

Are The Students from Green Campus More Related to the Nature ?

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ABSTRACT

University leaders and also other university stake holders like students are expected to give more attention to environmental problems. Becoming a “green” campus is now perceived as a form of commitment and responsibility of the university towards the society. The UI GreenMetric is one platform to assess universities current environmental conditions and policies. Several Indonesian universities are already members of this platform and every year these universities are ranked based on several objective indicators. These ranks give information which university is greener compared with other universities. Theoretically, students who are exposed to a greener environment, will have a stronger nature relatedness than students who came from universities which are less “green”. However, there has never been a study to explore whether a campus environmental condition can predict the student’s nature relatedness. This study surveyed 90 students from several universities in Indonesia with a GreenMetric rank. The respondents were between 17-43 years old and they filled a questionnaire measuring their nature relatedness and some personal data. Result showed that environmental conditions (whether a campus is green or not) cannot predict students nature relatedness. Nevertheless, the authors found that students who came from a higher ranked green campus have a higher nature relatedness perspective than students who came from a moderate and lower level green campus. Implications and limitations of this study is discussed further.

Keywords: *Green Campus, Nature Relatedness, Student, University*

INTRODUCTION

Becoming “green” campus is now perceived as a form of commitment and responsibility to overcome environmental problems and efforts in realizing sustainable development. Campus could be viewed as a small town that has an impact on the surrounding area (Ragazzi, Marco & Ghidini, 2017). It has to transfer information and knowledge to all individuals and surrounding communities to maintain a sustainable environment (Tan et al., 2014). Educational institutions are expected to produce generations who are not only aware of the sustainability importance, but they should also do research and practice environmental friendly behaviour (Tahir, 2014). Therefore, it is important that a campus should endorse an eco-friendly environment or a “green campus” which also enhances sustainability. By becoming a “green campus”, it is hoped that it will help prevent and resolve various environmental problems that the world is facing now (Moelyaningrum, Dewi, & Ningrum, 2017).

The term of green campus refers to an eco-friendly campus masterplan and construction, which will guide a “green” operation and management of the university, and also academically (Tan et al., 2014). A green campus has a role to improve biodiversity, promoting mental health, providing a sense of security and aesthetic feeling for all campus residents (Tahir, 2014). Now days many campuses in the world consider being a “green campus” as a priority and hence they attempt to cultivate environmentally friendly values and principles of a sustainable environment (Tiyarattanac hai, Ronnachai & Hollman, 2016). In Indonesia, being a “green campus” could also be considered as a concrete step in implementing the three university obligation named “Tridharma Perguruan Tinggi” (Prihanto, 2018). To be a green campus, Universities have to ensure to integrate a harmony between economic, social and environment aspects in developing campus life (Ragazzi, Marco & Ghidini, 2017). Nevertheless, it must remain transformed in order to carry out the principles of sustainability into the system and policies (Ragazzi, Marco & Ghidini, 2017).

One way to assess how “green” a campus is ranked, is by joining the GreenMetric platform, which was developed by Universitas Indonesia in 2015 there are 400 universities all over the world already joined this platform. UI GreenMetric is one of the assessment platforms in the world, evaluating how far a campus is carrying out principles of sustainability development (Riyadhi, Prasetyo & Prayitno, 2018). UI GreenMetric aims to

provide an overview to universities leaders and their stakeholders, hoping to increase awareness and more attention in addressing global climate change issues, water conservation and energy, waste processing and eco-friendly transportation (greenmetric.ui.ac.id, 2018). The assessment method uses questionnaires which contains several indicators of a green campus. The six important indicators are setting and infrastructure, energy and climate change, waste management, water management, transport and education. Despite some limitations in the evaluation methods (Ragazzi, Marco & Ghidini, 2017), and the impact on behavioral change (Ghaus., Et al, 2017), UI GreenMetric has encouraged other campuses to participate in applying the green campus concept (Tiyarattanachai, Ronnachai & Hollman, 2016).

For the university level, applying the green concept means planning the provision of supporting facilities of learning and research, appreciation of environmental aesthetic and even food production. It could be done gradually starting from having a common understanding of the green campus concept among all university stakeholders, adopting appropriate green technology and supporting facilities, until it could be implemented and integrated into the campus conditions (Tan et al., 2014). In the process, the concept of green campus is often difficult to implement due to limited knowledge, lack of incentives, lack of power executing policies and also financial constraints (Hopkins, 2016). However, the campus can solve it by changing its perspectives, making university targets, replanning sustainable development, providing financial motivation for key stakeholders on campus, setting up a special office or section focusing on sustainable development, promoting and marketing initiatives construction of a green campus (Hopkins, 2016).

