

# Environmental awareness and behavior of college students in regards to the environment in urban area

Zarah Beby Ningrum<sup>1</sup> and Herdis Herdiansyah<sup>1\*</sup>

<sup>1</sup>School of Environmental Science, Universitas Indonesia, 10430, Salemba, Indonesia.

**Abstract.** College students as a community whose behavior and willingness to adopt environmentally sound policies will become a dominant force for sustainable environment in urban area. This research aimed to analyze the environmental awareness of college students, report their environmental behavior, and analyze the correlation of some factors towards environmental awareness and behavior in a sample of 150 college students in one university in Jakarta. Previous studies have shown that demographic characteristics influence environmental awareness and behavior. The method applied was quantitative methods. For this purpose, a research instrument in the form of questionnaire were designed and tested on college students. Data was processed by Spearman test with the help of SPSS. The results show that the level of environmental awareness and behaviors is 'good' among the respondents irrespective of gender difference, however there lies a difference between genders in practice level. This research concludes that college students have good environmental awareness and behavior. The college students show them by turning off computers when are not being used to save energy, reducing single-use-plastic use, using alternative for plastic such as paper/cloth bag, and participating in environmental programs.

## 1 Introduction

Environmental damage has become a major problem because the environment continues to be used for human prosperity without adhering to the principle of sustainability. Environmental damage is mostly caused by human behavior [1, 2]. Understanding how resource inputs, waste accumulation in urban is crucial in sustainable development [3] of which can be explained in Life Cycle Assessment (LCA). LCA framework offers a comprehensive method to evaluate complex system such as urban areas. In accordance with human behavior, it is elaborated in –for example- consumers' practical thinking and impact on actual environmentally conscious purchase [4] of the entire LCA. Thus, LCA is a metric to achieve sustainable development goals. Currently, Indonesia has become one of countries that contribute to environmental damage because of the human behavior, especially in urban areas. Various environmental problems that afflict urban areas can be in

---

\* Corresponding author: [herdis@ui.ac.id](mailto:herdis@ui.ac.id)

the form of water supply, sewage, solid waste, energy, loss of green and natural spaces, urban sprawl, land contamination, traffic, transport, water pollution and noise [3], and they appear in almost all Indonesia's urban areas, including Jakarta.

Jakarta has high index of river water pollution, and its sea is heavily polluted that leads to the decreasing number of fish in Jakarta's bay [6]. For that reason, urban environmental problems need to be aware by all elements of society because protecting the environment is important for human life in the future [9]. One way to increase awareness and instill the principles of sustainability to protect the environment is through education.

Environmental education can help create awareness and attitudes to deal with environmental issues, whilst curbing the negative role of human actions on the environment [8, 9]. In addition, if education is integrated into the principle of sustainable development, it can ultimately encourage changes in behavior towards the environment [10]. In this case higher education also has an important role since universities educate young generations expected to be the future leaders in many different areas [11] and prominent among a growing group that recognizes the need to protect environment in homes, businesses, and cities [12]. Universities must prepare graduates from various departments to be able to participate in the framework of protecting the environment by holding sustainable principles [13].

Therefore university has the responsibility to encourage the awareness, attitudes and environment behavior of students [11]. There are limited studies in Indonesia that focus on environmental awareness and environmental behavior in college students, especially in urban areas. For this reason, researchers are interested in analyzing environmental awareness and environmental behavior in urban students and analyzing the relationship of several factors that can distinguish environmental awareness and environmental behavior among college students. Factors that are more widely examined from previous literature are demographic characteristics. Demographic characteristics can have an effect on college students as a community whose behavior and willingness to adopt environmentally sound policies will become the dominant force for environmental.

Environmental awareness can be defined as knowing the impact of human behavior on the environment [14]. Li and Chen [15] consider environmental awareness as the formation of cognition in memory through the process of sensory stimulation, notice, identification, and perception. While environmental behavior refers to human activities to protect the environment [16], environmental awareness refers to people's understanding and awareness of the environment and the related issues (such as waste disposal, noise and air pollution, water pollution, soil pollution, ozone layer destruction, greenhouse effect, and acid rain) [17]. Based on Kaiser et al. [18], environmental behavior has six (6) indicators, namely: (1) energy savings, (2) mobility and transportation, (3) prevention of waste, (4) recycling, (5) consumption, (6) behavior that aims to conserve nature. These six indicators can be used to measure how 'good' or 'bad' the environmental behavior of each individual is.

