



## DIFFUSION INNOVATION BEHAVIOR STUDENT IN WASTE MANAGEMENT SCHOOLS ON SMALL ISLANDS

By

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### Article Info

#### Article history:

Received Oct 13, 2023

Revised Nov 18, 2023

Accepted Dec 28, 2023

#### Keywords:

Diffusion Innovation, Behavior, Students, Waste Management, Small Island

### ABSTRACT

This research aims to determine the diffusion of waste management program innovations in schools on Penyengat Island, Tanjungpinang City. This research uses descriptive qualitative methods. Based on the analysis results obtained in the field, it can be concluded that the results found using the Diffusion of Innovation theory by Everet M. Rogers with 4 elements, namely Innovation, Communication Channels, Time Period and Social System, show that the waste management program adoption process will run optimally. This shows that the spirit of intensive communication from the school community on Penyengat Island is enthusiastic about adopting the program due to the sense of ownership of the school, facilities and infrastructure that require development as well as the process of preparing administrative requirements which is slowly increasing with collaboration. More incentive assistance and communication is needed, especially by activating the role of committees at each school in forming the character of students

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## 1. INTRODUCTION

Penyengat Island is a historical relic of the Islamic kingdom, and a religious tourist attraction in the Riau Islands, Malay land. This island measures 2 KM long and 0.85 KM wide. Penyengat Island has limited land and minimal facilities and waste transport fleets, especially for transporting waste on small islands and a lack of public awareness (Willmott and Graci, 2012; Shamshiry *et al.*, 2011). Based on Law Number 18 2008 (Kemensetneg, 2008) and Government Regulation Number 81 of 2012 (Kemensetneg, 2012) provides standards that the waste management system includes efforts to reduce the amount of waste and handle it.

Waste management on Penyengat Island only involves collecting waste from agencies, offices (non-domestic waste) and household waste (domestic waste) but only some people collect waste for officers to take to the end of Penyengat Island. Waste is thrown away and piled up, there are no facilities or management carried out. Waste is only burned and even falls and pollutes the sea. Based on the results of research on 192 coastal countries in 2010 (Jambeck, 2016), Indonesia is the second largest emitter of plastic marine waste in the world after China, around 3.32 million metric tons/year. People more often burn waste openly and scatteredly, this will result in increased CO<sub>2</sub> levels and global warming or throw waste directly into the sea (Alfons and Padi, 2019; Deschenes and Chertow, 2004) resulting in marine pollution due to waste (especially plastic waste) and wastewater (leachate).

Efforts to manage the environment have been carried out by various parties, including through sustainable development policies by producing the Mellenium Development Goals document which was followed by the

Sustainable Development Goals which emphasize that education is an important element as a basis for achieving sustainable development. Therefore, it is hoped that all countries can integrate this understanding of sustainable development into the education system at all levels and levels of education according to their level. In response to this, Indonesia implemented a memorandum regarding the guidance and development of environmental education in the Adiwiyata program.

The program is expected to increase students' understanding and awareness of environmental problems. Understanding environmental problems in question is understanding related to understanding and interpreting environmental conditions (Azodo et al., 2017; Hakim, 2021; Manumanoso Prasetyo et al., 2021; Yusnidar et al., 2015). Diffusion of innovation is a process where an innovation is communicated through certain communication channels over a certain period in a social system. Health Promotion is related to new information that will be conveyed with the aim of introducing new information that will give birth to better changes (Hana Naqiyya Nada et al., 2021; Larashati et al., 2022; Syah et al., 2021). This would be good if communication is a process where someone transfers stimuli which are usually symbols of words to change other people's behavior for the better, in this case is related to waste management in the school community. Community efforts to influence other people, before those other people have an opinion, behave, and behave as expected.

## 2. REASERCH METHOD

Researchers use qualitative research methods because the data obtained from this research is by means of in-depth interviews, observation, and documentation. Research explains that events and phenomena occur and are experienced by research subjects and as a procedure for producing descriptive data in the form of written and spoken words from the behavior and people observed. The informants in this research were the school community consisting of the principal, teachers, students, school committee and students' parents. Data collection was carried out by means of in-depth interviews related to the waste management program carried out at schools on Penyengat Island, consisting of elementary schools and junior high schools.

## 3. FINDING AND DISCUSSION

Diffusion of innovation is a process where an innovation is communicated through certain communication channels over a certain period in a social system. Health Promotion is related to new information that will be conveyed with the aim of introducing new information that will give rise to better changes. (Larashati et al., 2022; Pane & Patriana, 2016; Syah et al., 2021). The main characteristic of an innovation is the novelty factor. This means that an innovation must be an idea or idea and practice that is truly felt to be something new for the community that is the target adopter. The adopter as a source of communication must have communication skills which include speaking, writing, listening, and thinking skills. Having an attitude towards the source of communication itself, towards the recipient of communication and towards the message conveyed in the communication process. (Godara & Khirwadkar, 2017; Koomen, 1991; World Health Organisation, 2017). The level of knowledge of a source about the process, message, and the recipient of the message in the communication process. And a source must have a position as a social source in a socio-cultural system.