One goal of the green campus is to raise eco-friendly awareness, hoping that all stakeholders especially students will be more concerned about protecting the environment and they will act pro-environmental in their daily activities (Riyadi, Prasetyo, & Prayitno, 2018). In University of Technology Malaysia, green campus implementation already show a positive impact in reducing climate change in their campus by promoting cycling, saving paper, energy and water (Najad et al., 2018). Being a green campus also brings some benefits. Studies shows that green campus stakeholders are feeling more satisfied concerning their quality of life than stakeholders from non green campus (Tiyarattanachai, Ronnachai & Hollman, 2016).

Universities who joined the GreenMetric platform will be ranked regarding their existing condition and their policies to enhance an eco-friendly and sustainable campus (greenmetric.ui.ac.id, 2018). From this ranking it could be assumed that the greener campuses will have a different impact on the students. Theoretically, students who are exposed to a green environment, will have a stronger nature relation than students who came from universities which are less “green”. Nevertheless, there has never been a study to explore whether a campus environmental condition can predict the student’s nature relatedness. This study aims to explore, whether campus environment condition—using GreenMetric index— could predict the students nature relatedness.

Nature relatedness describes the individual levels of connectedness with the natural world (Nisbet, Zelenski, & Murphy, 2009: 718). Nature relatedness is a human tendency that includes his appreciation and understanding of relationship to all things on earth. According to the biophilia hypothesis, feeling close to nature is a need to build and empirically proven (Nisbet, 2011). Nature relatedness could be measured by a scale which is differentiated into three important dimensions; Nature Relatedness-Self, Nature Relatedness-Perspective and Nature Relatedness-Experience. Nature Relatedness-Self represents an internal aspect of identification with nature, reflective feelings and thoughts about how the self is connected to nature. In other words, Nature Relatedness-Self describes how an individual feels about his/hers interrelation with his/her physical/nature surroundings. The Nature Relatedness-Perspective represents an external aspect of personal relation to nature, as to how humans interact with other living organism and it will reflect from the individual's view on animals treatment and the use of natural resources. Nature Relatedness-Experience is reflecting a physical closeness to the natural world, the level of comfort and desire to unite with nature. All of them are integrated each other as a human traits.

METHOD

This study used the survey method, with accidental sampling technique to 90 students from 5 universities in Indonesia. The participants fill questionnaire through google form between April to May 2018. The authors hypothesize that students who are coming from a greener campus feel more related to the nature than students from a less greener campus. the authors adapted the nature relatedness scale that is developed by Nisbet, Zelenski, and

Murphy (2009). The scale (1= strongly disagree until 6= strongly disagree) with a total of 19 items was delivered in Bahasa Indonesia. Before the real survey, the authors did a try out ($n = 10$) and calculated the alpha Cronbach ($r = .840$, $p < .00$). The data were analyzed using SPSS version 24 with level of significance is 0 .05. An independent sample t-test and simple linier regression are used to explore the students nature relatedness on campuses in Indonesia which are classified as very, moderate and less green campus. The categorization of green campus refers to UI GreenMetric in 2017. The 90 students who come from green campus in this study were students of V university ($n = 58$), W university ($n = 14$), X university ($n = 6$), Y university ($n = 6$), Y, and Z university ($n = 6$). The authors used initial name of the universities for the ethical reason. The participants consisted of 21 men and 69 women; which were derived from Z generation (17-23 years, $n = 47$) and Y generation (24-38 years, $n = 43$). The participants' educational background were undergraduate level ($n = 46$), and post-graduate level ($n = 44$).

Table 1. Level Green Campus based on UI GreenMetric 2017

No	University	Status	N	Level GreenMetric in Asia (2017)	GreenMetric Score
1	V University	Green Campus	58	High	6519
2	W University	Green Campus	14	High	6076
3	X University	Green Campus	6	High	5643
4	Y University	Green Campus	6	Moderate	5101

RESULT & DISCUSSION

The authors proposed a hypothesis that students from green campus feel more related to the nature. In other words, GreenMetric score of campuses can predict the student's nature relatedness. Result showed that the mean of student's nature relatedness is moderate ($M = 87.17$, $SD = 11.91$). If differentiated in dimension, the authors found Nature Relatedness-Self ($M = 41.43$, $SD = 6.78$), Nature Relatedness-Perspective ($M = 20.29$, $SD = 3.15$) and Nature Relatedness-Experience ($M = 25.44$, $SD = 4.17$). From the regression calculation the authors found that environmental conditions (whether a campus is greener or less) cannot predict students nature relatedness ($p > .05$, $p = .372$). Nevertheless, students

who came from a higher ranked green campus showed a higher nature relatedness perspective than students who came from a moderate and less level green campus. Referring to the nature relatedness scale, Nisbet, Zelenski, and Murphy (2009) describe that nature relatedness perspective refers to an external aspect of personal relation to nature as to how humans interact with other lives and will reflect on the individual's view of the treatment of animals and the use of natural resources that. It is possible that students also have awareness to keep their campus clean, use water and electricity wisely or join to use campus bus as their transportation to reduce impact of climate change. However, it is also proven that feeling related to the nature can be affected from other factors like age, gender (McFarlane & Hunt, 2006), residence (Cox et al., 2017) and involvement as member of environmental community or movement (Horton, 2003).

