STUDENTS' ATTITUDE TO CONSERVE MEDICINAL PLANTS AND ENVIRONMENT IN CIPANAS: PROFILE AND COMPARATIVE ANALYSIS

Ilmi Zajuli Ichsan, Diana Vivanti Sigit, Rizhal Hendi Ristanto, Ilena Amalia Luthfi, Dewi Robiatun Muharomah, and Muhammad Efendi
Universitas Negeri Jakarta and Cibodas Botanical Garden,
Lembaga Ilmu Pengetahuan Indonesia (LIPI), Indonesia
ilmi.zajuli@outlook.co.id

Abstract
Students' awareness in conserving medicinal plants and the environment is still the focus of discussion among educators. Especially in students at vocational school levels who do not receive comprehensive Biology learning. The purpose of this study was to measure students' attitudes in conserving medicinal plants and the environment. The research method used is descriptive method with survey techniques. The study was conducted in March-April 2019 at Cipanas State 1 Vocational High School, Cianjur, West Java, Indonesia. The sample used was selected by simple random sampling, obtained as many as 104 students divided into 44 male and 60 female students. The results showed that the average score of students' attitudes was 76.47. The indicator with the highest score is related to the program of planting medicinal plants in the home yard. While the lowest indicators relate to conservation policies for medicinal plants and the environment. This is because the information received by students in terms of conservation policy is still need to be improve. The conclusion of this study is that the scores of student attitudes regarding the conservation of medicinal plants and the environment are good, but in some indicators still need to be improved.

Keywords: attitude, medicinal plants, vocational school

Introduction

Public awareness in preserving the environment is still the focus of the problem that must be solved. Especially in terms of preserving plants and their habitat. The development of the city carried out, sometimes ignores the sustainability of these plants. This results in fewer green areas in a city. That is what makes people increasingly use the limited land to plant in their homes (Han & Yoon, 2015; Lazaridou, Michailidis, & Trigkas, 2018; Seebauer, Fleiß, & Schweighart, 2017).

One type of plant that is often planted in home gardens is medicinal plants. Usually, people plant ginger, turmeric, and other spices, but sometimes it is used

as a medicinal plant. This is usually done by people with adult age. Young people, in this case, students, are usually not very familiar with the benefits of medicinal plants. Moreover, these students usually live far from rural areas (Cooper, Larson, Dayer, Stedman, & Decker, 2015; Spinola, 2016; Takahashi & Selfa, 2015).

Schools, in this case, play a role in conveying information about the benefits of these medicinal plants to students. Topics regarding medicinal plants and their environment can be inserted through science learning. Information about medicinal plants, for students who attend high school senior level, may be more easily delivered. That is because at the Senior High School level (SMA), there is a face-to-face time to discuss plant morphology in Biology learning. Unlike students at vocational school (SMK) levels, they are very little at getting Biology material. The knowledge possessed by vocational school students is less likely than senior high school students (Gündüz, Alemdağ, Yaşar, & Erdem, 2016; Pangma, Tayraukham, & Nuangchalerm, 2009).

This is what underlies the measurement of student attitudes. This is because attitudes are related to knowledge. The attitude of students is also influenced by various factors, one of which is location or geographical location. Students who live in areas that are still relatively rural will have a better attitude than students who live in cities in conserve nature. As for schools that can be said to be still in rural areas if it is still easy to find paddy fields or plantations around the school (Avan, Aydinli, Bakar, & Alboga, 2011; Choudri, Baawain, Al-Sidairi, Al-Nadabi, & Al-Zeidi, 2016).

Previous studies conducted in the world on attitudes usually focused only on students in senior high school (Timur, Timur, & Yilmaz, 2013; Ugulu, Sahin, & Baslar, 2013). Besides that, it is usually also measured people's attitudes towards the environment (Braun, Cottrell, & Dierkes, 2018; Yeow, Dean, & Tucker, 2014). This makes this research give a novelty because in this study, a profile of students' attitudes in vocational school will be presented in terms of conserving medicinal plants and the environment. Based on the description above, the purpose of this study is to measure the attitudes of students at vocational school level in conserving medicinal plants and the environment.