The existing environmental behavior must emerge without the need to be encouraged by the surrounding conditions and firmness of the policy alone. However, this behavior should emerge from the intrapersonal values of the community including college students. As college students with sufficient ability and knowledge can be the key to shaping sustainability behavior and environmental problems and finding possible solutions to overcome current problems [19].

Higher education is an educational tool that plays a role in directing college students to have social awareness effectively [20]. The Environmental Management System has been implemented in several European universities as a way of supporting sustainable campus programs [21]. This has also been applied by several university in Indonesia, e.g 'green campus' movement. Sadly, this management system has yet to be implemented properly in

Indonesia. Hence, better implementation needs to be made since it could support students and the staffs to perform good environmental behavior.

## **2 Method**

This research was conducted with quantitative methods. Data were obtained quantitatively through questionnaire. The survey data was conducted by collecting 150 students participated as subjects from one university in Jakarta, Indonesia. Students were chosen with purposive sampling with 20-25 years of age for the consideration of that is the early adult age phase, as a criteria from Hurlock [22]. Before performing the analysis, data were collected for validation and reliability of the questionnaire. Questionnaires that have been proven valid and reliable were then used as a variable measurement tool.

This research's questionnaire has three parts. Part one provides backgrounds on respondents regarding gender, level of education, and origin (urban or rural). The second part is about the students' environmental awareness of environmental issues in urban area, while the third part measures the environmental behavior of the students in the collage and their residence. Some items for the survey were mainly derived from Kaiser et al. [18] and Cotton [23]. Meanwhile, other statements were designed in accordance with the actual situation such as the current conditions.

The validity and reliability test were firstly carried out to instruments that will be used as a measuring tool. The reliability and the validity test uses Cronbach Alpha test and Product Moment. The test yields a Cronbach alpha coefficient of 0.873 which shows valid. Instruments created by using a Likert scale and it has four alternative answers; Strongly Agree, Agree, Strongly Disagree, and Disagree. This research does not include the Neutral scale (N) to avoid data collecting to the middle in statistical calculations, and with consideration that neutral answers have a tendency toward either category agree or disagree or not really neutral. Furthermore, the data analysis was done with the Spearmann test and processed by SPSS (Statistical Package for Social Sciences) program version 22.00. This analysis was done to obtain the value of effect to variables.

## **3 Discussion**

### **3.1 Students' general profile**

This study took personal data from students at the beginning of the questionnaire in the form of gender, level of education, and place of residence from students studying at the place (Table 1). Students selected as samples have an educational background consisting of bachelor and master. Most of the students come from urban areas (112 people) which assumption that said students should be more familiar with the urban environment in longer periods than those from rural areas.

### **3.2 Environmental awareness**

The results showed that 57% of respondents had high environmental awareness. Some students admitted that it was important to have environmental awareness, especially because urban area has been polluted by the human. In addition, 80% of respondents claimed that they are not using private vehicles to reduce air pollution. Some students also claimed that saving electricity was one of the important things to protect the environment.

**Table 1.** Students' general profile.

Variable	Category	Frequency	Percent (%)
Gender	Male	75	50
	Female	75	50
Education (last obtained degree)	Bachelor	67	44,7
	Master	83	55,4
Origin	Urban	112	74,7
	Rural	45	25,3

Furthermore, in this study also conducted correlation analysis between environmental awareness with demographic components (gender, last education, and origin). The results of the analysis showed a positive relationship between environmental awareness with gender and origin (Table 2), but there was no relationship between environmental awareness with the level of education. The results also found that female students showed a higher level of awareness than male students. Students from rural areas showed a higher sense of awareness than students from urban areas, this is in line with the research of Berungeur et al. [24]. The results showed no significant differences in the level of education.

**Table 2.** The correlation of gender and origin with environmental awareness.

Variable X	Variable Y	Correlation "r"	p-value
Gender	Environmental Awareness	0.634	0.002
Origin	Environmental Awareness	0.532	0.003

### 3.3 Environmental behavior

The next step in this study was to report environmental behavior and analyze its relationship with demographic component (gender, last education, and origin). Based on the results, the research found that students already have good behavior towards the environment. Students show it in daily activities at campus and home. The results also showed that students showed environmental behavior by: turning off their computers when they are not being used to save energy, reducing single-use-plastic use, and using alternative for plastic such as paper/cloth bag. Some students also like to participate in activities related to environmental protection, e.g volunteering in cleaning trash at campus area.

