



ARE YOUR CAMPUS ECO ? A STUDENTS' PERCEPTION ABOUT ENVIRONMENTAL EDUCATION IN JEMBER, INDONESIA

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ABSTRACT

Global warming is a global issue. Eco campus or green campus is the concepts to resolve the environmental problems. The aim of this research is to analyze how eco is your campus observed from knowledge and students' perception on environmental sustainability education. The methods of this research are cross sectional study and analytic observational. The total of respondents is 160 students who randomly chosen. Respondents have interviewed about their perspectives on environmental sustainability education especially the eco campus concept. The result of this research showed that 134 respondents (83,75%) had known about the information of the eco campus. There were 77 respondents (48,1%) have the negative attitude, 43 respondents (26,9%) have the positive attitude and 40 respondents (25%) have the neutral attitude about the eco campus. The data showed that 91 respondents have poor behavior toward eco campus concepts (56,9%), 65 respondents good enough (40,6%) and 4 respondents have very good behavior (2,5%). The development of sustainable environment should be educated continuously to the higher students to meet the eco campus sustainability to reduce the global warming.

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INTRODUCTION

Global warming is a global problem. The limitedness of natural resources to meet human needs is a point for us to contribute the environmental sustainability. Global warming data shows that temperature rise is very significant. The atmosphere and oceans have been warming, the amount of snow and ice have decreased, and the sea level has increased (Climate change, 2014).

Global warming affects on the earth, health and social. People, animals, birds and habitats are impacted by global warming (Bhatt, 2012). This will endanger human health either directly or indirectly such as Asthma, Respiratory Allergy, and Airway Disease, Foodborne Disease, Human Development Effects, Borne Vector and Zoonosis Disease, Water Disease, etc. The environmental consequences of climate change, such as the rise of sea level, changes in rainfall resulting in floods and droughts, heat waves, stronger hurricanes and storms, and degraded air quality (Portier, 2010).

Human activity is the main cause of global warming, this has been observed since 1976 (Ring et al). Global warming caused by greenhouse gases such as CO₂, CH₄, N₂O, O₃, water vapor (H₂O), and CFC. Human activities such as burning fossil fuels and deforestation lead to green gas emissions (Yun et al, 2011). Methane (CH₄) emissions from Waste Disposal Sites are the major source of greenhouse gases (UNEP, 2010).

Sustainable environmental development should be undertaken as a shared commitment to control global warming as a global problem. Academics are older communities that shall give contribution to controlling climate change. Campus is a strategic place to educate future generations about the sustainability of environmental development. Eco campus is the Environmental Management System (EMS) for the higher education sector. It is an integrated and comprehensive concept which educate the next leader to protect the environment. Eco campus is a concept that involves all elements of the university to achieve a sustainable environment. Those elements shall actively support this concept. The eco campus will be represented by the concept of green building, green places and green behaviour. Knowledge of environmental sustainability contributes to the attitudes and behaviours. Thus, this research was conducted to analyze the students' perception about knowledge, attitude and practice on the higher students to support the campus eco.

METHODS

The methodology used in this study were qualitative and quantitative techniques. Quantitative technique by collecting data using questionnaire, and qualitative technique by collecting comments and opinions from the respondents obtained questionnaires.

This is a cross-sectional study conducted in Jember, Indonesia. The samples were 160 undergraduate students of University of Jember which randomly chosen from 16 faculties and majoring subject students which studied in 2nd, 4th, 6th, 8th ,and 10th semester. Every subject or faculty, ten students were chosen as respondent. They were students from Public Health; Nursing; Medical Science; Farmacy; Faculty of Teacher Training and Education Majoring in Physics Education; Majoring in Biology Education; Majoring in Mathematic Education; Majoring in Out-of-school Education; Majoring in English Education,; Faculty of Math and Science majoring in Biology; majoring in Mathematics, Faculty of Economy Majoring Management, Faculty of Agriculture majoring Agrotechnologi and majoring Food technology, Faculty of Engineering majoring Mechanical Engineering, Faculty of Social and Political Sciences majoring Social Welfare.