Method

This study used descriptive method with survey technique, carried out in March-April 2019. The research location was at Cipanas State 1 Vocational High School (SMKN 1 Cipanas), Cianjur, West Java, Indonesia. This school was chosen because it is a school located in rural areas and one of the favourite schools in the Cipanas area. Students were selected by simple random sampling, obtained as many as 104 students divided into 44 male and 60 female students. The indicator instrument attitude used is based on Sugandini, Rahatmawati, & Arundati (2018) with a few modifications and adjustments. The instrument points used are as many as ten items that have been declared valid and reliable. The instrument grid can be seen in table 1.

Table 1. Grid of attitude instruments

No	Indicator	Item
1	Plant medicinal plants in the yard	1,2*,3
2	Conservation of medicinal plants	4,5*, 6*
3	Using medicinal plants as an alternative to treatment	7,8,9*,10*

Note: *item with a negative statement

The answer options for each instrument consist of strongly agreeing, agreeing, not arguing, disagreeing, and strongly disagreeing. There are four items that contain negative statements. This is useful to see the consistency of answers from students.

Findings and Discussion

Based on the results of the research data has been obtained, such as the table below. In table 2, the average attitude score of students is reviewed from each item. Based on table 2, it can be seen that the item has the smallest score is on item 10. While the largest item is in item 7. The total score of students' attitudes is 76.47 (after being changed to a scale of 0-100). The details of the average score of each indicator can be seen in table 3.

Table 2. Average student attitude scores have seen from each item

No	Item	All Students (n=104)	Male (n=44)	Female (n=60)
1	I prefer if the home garden is planted with medicinal plants	4.15	4.05	4.23
2	Planting medicinal plants will make the yard narrow and dirty *	3.86	3.66	4.00
3	If there is an empty neighbor yard, I advise him to plant medicinal plants/herb	4.05	3.91	4.15
4	I feel happy when the officers have the authority to punish people who damage the protected medicinal plants	4.30	4.20	4.37
5	All medicinal plants do not need to be protected because they will grow by themselves *	3.84	3.73	3.92
6	Planting herbs/medicinal plants require special treatment, that is not easy *	2.71	2.70	2.72
7	Use medicinal plants are more environmentally friendly than chemical drugs	4.41	4.41	4.42
8	Consuming native Indonesian medicinal plants means indirectly participating in preserving the culture	4.27	4.11	4.38
9	It's better to use chemical drugs because the effect is faster *	3.64	3.30	3.90
10	Consuming medicinal plants is not easier than consuming chemical drugs *	2.75	2.66	2.82

Note: each item has a score range of 0-5; *item with a negative statement

Table 3. Average student attitude scores seen from each indicator

No	Indicator	All Students (n=104)	Male (n=44)	Female (n=60)
1	Supporting the program of planting medicinal plants in the yard of the house	4.02	3.87	4.13
2	Supporting conservation policies for medicinal plants	3.62	3.55	3.67
3	Encourage the use of medicinal plants as an alternative for treatment/therapy	3.77	3.62	3.88

Note: each indicator has a score range of 0-5

Based on table 3, it can be seen that the indicator with the lowest score is in the second indicator regarding supporting the conservation of medicinal plants. This is because many vocational school students do not understand the importance of conserving medicinal plants. This is due to the lack of information that they can relate to the conservation policy of medicinal plants. Biology teachers in vocational school in this case can actually convey various information about these medicinal plants to students through various teaching materials and learning media (Ali & Arif, 2019; Blaschke, 2014; Bower, 2016; Fitriani, Adisyahputra, & Komala, 2018; Hidayati, Pangestuti, & Prayitno, 2019; Yusop & Sumari, 2013; Zhou, Lee, & Sin, 2017).

For example, it is using learning media in the form of documentary films containing summaries of the impacts caused by forest destruction, including the impact on medicinal plants. This can be done because students in rural areas find it difficult to find examples of natural damage around them. In contrast to students in urban areas who are very easy to damage the environment. This is the cause of the indicator regarding supporting this conservation policy to be the lowest (Jose, Gamarra, & Toombs, 2017; Strange, Jellesmark, Bladt, Wilson, & Rahbek, 2011).

