. Improves indoor air quality
4. Removes toxic materials from buildings
5. Employs daylighting strategies and improves classroom acoustics
6. Employs sustainable purchasing and green cleaning practices
7. Improves environmental literacy in students
8. Encourages recycling
9. Promotes habitat protection
10. Reduces demand on local landfills

The main focus of environmental education programs has been to change environmental behavior through increasing environmental knowledge. Our results suggest that cultural value orientations, independent of knowledge, need to be targeted as the basis of environmental programs. Environmental education involves developing values, attitudes, knowledge, and problem-solving orientations. It emerges through broad community introspection into the values and ethical issues that it desires to nurture (Pooley & O'Connor, 2000); thus, we argue, it is highly dependent on particular and country-specific value orientations (Oreg, 2006)

Education for sustainable development, through developing pupils' skills in, and commitment to, effective participation in the democratic and other decision-making processes that affect the quality, structure and health of environments and society and exploring values that determine people's actions within society, the economy and the environment (Dobson, 2007). Educational strategies designed to improve environmental literacy (e.g., by highlighting the inaccuracy of many compensatory beliefs and improving environmental awareness) might reduce the tendency of people to use compensatory beliefs. There are many examples of interventions aimed at improving the environmental literacy of individuals, particularly within educational settings (Kaklamanou et al, 2013)

Evidence indicates strong impressions formed during a person's formative (teenage) years can have a life-long impact on a person's values, attitudes and behavior although students' values and value-orientations also affect their engagement with sustainability education at school. Educators should not assume students have similar knowledge or views about sustainability, but instead must identify and gradually develop the sustainability literacy of their students. According to cognitive psychology, we are continuously confronted with a vast flow of information and individuals filter through this information according to our schema, which determines what we "see" and what we "ignore" Conceptions of sustainability and their associated learning and teaching implications are context driven and vary considerably. Wals and Jickling (2002) suggest "there are multiple perspectives in sustainability, education for sustainable development, and education for sustainability and multiple perspectives on the way educators should interpret these ideas.

Key elements in developing sustainability literacy are modifying curriculum content, experiential and social learning (Trip and Muzzin, 2005), systems thinking, inter-disciplinarity (Matthews, 2005), connecting curriculum to local contexts (business/NGOs), taking a critical approach, and a strong research programmer.

Methodology

This study will undertake a quantitative research method to explore structural relationship among constructs. Quantitative research will use survey method through the distribution of a set of questionnaire and it consists of predetermined response options and distributed to a great numbers of respondents. The purpose of conducting a quantitative research method is to confirm the research model development and to identify some unknown variables.

Quantitative research will produce statistical findings which can be presented in model, graph and diagram (Fallis, 2013). The main purpose of quantitative research is to gain information to:

- a) make accurate predictions about relationship between variable.
- b) gain deep understanding into those relationship.
- c) validate relation.
- d) test hypotheses.

Quantitative research is reliable because all respondents are asked on the same questions with the same way and sample size is much larger (Hair, Sarstedt, Pieper, & Ringle, 2012). The research design that will be used in this present study is descriptive-correlational research. Descriptive-correlational research is conducted to examine the existence of relationship between two or more variables. Descriptive-correlational design is able to provide precise description of population characteristics and can present adequate information on causal relationship among variables (Aaker et al, 2004). In addition, descriptive-correlational research design also provides basis for decision making (Ting & Thurasamy, 2016). In relation to this study, this research design permits the researcher to make future forecasting, for instance, the influence of values, beliefs and norms and other variables on perception on sustainable efforts towards event greening. The strength of descriptive research is, it is able to provide accurate description characteristics of a population, if the sample size is large and it is selected properly (Aaker et al, 2005).