Communication will be effective if there is a common interest between the needs felt by the source and the recipient of the message. The message conveyed is a solution to the problem faced by the recipient of the message, while the source of the message in this case believes that the recipient will be superior to the message conveyed, and vice versa, the recipient of the message hopes for help from the source to find a solution to the problem they are facing.

Researchers conducted interviews regarding the benefits obtained through this triggering training, namely:

*"So the goal is a school that cares about and has a culture of the environment, so get used to the movement of care and culture about the environment in schools, so that in the end it will create a school that is cultured and cares about the environment."*

*"Early on, we want the school, especially its students, to understand the problem. "Trash is one of the strategic issues, especially in the islands. Actually, the benefit is that it leads to changes in behavior, so it's not a matter of profit or loss but more about self-awareness, for togetherness and a better environment."*

Relative advantage relates to a new idea, ideas and practices that are considered better than previously existing ideas. Relative advantage relates to new ideas which, if they are considered to provide better benefits for the social system, will be more quickly adopted by an individual or society. Based on the results of interviews conducted with key informants 1 and 2, this school environmental management program is a new concept, idea and practice that is adopted in schools, especially those on small islands with limited environmental support and capacity.

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*"The advantage for the first school is an award for the school which is one of the supports for our school. As an example, apart from that, as an Adiwiyata school, we can also receive assistance from the Health Polytechnic in the form of assistance and trash cans as well as cleaning tools as well as skills and equipment. to make compost, clean and healthy schools"*

With the many advantages and benefits obtained by the school, including in terms of changing the character of students for the better, adequate facilities and infrastructure and in terms of the school environment, this program can be said to be a new idea that has been adopted and provides better advantages and benefits than previous innovation. So, it can be concluded that the relative advantage indicator provides good results by looking technically at the benefits of the program which makes the school a school that cares and has an environmental culture and forms better behavior and care about the environment for school members, because based on the definition relative advantage is a degree to which a new idea (if adopted) is considered to be something better than the old idea that has been adopted or that existed previously.

Compatibility relates to the suitability of the innovation being adopted with the experience, values, and potential needs of an adopter. An idea that has suitability or compatibility will reduce uncertainty and make an adopter not hesitate to adopt the innovation. The higher the compatibility between new innovations and previously existing ideas, the higher the chance for the innovation to be adopted by society. Then, innovation must be in harmony with needs, meaning that if an innovation is really needed by society, the innovation will be easy to accept in the environment.

*"This program is felt to be in accordance with the cultural values that exist in the school, such as educating students and school residents, especially to become individuals who have concern and love for the environment, apart from that, it is in accordance with the values that exist in the school, of course, as the school requires students to always maintain cleanliness of the classroom and school environment."*

*"This love for the environment can produce a school environment that is clean, beautiful, and pleasant when carrying out the teaching and learning process, right, so it is not only in accordance with the values and culture at the school but also in accordance with the needs of the school, on Penyengat Island."*

Changes in the character of all school members towards being better and more caring and in love with the state of the school environment and making the environment cleaner, more beautiful and comfortable so that it is in accordance with what is needed by the school to carry out the teaching and learning process. This relates to indicators of the compatibility of an innovation with needs. The success or failure of an innovation is closely related to how complicated the innovation is to adopt. In general, an innovation will be difficult for society, organizations, and even social systems to attract if it is deemed too complicated and difficult to use. According to Rogers, the simpler an innovation, the greater the level of adoption (Rogers and Kincaid, 1981; Rogers, 2002, 2004; Rogers et al., 1983).

*"There are difficulties, so we have done socialization in two ways, the first way we did socialization in one place and brought in resource persons, it was actually less effective because of the large number of participants, there were some who didn't focus on the resource person so the information just passed by, the problem was What's more, those who came weren't the ones taking care of the school, so the socialization that we conveyed earlier didn't reach the team, that was the first model of socialization, now our second model of socialization came to schools so we came and explained this to the principal, teachers and students. , that's the downside in terms of time and money because we have to schedule school visits, sometimes the information we convey doesn't arrive... later the principal and teacher arrive but the team changes, there are different people. "So, the problem with this socialization is actually how to convey the material in as much detail as possible to the team, well that's a bit difficult."*

*Another difficulty is the change in assistants or school leaders so that they must advocate again to get policy support in its implementation. From the teacher's point of view, as an educator and in direct contact with the actors who make changes (students) in the initial area, they must provide many examples and give advice regularly and patiently. This is done to create understanding and*

*awareness for each student in managing waste, starting from sorting it to processing it in the form of compost and handicraft items.*

#### Response from students

*The initial difficulty was because we weren't used to it, after getting used to it everything became easy and fun.*

#### Response from parents

The initial difficulty is changing habits. We are used to throwing waste directly into the sea. Our house is above the sea. We were told by the children not to throw waste into the sea. At home it is difficult to apply consistently, sometimes we remember, sometimes we forget.