While the highest indicator is obtained in the first indicator, namely supporting the planting program of medicinal plants in the yard of the house and around their environment. This indicator is the highest because students who were sampled in this study were students who lived in rural areas. This resulted in farming activities still easy to do because there was still a lot of land available (McCarthy & Liu, 2017; Nwankwoala, 2015; Sangroya & Nayak, 2017). Students can plant their medicinal plants that are needed in the yard. But the interesting thing is that when viewed from gender, the female attitude score on this indicator is greater than the score on students with the male gender.

This is because female students are more likely to care for plants than male students. Besides that, it is also caused by the habits of female students who often use various medicinal plants for cooking. This makes them plant their medicinal plants more often. While male students cook less frequently using ingredients from medicinal plants. Gender differences do affect attitudes towards the environment (Chouhan, Bhatnagar, Suman, & Kaur, 2017; Keles, 2017; Price, Kares, Segovia, & Loyd, 2018; Raman, 2017).

Then when viewed from table 2, the score on item 10 has the lowest score. This is because many students do not understand how to treat or use medicinal plants properly and correctly. That makes them tend to be lazy to use medicinal plants compared to chemical drugs. Though to process various medicinal plants to be used to cure diseases is not difficult. This becomes an evaluation in Biology learning. The teacher can introduce in a class by demonstration in a procedure on how to process and use medicinal plants. The teacher can practice this in front of the class so students can find out (Fisher-Maltese & Zimmerman, 2015; Sever, Yurumezoglu, & Oguz-Unver, 2010; Srisumra, Nontamolee, & Srijamon, 2014).

The highest point is in item 7. This can happen because students feel that even though they cannot process and use it, they think that medicinal plants, in general, are better to use than chemical drugs. Of course, this is caused by many factors, such as the incessant advertising of herbal medicinal products on television. These advertisements are an indirect form of socialization regarding the advantages of medicinal plants compared to chemical drugs. In general, student attitudes are in a good category because they get an average score of 76.47. But of course, there must be improvements in the future, especially in terms of material delivery using instructional media by teachers. Students who are in the vocational school level must also master various developments in science. Precisely by understanding a lot of things about medicinal plants and the environment, these students will be able to make medicinal plants as a business field, for example, to become a producer of herbal medicines (Aguilar-Salinas, Ojeda-Benitez, Cruz-Sotelo, & Castro-Rodríguez, 2017; Miller, 2018).

Conclusions

Based on the results of the study obtained an average score of students' attitudes in the conservation of medicinal plants and the environment is 76.47, this can be interpreted the attitude of students is good. While the indicator with the highest score is obtained on the first indicator, namely supporting the program of planting medicinal plants in the home yard with an average score of 4.02. The lowest indicator is in the second indicator, which is about supporting the conservation of medicinal plants with an average score 3.62. This is because the provision of information in the class is still relatively small. Even though understanding the topic of medicinal plants and environment well will make students after graduating from the vocational school create business opportunities. Also, the recommendation of this study is that a book on medicinal plants and the environment needs to be developed for secondary school (Junior High School, Senior High School, and Vocational School).

References

Aguilar-Salinas, W., Ojeda-Benitez, S., Cruz-Sotelo, S., & Castro-Rodríguez, J. (2017). Model to evaluate pro-environmental consumer practices. *Environments, 4*(1), 1–15. https://doi.org/10.3390/environments4010011

Ali, A. & Arif, W. P. (2019). Developing of guidance for laboratory practice of Islamic science-integrated plant anatomy-physiology. B*iosfer: Jurnal Pendidikan Biologi, 12*(1). Retrieved from http://journal.unj.ac.id/unj/index.php/biosfer/article/view/10655

Avan, C., Aydinli, B., Bakar, F., & Alboga, Y. (2011). Preparing attitude scale to define students' attitudes about environment, recycling, plastic and plastic waste. *International Electronic Journal of Environmental Education, 1*(3), 179–191. Retrieved from
https://search.proquest.com/docview/1697487841?accountid=130632

Blaschke, L. M. (2014). Using social media to engage and develop the online learner in self-determined learning. *Research in Learning Technology, 22*(1), 1–23.