Respondents were interviewed about sustainable development perspective, especially eco campus in three main variables which was breakdown into fifteen questions. The variables are environmental information, energy efficiency and environmental education which are about green building, green places and green

behaviour. Then, we analysed the knowledge, attitude and behaviour of students on eco campus.

RESULTS AND DISCUSSION

1. The Profile of Respondents

There were 113 (70.6%) female respondents and 47 (29.4%) male respondents. Environmental issues are our problem. Either men or women should pay attention to it. It is stated that some studies showed that women paid more attention to the environment than men (Craight, 2010). However, other researches showed that men were found to be more caring and knowledgeable about environmental problems (Arcury, 1987).

The data below shows that the respondents are students of 2nd semester (11.3%), 4th semester (17.5%), 6th semester (51.9%), 8th semester (18.8%) and 10th semester (0.6%). The duration of respondents who studied in higher education were interviewed to describe the profile of the respondents. It may contribute some informations about the concept of eco sustainability. However, it depends on the number of factors such as the information environment they got from higher education, newspapers, electronic media, student organizations and concern for environmental sustainability (see Table 1).

Table 1. The Characteristic Respondents, Feb 2017

Variable	N	%
Gender		
Male	47	29,4
Female	113	70,6
Total	160	100
Study time on campus		
1 years (2nd semester)	18	11,3
2 years (4th semester)	28	17,5
3 years (6th semester)	83	51,8
4 years (8th semester)	30	18,75
5 years (10th semester)	1	0,6
Total	160	100

Source Author

2. The knowledge of Eco Campus

Eco campus is a sustainable environmental management concept, which means eco campus is an integrated environmental education concept for universities. In Indonesia, the national award for eco campus is not well known as eco school does. A green friendly school or "adiwiyata school" is a national program of Indonesian

government awards for schools that have the concept of environmental sustainability. Indonesia has many adiwiyata schools, but it is rarely found for higher education. The Eco Campus may be considered as a continuation of a green friendly school or adhiwiyata school.

This study analyzes students' knowledge of eco campus concepts. The data shows that there are 83.8% respondents who notice the terms related to eco campus. However, they do not understand about the concept of sustainability development. Respondents's knowledge related to eco campus is only limited to campus which care about the environment only. Some respondents said that they know the term eco campus because some media often write about awarding schools that are considered as green friendly school.

Apparently, the eco campus has been widely heard from the media which explain about the national award for eco school. There are 68.8% of respondents said that lecturers never provide information about eco campus as they study in the classroom. Lecturers are the most influential people in educating students as teachers can help students develop competence (Reimess et al., 2014). The role of educators in environmental education is important (Esa, 2010). Training on environmental sustainability should be done routinely. As Amin (2012) says that awards and knowledge related to environmental issues have been increased with the environmental training.

Some respondents said they did not get information related to campus eco while attending lectures. Some of the respondents are as follows:

Respondent A, male students, 6th semester, majoring Social Welfare, Faculty of Social and Political Science

“... never yet heard about the eco campus from the lecturer “

Respondent B, female students, 8th semester, majoring Mathematic, Faculty of Mathematic and Natural Science

““... i never heard, the lectures said about eco campus or green campus..””

Responden C, female students, 10th semester, majoring Phisic education, Faculty of Education.

““... the lecture never said about eco campus or green campus, but got the course about environmental... “”

Further, there were 52,5 % respondent that had perspectives about eco campus as a campus that have a lot of trees. Eco campus is the concepts of eco sustainability, not just only the existing the trees. Eco Campus is an international awards program that guides third level institutions on their sustainable journey, providing a simple framework to make sustainability an integral part of campus life (Daniel, 2016). Hindley (2016), the head of Environmental Strategy, Manchester University metropolitan said that Eco campus is an environmental sustainability strategy, which focuses on the organization and learning for a sustainable future, which instills sustainability into the curriculum.

