

PAPER • OPEN ACCESS

Pondok community participation in sustainable solid waste management practices

To cite this article: N A Barudin *et al* 2021 *IOP Conf. Ser.: Earth Environ. Sci.* **842** 012049

View the [article online](#) for updates and enhancements.

You may also like

- [Integrated space in the traditional Pondok school education system - A case study in Pattani, Thailand.](#)
Mohd Jaki Bin Mamat and Md. Baharuddin Abdul Rahman
- [Developing a Sustainable Solid Waste Management System Using Analytical Hierarchy Process \(AHP\) Method at Pondok Institutions in Kelantan](#)
S N S S Azahari, M A Abas, H Hussin et al.
- [Tidal inundation \("Rob"\) investigation using time series of high resolution satellite image data and from instiutu measurements along northern coast of Java \(Pantura\)](#)
Heri Andreas, Usriyah, Hasanuddin Zainal Abidin et al.



The Electrochemical Society
Advancing solid state & electrochemical science & technology

241st ECS Meeting

May 29 – June 2, 2022 Vancouver • BC • Canada

Extended abstract submission deadline: Dec 17, 2021

Connect. Engage. Champion. Empower. Accelerate.
Move science forward



Submit your abstract



Pondok community participation in sustainable solid waste management practices

N A Barudin¹, M A Abas^{1,*}, N H Hassin¹, K A Hambali¹, M F A Karim¹, N Fitriani², M R M Yusoo³ and S T Wee⁴

¹Faculty of Earth Science, Universiti Malaysia Kelantan, 17600 Jeli, Malaysia

²Faculty of Mathematics and Natural Sciences, Universiti Padjadjaran, 45363 Sumedang, Indonesia

³SWCorp Pahang, 25300 Kuantan, Malaysia

⁴Faculty of Technology Management and Business, Universiti Tun Hussein Onn Malaysia, 86400 Parit Raja, Batu Pahat, Malaysia

*Corresponding author: azahar.a@umk.edu.my

Abstract. This study is focusing on Pondok community participation in a sustainable solid waste management programme. Besides that, the factors that influence Pondok community participation, such as knowledge and awareness, were explored. This study adopted a stratified sampling technique with 99 respondents from Pondok Pasir Tumbuh, Kota Bharu, Kelantan were participating in this study. The data was processed SPSS software with descriptive and inferential analysis. This study revealed that Pondok community has excellent knowledge and awareness regarding sustainable solid waste management practices. However, the exercise of Pondok community in sustainable solid waste management is still moderate. Besides that, this study also found out that the different groups of age, marital status, and education level significantly influence Pondok community's participation in sustainable solid waste management practices. The findings of this study are crucial in providing the preliminary data of Pondok community readiness and willingness to practice sustainable solid waste management like recycling and composting.

1. Introduction

The traditional islamic education institution (referred to as "Pondok") has been known as part of Malaysia's formal traditional religious educational system. Pondok institution has become avenues for Islamic education focusing on teaching students to memorize and recite the whole Al-Quran. The Pondok education was getting more popular in Malaysia as Yayasan Pembangunan Pondok Malaysia (YPM). Currently, there are 242 Pondok institutions in Malaysia and 62 of the list located in Kelantan [1]. This statistic shows that the number of Pondok institutions is mushrooming since 2000, with the majority being privately owned [2]. However, there are issues and problem that often deliberate such as the problems include lack of security measures: inadequate water supply, electricity and reading materials; squalor in dorms, kitchens and a lack of food hygiene, poor waste management; bad financial administration due to lack of funds; little administrative knowledge among mudir (head of school) and low standards of teaching and learning [3]. The previous studies show that the Pondok institution in Malaysia is vulnerable to insufficient physical and economic component [4].

The increase in student enrolment has caused an increasing number of solid waste generated in Pondok institution. The number of solid waste generated by Pondok institution in Malaysia keeps



increasing over the years [5]. Improper solid waste management in the school and institution will harm the student and staff health and safety. An unhygienic school environment will affect student performance in the learning process [6]. Besides that, improper solid waste storage will invite venomous animals like snakes and disease-borne animals like rodents [7, 8]. This situation obsoletely is not conducive and safe for the Pondok institution students and staffs.