Bower, M. (2016). A framework for adaptive learning design in a framework for adaptive learning design in a web-conferencing environment. *Journal of Interactive Media in Education, 1*(11), 1–21. https://doi.org/10.5334/jime.406

Braun, T., Cottrell, R., & Dierkes, P. (2018). Fostering changes in attitude, knowledge and behavior: Demographic variation in environmental education effects. *Environmental Education Research, 24*(6), 899–920. https://doi.org/10.1080/13504622.2017.1343279

Choudri, B. S., Baawain, M., Al-Sidairi, A., Al-Nadabi, H., & Al-Zeidi, K. (2016). Perception, knowledge and attitude towards environmental issues and management among residents of Al-Suwaiq Wilayat, Sultanate of Oman. *International Journal of Sustainable Development and World Ecology, 23*(5), 433–440. https://doi.org/10.1080/13504509.2015.1136857

Chouhan, S., Bhatnagar, B., Suman, & Kaur, M. (2017). Assessment of environmental attitude of adolescent of Bikaner City. *Studies on Home and Community Science, 11*(1), 25–28.
https://doi.org/10.1080/09737189.2017.1336308

Cooper, C., Larson, L., Dayer, A., Stedman, R., & Decker, D. (2015). Are wildlife recreationists conservationists? Linking hunting, birdwatching, and pro-environmental behavior. *Journal of Wildlife Management, 79*(3), 446–457. https://doi.org/10.1002/jwmg.855

Fisher-Maltese, C. & Zimmerman, T. D. (2015). A garden-based approach to teaching life science produces shifts in students' attitudes toward the environment. I*nternational Journal of Environmental and Science Education, 10*(1), 51–66. https://doi.org/10.12973/ijese.2015.230a

Fitriani, U., Adisyahputra, A., & Komala, R. (2018). Eco-friendly website development in biology learning based on project activities on environmental pollution. *Biosfer: Jurnal Pendidikan Biologi, 11*(1), 32–46. https://doi.org/https://doi.org/10.21009/biosferjpb.11-1.4

Gündüz, A. Y., Alemdağ, E., Yaşar, S., & Erdem, M. (2016). Design of a problem-based online learning environment and evaluation of its effectiveness. *The Turkish Online Journal of Educational Technology, 15*(3), 49–57. https://doi.org/10.1017/CBO9781107415324.004

Han, H. & Yoon, H. J. (2015). Hotel customers' environmentally responsible behavioral intention: Impact of key constructs on decision in green

consumerism. *International Journal of Hospitality Management, 45*, 22–33. https://doi.org/10.1016/j.ijhm.2014.11.004

Hidayati, N., Pangestuti, A. A., & Prayitno, T. A. (2019). Edmodo mobile: Developing e-module biology cell for online learning community. Biosfer: *Jurnal Pendidikan Biologi, 12*(1). Retrieved from http://journal.unj.ac.id/unj/index.php/biosfer/article/view/10813

Jose, M., Gamarra, C., & Toombs, T. P. (2017). Thirty years of species conservation banking in the U.S.: Comparing policy to practice. *Biological Conservation, 214*, 6–12. https://doi.org/10.1016/j.biocon.2017.07.021

Keles, O. (2017). Investigation of pre-service science teachers' attitudes towards sustainable environmental education. *Higher Education Studies, 7*(3), 171. https://doi.org/10.5539/hes.v7n3p171

Lazaridou, D., Michailidis, A., & Trigkas, M. (2018). Socio-economic factors influencing farmers' willingness to undertake environmental responsibility. *Environmental Science and Pollution Research*, 1–10. https://doi.org/10.1007/s11356-018-2463-7

McCarthy, B. & Liu, H. B. (2017). Food waste and the "green" consumer. *Australasian Marketing Journal, 25*(2), 126–132. https://doi.org/10.1016/j.ausmj.2017.04.007

Miller, A. L. (2018). The role of creative coursework in skill development for university seniors. *Global Education Review, 5*(1), 88–107.

Nwankwoala, H. N. L. (2015). Causes of climate and environmental changes: The need for environmental-friendly education policy in Nigeria. *Journal of Education and Practice, 6*(30), 224–234.