Respondent D, female students, majoring Biology, Faculty of Mathematics and Science, on 6th semester

“.... can called eco campus because have a lot of trees .. “

Respondents E, male, 6th semester, majoring Phisic Education, Faculty of Education

“”... a lot of trees, make university called eco campus...”” “

Respondent F, female students, 6th semester, Faculty of Nursing

“....there are alot of big trees, so it called eco campus.....”

Table 2.The Knowledge of Eco Campus, Feb 2017

Variable	N	%
Knowledge		
• Term of Eco Campus		
Yes	134	83,8%
No	26	16,2%
Total	160	100
• The Sustainable environment on Eco Campus		
Yes	26	16,2%
No	134	83,8%
Total	160	100
• Eco Campus information on Lecture Class		
Yes	50%	31,3%
No	110%	68,8%
Total	160	100

Source. Author

3. The Attitude Toward Eco Campus

Attitudes of respondents were analyzed by three variables containing fifteen questions. Analysis of the fifteen questions of question items, indicating that most

respondents had negative attitudes about campus eco (48.1%), positive attitude 26.9% and neutral 25%. (Table 3).

The environmental information. There were 69.4% of respondents who agreed with the socialization of eco campus concept, and the existence of eco campus media (83.1%). There were 46.9% of respondents agreed with the existence of public transportation in the campus and most respondents (77.5%) agreed with the application of green friendly behaviour.

The energy efficiency. Respondents agreed with the efficiency of electricity on campus (51.3%), efficient water usage (61.3%), the using of environmentally friendly alternative energy (55%), the using of local or environmentally friendly material in construction (62.5 %), the using of solar energy for lighting (60.6%), and 40% of respondents did not use groundwater (wellbore) for on-campus activities.

Environmental education. Many respondents disagreed about the need for eco-campus-related education for the students, staff and the surrounding community (47.5%), they said that environmental education should focus only for students rather than for staff and surrounding communities. Many respondents did not agree to be an environmental event initiator (47.5,%), but agreed to support eco campus activities if it would be implemented on campus.

Tabel 3. The Attitude towards Eco Campus, Feb. 2017

No.	Attitude	n	%
1.	Positif	43	26,9
2.	Neutral	40	25
3.	Negatif	77	48,1
Total		160	100

Source. author

4. The Behavior Toward Eco Campus

The concept of eco campus should be implemented on the behaviour of higher students. The data showed that there were 56.9% of respondents had less implementation

of eco campus framework, there were 40,6% of respondents behaved quite well and only 2.5% of respondents had good behaviour in applying eco campus. (Table 4).

The environmental information.

Environmental issues, such as global warming, climate change is a global issue. Higher education institutions are strategic institutions to participate in controlling global issues and environmental issues. There were 39.4% of respondents who barely got information about the concept of eco campus among students, there were 43.8% of respondents never accessed environmental media in campus and 40% of respondents barely got information from the environmental media on campus. 63.1% of respondents never used public transportation in the campus environment. Students still used fossil fuels. 83.1% of respondents never used environmentally friendly transportation and seldom behaved in an environmentally friendly manner in campus environment (39.4%).

The energy efficiency.

Most of the respondents stated they had never done energy efficiency before, they did not use electric energy efficiently (56.5%), did not use water efficiently (40.6%), did not use paper efficiently (56.9%), did not use a more environmentally friendly alternative as energy (55%). The using of environmentally friendly materials for building construction had not considered by the campus environment (55%), had not really use sunlight in indoor activities (53.8%), however, they did not use underground water for on-campus activities anymore (44 , 4%) because most of them use surface water wells or dug wells.

Environmental Education. Students said they had never educated each other related to the implementation of eco campus, both with staff and the surrounding community (47.5%). Most of the respondents rarely act as initiators in the on-campus environmental events (40%) and there were 53.8% correspondents that would support the implementation of student behaviour for environmental insight.