According to Ashadi [9], religious schools like the Pondok institution have proven to produce civilized, responsible and virtuous people due to their teachings. Hence, it should be preserved through more systematic modern Pondok institutions to be operated, in line with the current advanced technology and sustainable school practice, to be perceived as more relevant. Therefore, this study is conducted to measure the knowledge, awareness, and participation of the Pondok Pasir Tumboh, Kota Bharu community in sustainable solid waste management practice. The findings of this study can be used by stakeholders Pondok institution such as the administrative unit in addressing suitable solid waste management programme or practices that will suit the level of awareness and knowledge of the Pondok community.

2. Methodology

2.1. Study area

The study was conducted at Pondok Pasir Tumboh, Kota Bharu, Kelantan, the oldest Pondok institution in Kelantan. It covers 10 acres with $\frac{3}{4}$ acres of Islamic land wakaf land, while the rest is privately owned. It accommodates approximately 800 units of houses and huts where it is divided into several areas: teacher houses, Pondok for older people, male and female. The selection of the study area is based on the population (Staff and Student), which is the highest compared to other Pondok institutions in Kelantan and it's generates a lot of inorganic and organic waste.

2.2. Data collection

2.2.1 *Research instrument.* The data collection instrument that was used in this study is a questionnaire. There are three (3) sections as follow:

- i. section A asked about respondents' socio-demographic,
- ii. Section B is about awareness and knowledge in sustainable solid waste management practice,
- iii. Section C is about the participation of the Pondok community in sustainable solid waste management practice.

2.2.2. *Sampling technique.* The Stratified sampling method was used. Stratified sampling is a sampling method that will divide the total population into smaller groups/strata. The strata were different and not overlapping [10]. The most common strata are age, gender, socioeconomic status and education level. The survey was conducted on Pondok community which consist of administration staff, teachers, and students. A total of 99 respondents participated in this study.

2.3 Data analysis

2.3.1 *Normality test.* Normality test that was used in this study is Skewness and Kurtosis test by using SPSS [11]. This data will be considered normal when the skewness of the test is ranging from -2 to +2 meanwhile the kurtosis ranging from -7 to +7 [12, 13, 14].

2.3.2 *Descriptive analysis.* Data were analysed descriptively in terms of measures of central tendencies and measures of variability. Central tendency includes mean, frequency and percentage, while measures of variabilities include standard deviation and range. The descriptive analysis was used to measure the level of knowledge, awareness and participation of the Pondok community in sustainable solid waste practices. The level of knowledge, awareness and participation was determined by a score based on a 5-point scale where score 1-2 shows low level; score 3 is medium level, and score 4-5 are high levels [15].

2.3.3. Inferential analysis. ANOVA (analysis of variance) and independent t-test analysis was used in analysing the data. ANOVA was used to determine whether there was a statistically significant difference between the means of three or more groups. An independent t-test was used in comparing the means of two group in the variable. Another inferential analysis which is correlation analysis, was used to measure the relationship between variables. It was used to measure the factors that influence barriers and participation of Pondok communities in sustainable solid waste management practices.

3. Result

3.1. Respondents profile

Based on Table 1, most respondents are male (60.6 %) and female (39.4 %). The number of respondents who are married (10.1 %) is lower than unmarried respondents (89.9 %). The age group of respondents are divided into four categories which are an early teenager, below 14 years old (40.4 %), teenager, 15-29 years old (50.5 %), early adult, 30-39 years old (4.0 %) and adult, more than 40 years old (5.0 %). Most of the respondents live in the family house (85.9 %), followed by the hostel (10.1 %) and wooden house (4 %). Most respondents are students (86.9 %) followed by teacher (4.0 %) and staff (9.1 %). The educational level of the respondents varies from primary school (2.0 %), secondary school (48.5 %), diploma (16.2 %), bachelor (24.2 %), certificate (8.1 %) and master (1.0 %). The majority of the respondents have been at the Pondok institution for 1-5 years..