The results of the correlation analysis were in line with the environmental awareness variable, that is only gender and origin have relationship with environmental behavior variables (Table 3). In female students ( $\rho = 0.97$ ) environmental behavior significantly also showed a higher level than male students ( $\rho = 0.70$ ). In addition, the difference significantly shows that students who come from urban areas have better environmental behavior than those from rural areas. The results showed there were no significant differences in the level of education.

**Table 3.** The correlation of gender and origin with environmental behavior.

Variable X	Variable Y	Correlation "r"	p-value
Gender	Environmental Behavior	0.850	0.005
Origin	Environmental Behavior	0.344	0.000

Structurally, students must be encouraged to be able to behave environmentally. University needs to develop infrastructure, facilities and systems that friendly to environmental. In that way, college students could contribute in order to solve the environmental problems and having awareness and positive behavior towards environmental.

## 4 Conclusion

This study concludes that environmental awareness and behavior among students is good. From the results of the correlation shows that there is a relationship between gender and origin of students with the environmental awareness and behavior. The college students feel that protecting the environment from damage is important and should be performed in their daily activities. The college students show actions to protect the environment by turning off computers after being as a form of energy saving, reducing single-use-plastic use, using alternatives for plastic such as paper/cloth bag, and participating in environmental programs.

## Acknowledgement

This research is funded by the Grant of Indexed International Publication for Final Project of Students *Publikasi Terindeks Internasional untuk Tugas Akhir Mahasiswa* (PITTA) Universitas Indonesia 2018 with contract number 2577/UN.R3.1/HKP.05.00/2018.

## References

1. B. Thapa, *Env. Edu. Res.* **7**, 39 (2001)
2. K. Watson, C.M. Halse, *Asia Pasific Edu. Review* **6**, 1 (2005)
3. C. Kennedy, J. Cuddihy, J. Engel-Yan, *J. Ind. Eco.* **11**, 2 (2007)
4. S.A. Wagner, *Understanding Green Consumer Behaviour – A Qualitative Cognitive Approach* (Routledge, Taylor and Francis Group, London, 2003)
5. UNEP. Retrieved from: [www.unep.or.jp/ietc/Issues/Urban.asp](http://www.unep.or.jp/ietc/Issues/Urban.asp) (2014)
6. A.S. Suryani, *Info Singkat Kesejahteraan Sos.* **4**, 24. (2015)
7. S. Onder, *J. Appl. Sci.* **6**, 2 (2006)
8. J. Bradley, T. Waliczek, J. Zajicek, *J. Env. Ed.* **30**, 3 (1999)
9. M.D. Salequzzman, L. Stocker, *Int. J. Sus. Higher Ed.* **2**, 2 (2001)
10. UNESCO, Retrieved from: <http://unesdoc.unesco.org/images/0014/001416/141629e.pdf> (2005)
11. P.B. Corcoran, K.E. Walker, & E. Wals, *J. Env. Ed, Res.* **10**, 7 (2004)
12. A. Leiserowitz, *Risk An.* **25**, 6, 1433–1442. (2005)

from:

13. M. Bozoglu, A. Bilgic, K.T. Bakiye, & Y.A. Fresenius, *Env. Bull.* **25**, 4, 1243-1257 (2016)
14. A. Kollmus, Agyeman, *J. Env. Ed. Res.* **8**, 3 (2002)
15. D. Li, Chen, *J. Env. Education Res.* **21**, 4 (2014)
16. L. Fu, Y. Zhang, X. Xiong, & Y. Bai, *EURASIA J. Math. Sci. Tech. Ed.* **14**, 1 (2017)
17. J.M. Brehma, B.W. Eisenhauerb, & R.C. Stedman, *Soc. N. Res: Int. J.* **26**, 5 (2013)
18. F.G. Kaiser, B. Oerke, F.X. Bogner, *Dev. In. Ad* **27** (2007)
19. M. Laroche, J. Bergeron, G. Barbaro-Forleo, *J. Con. M.* **18**, 6 (2001)
20. D.J. Frank, J.W. Meyer, *Theor. Soc.* **36**, 287 (2007).
21. A. Disterheft, S.S.F. Caeiro, M.R. Ramos, U.M. Azeiteiro, *J. Cl. Prod.* **61**, 13 (2012)
22. E. Hurlock, *Developmental Psychology (translation)* (Erlangga, Jakarta, 1999)
23. D. Cotton, C. Shiel, A. Paco, *J. Cl. Prod.* **129**, 586 (2016)
24. J. Berenguer, J.A. Corraliza, R. Martin, *Eu. J. Psy. Ass.* **21**, 2 (2005)