Tabel 4. The Behavior towards Eco Campus, Feb. 2017

No	Behavior	Amount	%
1.	Good	4	2,5
2.	Enough	65	40,6
3.	Less	91	56,9
	Total	160	100

Source. author

Student perceptions related to the concept of eco campus are analyzed on students' knowledge, attitudes and behaviour. The data shows that most respondents know the term of eco campus (83.8%), but not about sustainability environment, most of them have negative attitude (48.1%) and behave less (56,9%).

Eco campus is a concept that emphasizes sustainability environmental development. As stated by Katillute (2016) that the concept of eco campus needs to be emphasized on the sustainability of strategies in teaching, university research processes, impacts on society, students' perceptions of the campus eco and its relation to sustainable university concepts.

Knowledge and attitudes of a person have contributed to their behaviour. Good knowledge is important, because there is a significant relationship between knowledge, awareness and attitudes toward environmental behaviour (Hasan et al, 2011). Other studies have shown that students with higher knowledge will have good environmentally friendly attitudes (Bradly and Zajicek, 1999). In this study, respondents knew about the term eco campus (83.8%) but they still do not understand about the concept of sustainability environment which is the basic concept in applying eco campus. Respondents just assume that eco campus is a campus that has many plants, they do not assume that this concept is related to sustainability environmental development.

The results showed that respondents' attitudes were negative (48.1%), positive (26.9%) and neutral (25%) and less behaviour (56,9%), enough (40,6%) and Good (2,5 %). Negative attitudes might possibly be caused by knowledge related to sustainability environment are low. The campus media has the high potential to be a major source of

information in improving students' knowledge of environment sustainability. However, respondents still do not use it to get information about environment sustainability.

There were 83.1% of respondents agreed that students would had a good knowledge of the concept of eco campus when they read the eco campus media regularly, but there were 43.8% of respondents never read the campus media which had spread across campus. Eco campus media can publish news about the concept of eco campus that students can read, then students can follow the latest environmental issues. The social media information will affect credibility of resources and cognitive elaboration (Wasterman and Patric RS, 2013).

Many respondents said they never used public transportation on campus. Using public transportation can reduce greenhouse gases, because this can limit vehicle emissions. Campus areas should be free of air pollution that affects the greenhouse gases. Vehicle emissions are a source of air pollution (R. Zhou et al, 2014). As Hoglund and Jarkko (1999) mentioned that traffic conditions contribute to vehicle emissions. Energy efficiency is an important variable in maintaining sustainability environment, including realizing eco campus concepts.

The concept of eco campus is not just focus on the students. Eco campus concept is a system that integrates all of University components, including staff and educate people around the campus on environmental sustainability. Students as environmental event initiators are characterized by eco-campus students in higher education, but the data indicated that respondents' attitudes do not agree to be an environmental initiator because they do not have the time to do it. However, respondents agreed to support environmental events. This is a positive point that respondents still put their attention toward the environmental events. Most respondents (40%) said that they barely become initiators for environmental events because they were too busy. Therefore, global environmental issues such as global warming and environmental sustainability should be included in the curriculum, hence it can encourage students to be involved in the event environment and have the participation in it.

A person's behaviour is influenced by many factors. Attitudes affect one's behaviour (Sun et al, 2015). The positive attitude of respondents toward eco campus showed that respondents had the good potential to behave in an environmentally friendly manner. This potential must continue to be developed for the sake of the realization of

environmentally friendly behaviour through various methods. Previous research had shown that environmental sustainability is not a knowledge gap, but a commitment gap (Emanuel, 2001). Therefore, the commitment from all elements from university is necessary to bring eco campus concepts into reality. The university, students, staff must have a commitment to bring the vision of eco campus.