Conclusion

Environmental education and training will continue to underlie progress towards sustainable development by providing the most essential tool: knowledge. The discovery of school children's level of awareness on environmental issues from this research and the findings on the awareness of green education will enhance the body of knowledge in this field that will contribute towards a better understanding of school children's level of awareness on environmental issues. The curriculum would outline the need for green education beginning in schools to educate the younger generation on the importance of environmental protection and preservation. How individuals think about sustainability and environmental concerns more specifically, are rooted in their education of these issues.

This study represents a clear opportunity to cultivate a diversity of interpretations of sustainability in a way that helps to redraw boundaries that are increasingly necessary to revitalize the educational mission that is required to address current social-economic-ecological issues. This requires environmental and sustainability education to inculcate "lateral rigor" across disciplines to match the "vertical rigor" within them (Fisher, 2015). For sustainability, integrating lateral rigor though general education requirements seems paramount as a foundation for situating knowledge in the field. This would also create opportunities to apply sustainability after a disciplinary concentration is established to help avoid these potential disciplinary pitfalls. This approach emphasizes higher orders of learning around transdisciplinary problem-solving, collaborative learning, creative application and knowledge synthesizing (Barth and Timm, 2011) that can be attained through transdisciplinary and integration (Warburton, 2003).

The outcome of this study will also stress the importance of curricular approaches to sustainability that are integrated. Three issues arise from these implications: first, that sustainability programs should incorporate a course or series of courses that expose students to a wide variety of scholarly approaches to sustainability early in the curriculum; second, within courses deeply entrenched in disciplinary silos, sustainability should be presented in a way in which disciplinary focus is situated within that larger frame; and third, greater attention should be paid within programs that are fully integrated with an emphasis on typical descriptors of effective sustainability education as holistic systems, ability to make connection, interdisciplinarity and lateral rigor (Weissman, 2012). This conforms to previous arguments that sustainability should be approached from several different angles, including the social, cultural, political and artistic (Orr, 2004). Ideally, a comprehensive sustainability approach should address complementary

conceptualizations of sustainability in an integrated pedagogical approach across disciplines (Fisher & McAdams, 2015).

One is unlikely to knowingly be concerned about the environment or deliberately act in pro-environmental ways if one knows nothing about the problem or potential positive actions. Education is also important. In several countries, individuals with more education in general are more concerned about the environment (Gifford & Nilsson, 2014).

Success on the journey toward sustainable development requires an approach to education that strengthens the application of values, especially integrity and fairness and the awareness that people share a common destiny. This can be achieved when teachers provide students with experiences which lead to greater awareness of social and moral responsibilities, particularly those which generate greater self-awareness of personal value systems and a willingness to revise them towards sustainability. Finally, teachers are ultimately “responsible for the introduction of the subject of SD to their students” (Ceulemans and De Prins, 2010, p. 646). Each teacher has an opportunity to introduce sustainability topics that are appropriate to their student cohort, environment and institutional orientation towards sustainability.

Sustainability is a learning journey and each educational intervention contributes towards building greater understanding and orientation towards sustainability. An educator with curriculum control is strongly encouraged to embed sustainability as a core element of assessment. An educator with little or no influence over course curriculum or assessment, can still contribute to their students learning for sustainability. (Sidiropoulos, 2014)

Acknowledgment

The authors would like to express the deepest appreciation to all those who provided us the possibility to complete this research. The co-operation is much indeed appreciated. The authors also gratefully acknowledge the contribution of the Research Management Centre of Universiti Teknologi MARA, for the ongoing support and efficient management of the Fundamental Research Grant Scheme provided by the Malaysia Education Ministry [(600-IRMI/DANA 5/3/AAGBS (006/2017)], which contributed greatly to the quality of this study and outcomes. Their contribution for making the research proposal process smooth and efficient is highly appreciated.