Table 2. Statistic Descriptive of nature relatedness between green campus based on level

Green Campus based on		M	SD	Sig.
ranked in Asia				
Total NR	Lower Level	79,17	13,76	.178
	Moderately Level	94,00	12,61	
	Highly Level	87,26	11,52	
NR- Self	Lower Level	38,17	7,93	.275
	Moderately Level	45,50	6,47	
	Highly Level	41,37	6,65	
NR - Perspective	Lower Level	19,17	3,43	.038*
	Moderately Level	21,83	2,31	
	Highly Level	20,26	3,16	
NR - Experience	Lower Level	21,83	3,54	.154
	Moderately Level	26,67	5,27	
	Highly Level	25,63	4,68	

*) level of significance 0.05

In this study the authors did not prove that the campus environment could predict the student's nature relatedness. This result is contradictive. Previous study on UiTM Malaysia also show that implication of green campus concept can save the energy, paper, and water about 6% or save RM 3.3 millions during 2009 until 2012 (Najad et al., 2018). Another study in one of Indonesian green campus which is already implementing zero waste, zero emission and biodiversity among the university students (Sisriany, Saraswati & Fatimah, 2017). Another study involving students from Universitas Sebelas Maret, which is also one of the green campus in Indonesia showed no significant relationship between ecological concept and new ecological paradigm (Riyadi, Prasetyo, & Prayitno, 2018). Another study in Malaysia showed that there were no significant differences in perceptions and environmental responsibility among students at green campus and non-green campus (Ghaus et al., 2017). Based on these studies, we can highlight that it is important for leader on green campuses to raise awareness about feeling related to the nature as the cognitive and affective aspects of the students as affected subjects from the application of green campus.

Nature relatedness in this study is more likely to be highlighted as one of the psychological effects of the presence of green campus. Although the nature relatedness is considered as a traits that already exist in each individual (Nisbet, Zelenski, & Murphy, 2009) the implementation of a green campus could still improve nature relatedness. Nature relatedness proved to be positively correlated with increased physical activity in nature (Lawton et al., 2017), emotional intelligence and psychological well-being (Gerofsky, 2016), happiness (Nisbet & Zelenski, 2011), pro-environmental behavior (Nisbet, 2011) as well as negatively correlated with anxiety (Lawton et al., 2017). In addition, the study by Nisbet (2005) has shown that increasing the nature relatedness through environmental education can improve psychological health and motivate environmentally responsible behaviors. Therefore, the green campus can evaluate the cognitive and affective aspects of the students on campus as a form of comprehensive and holistic policy implementation towards environmental conservation.

Green campus can maximize the existence of green open space so it can be used as media in improving the nature relatedness in the students. Green space become really

important in green campus because it can provide physical and psychological needs within campus residents (Scholl, Kathleen & Gulwadi, 2018; Malekinezhad, Fahimeh & Hasanuddin, 2017; Wee, 2017). The results of research on students at Iran's Mashdad University on the perceptions of green space on campus also shown that there was a high positive correlation between the perceived aesthetic and feelings of security (Karimianet al., 2017). It can be a meaningful input for the campus in increasing the importance of green space for campus residents, especially students. Green space can be designed by adjusting campus conditions, especially urban campus with minimal land. It can also take advantage of unused land such as rooftop, parking buildings, sidewalks even in cafeterias.

CONCLUSION

This research has shown that students have a moderate nature relatedness. This study also showed that students from a greener campus have a higher nature relatedness perspective than students from a moderately and less greener campus. It needs environmental psychology interventions to be able to encourage the campus residents and stakeholders to maintain and improve their nature relatedness. Participatory community-based evaluation is also important by involving campus residents and communities around the campus in measuring how effective the application of green campus in Indonesia, especially in big cities. The limitation in this research was the number of respondents from the different level of green campus was not representative. Future research may involve other psychological variables related to nature relatedness such as well-being, happiness or stress.

BIBLIOGRAPHY

- Cox, Daniel TC, Danielle F. Shanahan, Hannah L. Hudson, Kate E. Plummer, Gavin M. Siriwardena, Richard A. Fuller, Karen Anderson, Steven Hancock, and Kevin J. Gaston. "Doses of neighborhood nature: The benefits for mental health of living with nature." *BioScience* 67, no. 2 (2017): 147-155.
- Gerofsky, Priscilla R., and Priscilla R. Gerofsky. "The Relationship between Nature Relatedness, Trait Emotional Intelligence and Well-Being." (2016).
- Ghaus, Raihana Mohd, Rosta Harun, Lim Kuang Hock, and Zakiah Ponrahono. "ARE GREEN UNIVERSITIES PRODUCING GREENER FUTURE LEADERS ?." *PLANNING MALAYSIA* 15, no. 4 (2017): 1-12.