Sometimes, there would be constrict for the university to provide support facilities such as covered walkways, bicycle paths, optimum lighting and landscaping in a controlled setting throughout the campus (Razak et al, 2012), but that is not a major issue if all elements have the same commitment to bring out the eco campus concepts. The Increasing of students' knowledge, attitudes and behaviours are the top priority in the establishment of character eco campus for students.

The application of eco campus has many benefits. Campus will be a convinient place to study. Prior research had shown campuses which pay attention to environmental sustainability can improve quality of life (Hipp et al, 2015). And students who study in green campus feel more comfortable and have better sigs perceived quality of life than non green campus university (Tivaeattanachai and R Hollmann, 2016). EcoCampus can be achieved if supported by all elements of campus (R. Hussin, 2015). As the result of research of Jamian (2006) conducting private and public university research showed that norm and Environmental sustainability on campus is the responsibility of academicians and students to reduce global warming in the future.

CONCLUSION

There were 70,6% female and 29,4% male respondents. The most of the respondents (51,8%) were on the 8th semester (have been 4 years in the University). Data showed that 83,8% respondents know the term of eco campus, although didnt understand completely why the campus called eco campus. They just knew that the term of eco campus was the national award for the school which can be called eco school. There were 68,8 % of respondents said that lecturer never gave the information abaut the eco campus when they were studying in the class. Most students still have negatif attitude (48,1%) and less behaviour (56,9%) toward eco campus. Developing sustainable environment should be educated continously to the higher students to reach the eco campus sustainability to reduce the global warming.

REFERENCES

- Amin L, Zurina Mahadi, Rozita Ibrahim (2012). *The Effectiveness of the 'Environment & Health' Course in Increasing Students' Awareness & Knowledge on Environmental Health Issues*. Procedia - Social and Behavioral Sciences. Volume 59 Pages 77-84. <http://www.sciencedirect.com/science/article/pii/S1877042812036890>
- Arcury TA, Susan J. Scollay, Timothy P. Johnson. (1987) Sex differences in environmental concern and knowledge: The case of acid rain. *Sex Roles*, Volume 16, Issue 9, pp 463–472
- Bhatt R. (2012). Causees and consequences of global warming. International Journal of Life Sciences Biotechnology and Pharma Research. Vol 1, Issue 1. 20112. www.ijlbpr.com
- Bradly JC , TM , J.M .Zajicek. (1999). Relationship between environmental knowledge and Environmental Attitude of high School Students. *The Journal of Environmental Education*. Vol 30, issue 3. www.tandfonline.com/doi/abs/10.1080/00958969909601873
- Climate Change (2014). Synthesis Report Summary for Policymakers. www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_Final_SPM.pdf
- Daniel, (2016). Eco-Schools Programme. <http://en.unesco.org/greencitizens/stories/eco-schools-programme>.
- Esa, N 2010. Environmental knowledge, attitude and practices of student teachers. *International Research in Geographical and Environmental Education*. Vol 19, 2010. Issue 1. www.tandfonline.com
- Emanuel, RJ.N Adams(2001). College students`perception of campus sustainability. *International journal of sustainability in higher education*, vol 12.issue :1pp.79-92
- Hasan A et al. The level of environmental knowledge awareseess, attitudes and practice among UKM , 2011. tree.utm.my/.../THE-LEVEL-OF-ENVIRONMENTAL-KNOWLEDGE-AWARENES