BIBLIOGRAPHIC REFERENCES

- Aaker, D. A., Kumar, V., & Day, G. S. (2004). *Marketing research*. New York: John Wiley & Sons.
- Aaker, David A., V. Kumar, George S. Day, and Meredith Lawley (2005), *Marketing Research, The Pacific Rim ed.* Milton, Queensland, Australia: John Wiley & Sons.
- Barth, M. and Timm, J.M. (2011), “Higher education for sustainable development: students’ perspectives on an innovative approach to educational change”, *Journal of Social Sciences*, Vol. 7 No. 1, pp. 13-23.
- Blewitt, J., Cullingford, C. (Eds.), 2004. *The Sustainability Curriculum: the Challenges for Higher Education*. Earthscan, London.
- Ceulemans, K., De Prins, M., 2010. Teachers’ manual and method for sustainable development integration in curricula. *J. Clean. Prod.* 18, 645e651.
- Cole, L. B. (2014). The Teaching Green School Building : a framework for linking architecture and environmental education, (February 2015), 37–41.
- Dobson, A. (2007). Environmental citizenship: Towards sustainable development. *Sustainable Development*, 15, 276–285.

- Fallis, A. (2013). Doing research in the real world. *Journal of Chemical Information and Modeling*, 53(9), 1689–1699.
- Fisher, B., & McAdams, E. (2015). Gaps in sustainability education. *International Journal of Sustainability in Higher Education*, 16(4), 407–423.
- Gadotti, M. (2010). Reorienting Education Practices towards Sustainability. *Journal of Education for Sustainable Development*, 4(1988), 203–211.
- Gifford, R., & Nilsson, A. (2014). Personal and social factors that influence pro-environmental concern and behaviour: A review. *International Journal of Psychology*, 49(3), 141–57.
- Hair, J. F., Sarstedt, M., Pieper, T. M., & Ringle, C. M. (2012). The Use of Partial Least Squares Structural Equation Modeling in Strategic Management Research: A Review of Past Practices and Recommendations for Future Applications. *Long Range Planning*, 45(5–6), 320–340.
- Kaklamanou, D., Jones, C. R., Webb, T. L., & Walker, S. R. (2013). Using Public Transport Can Make Up for Flying Abroad on Holiday: Compensatory Green Beliefs and Environmentally Significant Behavior. *Environment and Behavior*, 1–21.
- Lugg, A. (2007). Developing sustainability-literate citizens through outdoor learning: possibilities for outdoor education in Higher Education. *Journal of Adventure Education & Outdoor Learning*, 7(2), 97–112.
- Oreg, S. (2006). Predicting PR environmental Behavior Cross-Nationally: Values, the Theory of Planned Behavior, and Value-Belief-Norm Theory. *Environment and Behavior*, 38(4), 462–483.
- Schelly, C., Cross, J. E., Franzen, W., Hall, P., & Reeve, S. (2012). How to Go Green: Creating a Conservation Culture in a Public High School Through Education, Modeling, and Communication. *The Journal of Environmental Education*, 43(3), 143–161.
- Sidiropoulos, E. (2014). Education for sustainability in business education programs: A question of value. *Journal of Cleaner Production*, 85, 472–487.
- Ting, H., & Thurasamy, R. (2016). What matters to infrequent customers: a pragmatic approach to understanding perceived value and intention to revisit trendy coffee café. *SpringerPlus*, 5(1), 651.
- Watson, T. F. (2012). Fields of green: restorying culture, environment, and education. *Environmental Education Research*, 18(4), 553–558.
- Wiek, A., Withycombe, L., & Redman, C. L. (2011). Key competencies in sustainability: A reference framework for academic program development. *Sustainability Science*, 6(2), 203–218.
- Winter, J., & Cotton, D. (2012). Making the hidden curriculum visible: sustainability literacy in higher education. *Environmental Education Research*, 18(July 2015), 1–14.
- Wolsink, M. (2015). Environmental education excursions and proximity to urban green space – densification in a “compact city.” *Environmental Education Research*, 4622(March), 1–23.
- Xiong, H., Fu, D., Duan, C., Liu, C. E., Yang, X., & Wang, R. (2013). Current status of green curriculum in higher education of Mainland China. *Journal of Cleaner Production*, 61, 100–105.