Table 1. Respondent profile, N = 99.

| Socio-demographic | | Frequency | Percentage, % |
|--|------------------|-----------|---------------|
| Gender | Male | 60 | 60.6 |
| | Female | 39 | 39.4 |
| Marital status | Unmarried | 89 | 89.9 |
| | Married | 10 | 10.1 |
| Age group | <14 years old | 40 | 40.4 |
| | 15-29 years old | 50 | 50.5 |
| | 30-39 years old | 4 | 4.0 |
| | >40 years old | 5 | 5.1 |
| Type of house | Hostel | 10 | 10.1 |
| | Family's house | 85 | 85.9 |
| | Wooden House | 4 | 4.0 |
| Job/Position | Student | 86 | 86.9 |
| | Teacher | 4 | 4.0 |
| | Staff | 9 | 9.1 |
| Education level | Primary school | 2 | 2.0 |
| | Secondary school | 48 | 48.5 |
| | Diploma | 16 | 16.2 |
| | Bachelor | 24 | 24.2 |
| | Certificate | 8 | 8.1 |
| Number of years in <i>Pondok</i> institution | Master | 1 | 1.0 |
| | 1 year | 32 | 32.3 |
| | 2-3 year | 28 | 28.3 |
| | 4-5 year | 29 | 29.3 |
| | More than 6 year | 10 | 10.1 |

3.2. Level of Knowledge and Awareness

The level of knowledge for the Pondok community regarding sustainable solid waste management is 4.33. It can be concluded that the knowledge of the Pondok community regarding sustainable solid waste management is high. According to scale level, the knowledge of the Pondok community on solid waste

management is at category high. The level of awareness was done, and the result shows that the level of awareness for the Pondok community is 4.39. The level of awareness of the Pondok community in sustainable solid waste among the Pondok community is high, were in line with a study by Bautista [16]. The study shows that students show high awareness regarding solid waste management, importance and advantages of solid waste management to the environment. It can be proven by seeing the mean for the statement in the questionnaire which is segregating waste would do well for solid waste management at Pondok institution' with a mean of 4.47 (SD=0.733) and statement 'waste prevention is beneficial for Pondok society and environment' with mean of 4.46 (SD=0.79). With this, it can be concluded that Pondok society is aware of the sustainable solid waste management concept.

The descriptive statistics show that both knowledge and awareness in sustainable solid waste management among the community of Pondok institution are high. It was proven that the mean score of all items in knowledge and awareness has a mean score of 3.00 and above. This result is in line with Omar et al. [17], who conclude that most respondents have good knowledge of solid waste management. According to Laor et al. [18], three demographic elements can influence knowledge: age, education level, and occupation. The majority of the respondents are young persons divided into two groups: early teenager (40.4%) and teenager (50.5%). Young people are likely to have more knowledge compare to the elderly. Due to their level of knowledge, young people are likely to have a more positive attitude toward sustainable solid waste management [19]. Other than that, people with high education have high knowledge and attitude toward solid waste compared to lower education people [20]. The respondents are at least in secondary schools (48.5%) and higher education institutes (41.4%). For occupation, most respondents are students, which mean they are still in the learning process. The more the students learn, the more knowledge will be gained. Therefore, the exposure of sustainable solid waste management to students is crucial.

3.3. Level of participation of Pondok community in sustainable solid waste management practices

The level of participation among the Pondok community in sustainable solid waste management is moderate, with a score of 3.85 based on the statements in Table 2. Even though the knowledge and awareness level of the Pondok community regarding sustainable solid waste management is high, the practices of sustainable solid waste management like recycling, composting, and others are still moderate. This study in line with the finding of Al-Khatib et al. [21], which the level of knowledge and awareness are not the main factors to encourage people to practice sustainable solid waste management.

Table 2. Participation of *Pondok* community.

| Participation statements | Frequency (percentage, %) | | | | | Mean | S.D |
|--|---------------------------|-----------|-----------|-----------|-----------|------|-------|
| | *1 | *2 | *3 | *4 | *5 | | |
| I separate wet and dry waste before throwing it into the rubbish bin | 4 (4.0) | 8 (8.1) | 26 (26.3) | 31 (31.3) | 30 (30.3) | 3.76 | 1.098 |
| I segregate solid waste (e.g. plastic, paper, glass) | 3 (3.0) | 8 (8.1) | 35 (35.4) | 19 (19.2) | 34 (34.3) | 3.74 | 1.112 |
| I do composting at residential area using organic waste as compost material. | 1 (1.0) | 5 (5.1) | 34 (34.3) | 28 (28.3) | 31 (31.3) | 3.84 | 0.966 |
| I participate in sustainable solid waste management campaign | 2 (2.0) | 11 (11.1) | 29 (29.3) | 32 (32.3) | 25 (25.3) | 3.68 | 1.038 |
| I reuse things until it completely broken | 1 (1.0) | 2 (2.0) | 24 (24.2) | 35 (35.4) | 37 (37.4) | 4.06 | 0.890 |
| I reduce the waste before throwing it away | 2 (2.0) | 6 (6.1) | 35 (35.4) | 25 (25.3) | 31 (31.3) | 3.78 | 1.026 |