Pangma, R., Tayraukham, S., & Nuangchalerm, P. (2009). Causal factors influencing adversity quotient of twelfth grade and third-year vocational students Lalomwittaya School, Phusingh District, Sisaket Province, 33140 Thailand Department of Educational Research and Development, Faculty of Education, Mahas. *Journal of Social Sciences, 5*(4), 466–470.

Price, C. A., Kares, F., Segovia, G., & Loyd, A. B. (2018). Staff matter: Gender differences in science, technology, engineering or math (STEM) career interest development in adolescent youth. *Applied Developmental Science*, 1–16. https://doi.org/10.1080/10888691.2017.1398090

Raman, R. A. (2017). Attitudes and behavior of Ajman University of Science and Technology students towards the environment. *IAFOR Journal of Education, 4*(1), 69–88. https://doi.org/10.22492/ije.4.1.04

Sangroya, D. & Nayak, J. K. (2017). Factors influencing buying behavior of green energy consumer. *Journal of Cleaner Production, 151*, 393–405. https://doi.org/10.1016/j.jclepro.2017.03.010

Seebauer, S., Fleiß, J., & Schweighart, M. (2017). A household is not a person: Consistency of pro-environmental behavior in adult couples and the accuracy of proxy-reports. *Environment and Behavior, 49*(6), 603–637. https://doi.org/10.1177/0013916516663796

Sever, S., Yurumezoglu, K., & Oguz-Unver, A. (2010). Comparison teaching strategies of videotaped and demonstration experiments in inquiry-based science education. P*rocedia - Social and Behavioral Sciences, 2*(2), 5619–5624. https://doi.org/10.1016/j.sbspro.2010.03.916

Spinola, H. (2016). Environmental literacy in Madeira Island (Portugal): The influence of Demographic Variables. *International Electronic Journal of Environmental Education, 6*(2), 92–107. https://doi.org/10.18497/iejee-green.52941

Srisumra, J., Nontamolee, W., & Srijamon, S. (2014). Cooperative learning activities in arts of Prathom Suksa 4 Students Khon Kaen University Demonstration School Primary Section (Modindaeng). P*rocedia - Social and Behavioral Sciences, 112*, 677–682. https://doi.org/10.1016/j.sbspro.2014.01.1217

Strange, N., Jellesmark, B., Bladt, J., Wilson, K. A., & Rahbek, C. (2011). Conservation policies and planning under climate change. *Biological Conservation, 144*(12), 2968–2977. https://doi.org/10.1016/j.biocon.2011.08.022

Sugandini, D., Rahatmawati, I., & Arundati, R. (2018). Environmental attitude on the adoption decision mangrove conservation: An empirical study on communities in Special Region of Yogyakarta, Indonesia. *Review of Integrative Business and Economics Research, 7*(1), 266–275.

Takahashi, B. & Selfa, T. (2015). Predictors of pro-environmental behavior in rural American communities. *Environment and Behavior, 47*(8), 856–876. https://doi.org/10.1177/0013916514521208

Timur, S., Timur, B., & Yilmaz, S. (2013). Determining primary school candidate teachers' levels of environmental literacy. *Anthropologist, 16*(1–2), 57–67. https://doi.org/10.1080/09720073.2013.11891335

Ugulu, I., Sahin, M., & Baslar, S. (2013). High school students' environmental attitude: Scale development and validation. *International Journal of Educational Sciences, 5*(4), 415–424. https://doi.org/10.1080/09751122.2013.11890103

Yeow, P., Dean, A., & Tucker, D. (2014). Bags for life: The embedding of ethical consumerism. J*ournal of Business Ethics, 125*(1), 87–99. https://doi.org/10.1007/s10551-013-1900-2

Yusop, F. D. & Sumari, M. (2013). The use of social media technologies among Malaysian youth. P*rocedia - Social and Behavioral Sciences, 103*, 1204–1209. https://doi.org/10.1016/j.sbspro.2013.10.448

Zhou, Q., Lee, C. S., & Sin, S. C. J. (2017). Using social media in formal learning: Investigating learning strategies and satisfaction. P*roceedings of the Association for Information Science and Technology, 54*(1), 472–482. https://doi.org/10.1002/pra2.2017.14505401051