- Hindle J, 2016. MANCHESTER MET FIRST TO ACHIEVE ISO 14001:2015.
<https://www.nqa.com/en-gb/resources/news/manchester-met>.
- Hipp J.A et.al. The relationship between perceived greenness and perceived restorativeness of university campuses and students reported quality of life. Environment and behaviour. Agust, 2015.
http://journals.sagepub.com/doi/abs/10.1177/0013916515598200?legid=sp_eab%3B001391651559820v1&patientinform-links=yes&
- Hoglund PG and Jarkko Niittymäki. Estimating Vehicle Emissions and Air Pollution related to Driving Patterns and Traffic Calming. Paper for the Conference "Urban Transport Systems", Lund, Sweden, 1999-06-07--08. The following abstract is related to Topic 1 (thesis 1) "Environment and energy", "Methods for calculating and measuring effects, measures".
www.lth.se/fileadmin/tft/dok/KFBkonf/1HoglundNiitymeki.PDF
- Hussin R., and Velan Kunjuraman. Exploring strategies for sustainable 'ecocampus': The experience of Universiti Malaysia Sabah. GEOGRAFIA OnlineTM Malaysian Journal of Society and Space 11 issue 3 (84 - 96) 84. 2015, ISSN 2180-2491. www.ukm.my/geografia/images/upload/9x.geografia-mac15-velan-edam1.pdf
- Jamian N. F, Siohong Tih. Managing a green campus: Motivation for student recycling behavior. Journal of marketing and consumer behavior, vol 1, issue 1 (2006) 62-75
- Katiliute E and Jurgis Kazimieras S. 2016. Green Campus as an Integral Part of Sustainable University: Students perception.
link.springer.com/chapter/10.1007/978-3-319-47889-0_24/fulltext.html
- McCright AM. (2010). The effects of gender on climate change knowledge and concern in the American public. Popul Environ (2010) 32:66–87.
news.msu.edu/media/documents/2010/.../1a32cabc-4edc-45f4-aeccd731c6028db4.p

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Portier C J. (2010) *A Human Health Perspective On Climate Change*. A Report Outlining the Research Needs on the Human Health Effects of Climate Change. www.niehs.nih.gov/health/ahuman_health_perspective

Razak MZA., Nutaberta, A.N Handriyant, 2012. Reseach Journal of Environment and Earth Science 4(6) :646-657, 2012. A Study of students `perception on sustainability of campus design: A Case study of four research universities campus in malaysian.

Ring MJ, et al. (2012). Cause of global warming observed since the 19th Century. Atmospheric and Climate Sciences, , 2,401-415. www.file.scrip.org/pdf/ACS20120400002_59142760.pdf

Reimers FM ,et al. Empowering Teaching for Participatory Citizenship: Evaluating the Impact of Alternative Civic Education Pedagogies on Civic Attitudes, Knowledge and Skills of Eight-grade Students in Mexico. Journal of Social Science Education Volume 13, Number 4, Winter 2014

Sali G, Ozlem Korukcu, Aysel Koksal Akyol. Research on the Environmental Knowledge and Environmental Awareness of Preschool Teachers. International J. Soc. Sci. & Education 2015 Vol.5 Issue 3, ISSN: 2223-4934 E. 454-464

Sun G et al. Understanding walking behavior among university students using theory of planned behavior. International journal of Environmental research and public health. 2015, 12, 13806; doi:10.3390/ijerph121113794. www.mdpi.com/journal / ijerph

Trends G. UNEP. (2010) Waste an Climate Change : Global Trends and Strategy framework. www.unej.or.jp/ietc/publication/spc/waste&climatechange/waste&climatechange.pdf

Tiyarattanachai R and Hollmann NM. 2016. Green Campus initiative and its impacts on quality of life of stakeholders in Green and Non-Green Campus universities.
<https://www.ncbi.nlm.nih.gov>.

Westerman D, Patric R. Spence, Brandon Van Der Heide. 2013. media as Information Source: Recency of Updates and Credibility of Information
<http://onlinelibrary.wiley.com/doi/10.1111/jcc4.12041/full>

Yun FJ, (2011). Global warming, human induced carbon emissions, and their uncertainties. Sci China Earth Sci
scienceandpublicpolicy.org/images/stories/papers/reprint/human_induced.pdf

Zhou R, Wang S, Shi C, Wang W, Zhao H, Liu R, et al. (2014) Study on the Traffic Air Pollution inside and outside a Road Tunnel in Shanghai, China. PLoS ONE 9(11): e112195. <https://doi.org/10.1371/journal.pone.0112195>