| | | | | | | | |
|--|---------|---------|-----------|-----------|-----------|------|-------|
| I spend time to separate waste into different bags before put it at the garbage | 1 (1.0) | 7 (7.1) | 40 (40.4) | 24 (24.2) | 27 (27.3) | 3.70 | 0.984 |
| I spend time to learn about waste recycling, waste segregation, and waste prevention | 1 (1.0) | 7 (7.1) | 32 (32.3) | 27 (27.3) | 32 (32.3) | 3.83 | 1.000 |
| My family and peers involve in in sustainable solid waste management practices | 0 (0.0) | 6 (6.1) | 33 (33.3) | 29 (29.3) | 31 (31.3) | 3.86 | 0.937 |

*1 = strongly disagree

*2 = disagree

*3 = natural

*4 = agree

*5 = strongly agree

3.4. Socio-demographic factors that influence Pondok community participation in sustainable solid waste management practice

The statistical analysis show that different group in marital status [$t(97) = 4.259, p = 0.047$], age [$F(3, 95) = 3.670, P = 0.049$], and education level [$F(5, 93) = 4.619, P = 0.037$] have significant influence the participation of Pondok community in sustainable solid waste management (Table 3). The other Socio-demographic factors like gender, type of residence, job status, and the number of years in Pondok institution do not significantly influence the participation of the Pondok community in sustainable solid waste management practices. This study found that the respondents with these attributes, such as married, more than 30 years old, and possess at least degree education level have good participation in sustainable solid waste management practices. This finding is parallel with previous studies [22, 23, 24].

Table 3. Statistical results.

| Socio-demographic factors | ANOVA or T-test Value | P-value |
|---------------------------------------|-----------------------|---------|
| Gender | $t = 0.301$ | 0.553 |
| Marital status | $t = 4.259$ | 0.047* |
| Age group | $F = 3.670$ | 0.049* |
| Type of house | $F = 0.117$ | 0.890 |
| Job/Position | $F = 1.904$ | 0.155 |
| Education level | $F = 4.619$ | 0.037* |
| Number of years in Pondok institution | $F = 0.463$ | 0.709 |

*Significant at P value <0.05

4. Conclusion

This study showed that the Pondok community does have good knowledge and awareness in sustainable solid waste management practice. However, the practice of community in sustainable solid waste management is moderate. Therefore, some improvements needed to be enhanced to make the sustainable solid waste management at Pondok institution successful. Implementing environmental education at Pondok institution is vital to enhance knowledge and awareness, especially among older people at Pondok. Besides theoretical learning, practical learning also important where the Pondok community can practice hands-by-hands to see how to manage waste properly. It is crucial to implement physical practices for the Pondok community. This need to be done in order to make sure that the knowledge learnt is being executed perfectly and make them confident to practice sustainable solid waste management.

Acknowledgement

Special thanks to Universiti Malaysia Kelantan for providing technical support and adequate financial assistance facilities, under Short Grant Skim (SGJP-Impak) R/SGJP/A0800/01698A/002/2019/00679.