- Hopkins, Erin A. "Barriers to adoption of campus green building policies." *Smart and Sustainable Built Environment* 5, no. 4 (2016): 340-351.
- Horton, Dave. "Green distinctions: the performance of identity among environmental activists." *The Sociological Review* 51, no. 2_suppl (2003): 63-77.
- Karimian, Zahra, Leila Samiei, and Fatemeh Kazemi. "Assessment of User's Preferences of Campus Green Space at Ferdowsi University of Mashhad-Iran." *چشم انداز معماری* 48 (2017).
- Lawton, Emma, Eric Brymer, Peter Clough, and Andrew Denovan. "The relationship between the physical activity environment, nature relatedness, anxiety, and the psychological well-being benefits of regular exercisers." *Frontiers in psychology* 8 (2017): 1058.
- Malekinezhad, Fahimeh, and Hasanuddin Bin Lamit. "Structural Model to Describe Restoration Experience From The Impact of the Environmental Qualities and Mediation Effects of Perceived Restorativeness." (2017).
- McFarlane, Bonita L., and Len M. Hunt. "Environmental activism in the forest sector: Social psychological, social-cultural, and contextual effects." *Environment and behavior* 38, no. 2 (2006): 266-285.
- Moelyaningrum, Anita Dewi, and Prehatin Tri Rahayu Ningrum. "Are Your Campus Eco? A Perception Students About Environmental Education, Jember Indonesia." *Gazette of Education* 6, no. 3 (2017).
- Najad, Parviz Ghogh, Anuar Ahmad, and Irina Safitri Zen. "Approach to Environmental Sustainability and Green Campus at Universiti Teknologi Malaysia: A Review." (2018).
- Nisbet, Elizabeth K., and John M. Zelenski. "Underestimating nearby nature: Affective forecasting errors obscure the happy path to sustainability." *Psychological science* 22, no. 9 (2011): 1101-1106.
- Nisbet, Elizabeth K., John M. Zelenski, and Steven A. Murphy. "The nature relatedness scale: Linking individuals' connection with nature to environmental concerns and behavior." *Environment and Behavior* 41, no. 5 (2009): 715-740.
- Nisbet, Elizabeth Kathleen Laura. "A nature relatedness intervention to promote happiness and environmental concern." PhD diss., Carleton University, 2011.

Nisbet, Elizabeth Kathleen Laura. *The human-nature connection: Increasing nature relatedness, environmental concern, and well-being through education*. Ottawa, ON: Carleton University, 2005.

Prihanto, Teguh. "Green campus based management on conservation program in Semarang State University." In *AIP Conference Proceedings* , vol. 1941, no. 1, p. 020024. AIP Publishing, 2018.

Ragazzi, Marco, and Francesca Ghidini. "Environmental sustainability of universities: critical analysis of a green ranking." *Energy Procedia* 119 (2017): 111-120.

Riyadi, Idhun Prasetyo, and Baskoro Adi Prayitno. "The Linkage between Ecological Knowledge and Behavioral Intention in Green Campus Students." *International Journal of Pedagogy and Teacher Education* 2 (2018): 25-38.

Scholl, Kathleen G., and Gowri Betrabet Gulwadi. "College Campus Landscapes Within a Learning Ecosystem." *Planning for Higher Education* 46, no. 2 (2018): 50-64.

Sisriany, Saraswati, and Indung Sitti Fatimah. "Green Campus Study by using 10 UNEP's Green University Criteria Toolkit in IPB Dramaga Campus." In *IOP Conference*

Series: Earth and Environmental Science , vol. 91, no. 1, p. 012037. IOP Publishing, 2017.

Tahir, Mohd. "Developing a sustainable campus landscape criteria: an evaluation of Sultan Idris University Education a Green Campus." *Advances in Environmental Biology* 9, no. 4 (2015): 201-204.

Tan, Hongwei, Shuqin Chen, Qian Shi, and Lingling Wang. "Development of green campus in China." *Journal of Cleaner Production* 64 (2014): 646-653.

Team UI Green Metric. "Green Metric in Asian", 2017; <http://greenmetric.ui.ac.id> , accessed on July 10, 2018

Tiyarattanachai, Ronnachai, and Nicholas M. Hollmann. "Green Campus initiative and its impacts on quality of life of stakeholders in Green and Non-Green Campus universities." *SpringerPlus* 5, no. 1 (2016): 84.

Wee, Cresha. *Assessing the Perception of Campus Green Space and Stress Levels Among Students at Michigan State University* . Michigan State University. Environmental Design, 2017.