References

- [1] Ahmad R, Arsad S and Arifin N A 2017 Development of management index for pondok institutions in kedah: new horizons in assessing value towards pondok sustainability and survivability *International Journal of Academic Research in Business and Social Sciences* **7**(12) 110-17.
- [2] Abidin M Z H B Z, Maidin P B, Salleh M Y B Y, Hassan P B, Noh A, Mohd M and Razak M I A 2017 Survival of the pondok learning institution in Malaysia *International Journal of Academic Research in Business and Social Sciences* **7**(3) 822-30.
- [3] Jaafar N, Abd Ghani Z, Tibek S R, Mohd Nor A H, Gunardi S, Ismail N A, Darmi R, Mat Saad N S, Idrus M M, Abdullah H, Ishak M, Ismail H and Sulaiman A 2017 Cabaran Institusi Pendidikan Pondok Serta Impak Terhadap Pembentukan Diri Pelajar *Journal of Islamic, Social, Economics and Development* **2**(6) 223 – 35.
- [4] Fazial F and Bahari Z 2018 Problems faced by the pondok institutions in funding development *International Journal of Academic Research in Business and Social Sciences* **8**(6) 1313-1320.
- [5] Idris N 2012 The role of islamic institutions in the adoption of reduce, reuse, and recycle (3r) practices among Muslim communities in Malaysia. In The 8th International Malaysian Studies Conference (Msc8) :Transition And Transformation: State, Market & Culture In A Period Of Rapid Change, 9-11 July 2012, Universiti Kebangsaan Malaysia.
- [6] Abas M A and Nor N M 2015 Penglibatan komuniti kampus di Universiti Sains Malaysia terhadap sistem kitar semula satu aliran *Malaysian Journal on Student Advancement* **17** 83-95.
- [7] Abas M A and Wee S T 2020 Exploring policy governance factors using stepwise multiple regression analysis: a case study of solid waste management policy in Malaysia *International Journal of Public Sector Performance Management* **6**(6) 876-92.
- [8] Abas M A, Hassin N H, Hambali K A, Karim M F, Hussin H, Ismail L and Fitriani N 2021 Public satisfaction and willingness to pay (WTP) for better solid waste management services in rural area of Kelantan, Malaysia *IOP Conf. Ser.: Earth Environ. Sci.* **756** 012083.
- [9] Ashadi A 2019 Negotiation of tradition, islam, and modernity in the movement of the kaum mudo islamic reform in Minangkabau. *Jurnal Tasawuf dan Pemikiran Islam*, **9**(1) 30-59.
- [10] Abas M A, Ibrahim N E, Wee S T, Sibly S and Mohamed S 2020 Disaster resilience education (dre) programmes in schools: a case study in Kelantan, Malaysia *IOP Conf. Ser.: Earth Environ. Sci.* **549** 012078.
- [11] Pallant J 2013 SPSS survival manual, McGraw-Hill Education, UK.
- [12] Roscoe J T 1975 Fundamental research statistics for the behavioral sciences [by] John T. Roscoe.
- [13] Hair J F, Anderson R E, Babin B J and Black W C 2010 Multivariate data analysis: A global perspective (Vol. 7).
- [14] Byrne B M 2010 Structural equation modeling with AMOS: basic concepts, applications, and programming (multivariate applications series). *New York: Taylor & Francis Group*, 396, 7384.
- [15] Garson D 2012 Partial least squares: Regression and path modeling. *Asheboro, NC: Statistical Publishing Associates*.
- [16] Bautista P R 2019 Level of awareness and practices on solid waste management (SWM) among college students. *J. Bio. Env. Sci.* **14**(1) 131-38.
- [17] Omar A A, Hossain M S and Parvin M M 2019 Study on knowledge, attitude and practices towards the solid waste management in Karan district, Mogadishu Somalia *Age* **20**(25) 74.
- [18] Laor P, Suma Y, Keawdoungek V, Hongtong A, Apidechkul T and Pasukphun N 2018 Knowledge, attitude and practice of municipal solid waste management among highland residents in Northern Thailand. *Journal of Health Research*, **32**(2) 123-31.

- [19] Liao C and Li H 2019 Environmental education, knowledge, and high school students' intention toward separation of solid waste on campus. *International journal of environmental research and public health*, **16**(9) 1659.
- [20] Almasi A, Mohammadi M, Azizi A, Berizi Z, Shamsi K, Shahbazi A and Mosavi S A 2019 Assessing the knowledge, attitude and practice of the kermanshahi women towards reducing, recycling and reusing of municipal solid waste. *Resources, Conservation and Recycling*, **141** 329-38.
- [21] Al-Khatib I A, Kontogianni S, Nabaa H A and Al-Sari M I 2015 Public perception of hazardousness caused by current trends of municipal solid waste management. *Waste Management*, **36** 323-30.
- [22] Besar T A, Hassan M S, Bolong J and Abdullah R 2013 Exploring the levels of knowledge, attitudes and environment-friendly practices among young civil servants in Malaysia. *Pertanika J. Soc. Sci. & Hum*, **21** 21-38.
- [23] Madrigal D V and Oracion E G 2017 Solid waste management awareness, attitude, and practices in a Philippine Catholic Higher Education Institution. *Recoletos Multidisciplinary Research Journal*, **5**(2) 43-57.
- [24] Abas M A, Yusoh M P, Sibily S, Mohamed S and Wee S T 2020 Explore the rural community understanding and practices on sustainable lifestyle in Kelantan, Malaysia *IOP Conf. Ser.: Earth Environ. Sci.* **596** 012054.