The trialability stage determines whether an innovation will be adopted or not. Usually, prospective adopters will first study the innovation before they adopt the innovation. This is because something new can have a higher failure rate than success. By carrying out trials, adopters have the potential to see in advance the chances of success of an innovation that will be adopted.

*"Yes, before there was this mentoring program, it was difficult for us to maintain a clean and tidy school environment, but with mentoring we have slowly shaped the character of the students, the teachers have become an example by taking part in their role early in the morning, some of them are already sweeping the students if they see the teachers. "That's how you sweep along with your own self-awareness, this is done with patience and advice and by setting an example."*

#### Response from students

*It used to be difficult but now it has become a habit like there are school pickets, there is a deep sense of shame if our class is dirty, if our class is not creative. We compete to produce works from waste. Our innovation grows, our imagination expands and complements each other.*

Visibility is an indicator that shows the results of an innovation can be seen by others. The visibility of an innovation that can be seen with a person's eyes allows that person to accept an innovation rather than an innovation that is abstract and can only be imagined. So when the results of an innovation show a good level of visibility, it will be easier for someone and want to adopt the innovation. An innovation will be easily adopted if the results and benefits can be seen by the public through people who have previously used the innovation.

*We used to imagine what a school that cared about the environment would look like. It seemed difficult to implement, it needed cooperation and patience. But after we went through it, even though there were many challenges, together we were able to produce a clean, neat, orderly environment, the plants were also beautiful and green, pleasing to the eye. The enthusiasm for teaching is increasing.*

Factors that influence the effectiveness of innovation communication are seen from the perspective of message recipients, in this case the main ones (as targets) are students, namely: Message recipients will be able to receive messages correctly if they have good writing, speaking, listening, and reasoning skills like the source. communication. The recipient's attitude towards a message delivered must show the message recipient's confidence that the message received is indeed true. The level of knowledge of the message recipient includes the level of knowledge of the communication process, source, and innovation itself. The position of the message recipient in the social system will also influence the effective communication process. (Moore, 2016; Nurlaela, 2020; Stefanski et al., 2016).

Waste as residual or waste material resulting from the production process from human or animal activities that is not reused, if it is not managed correctly, will cause health problems, reduce environmental quality, and reduce environmental aesthetics (Ikhwan et al., 2019). The next thing that influences effective communication is the communication channel which is a tool for coding and decoding messages as well as a place for delivering messages. The form of communication chosen depends on the type of message and the effectiveness of the communication to be achieved. Media methods and strategies so that the message conveyed can be optimally understood and accepted by



students so that it can generate knowledge, awareness, willingness and ability to make changes in better waste management (Azodo et al., 2017; Jiang et al., 2022; Saari et al., 2021; Taylor et al., 2015).

Environmental behavior in environmental management, in this case waste management, can be studied through education with three determinants that most influence its development, namely knowledge, attitudes and actions or KAP (Knowledge, Attitude and Practice). (Hartley et al., 2018; Raharjo et al., 2017). Knowledge is positively correlated with environmental awareness and environmental awareness with sustainable behavior. A sustainable system mechanism is needed so that this behavior will last a long time and is part of the goodness of the system in the school community (Handoyo et al., 2021; Saari et al., 2021; Shen & Wang, 2022; Vantamay, 2018; Zeng et al., 2023).

The spirit of intensive communication from the school community on Penyengat Island is enthusiastic about adopting the program due to the sense of ownership of the school, facilities and infrastructure that require development as well as the process of preparing administrative requirements which is slowly increasing with collaboration. More incentive assistance and communication is needed, especially by activating the role of committees at each school in forming the character of students.

In school communities, to achieve certain educational targets, cooperation and coordination must be fostered between school principals, teachers and other functional staff, school committees (parents, teachers and community elements), and students. Students are the main recipients of educational services or behavior targets, while others are service providers or behavior developers (Đurišić & Bunijevac, 2017; Sunaengsih et al., 2019, . Efforts to achieve optimal learning outcomes require good interaction and cooperation based on causes, motivation and goals to be achieved and ultimately determine human behavior (Herpratiwi & Tohir, 2022; Mendo-Lázaro et al., 2022; Shen & Wang, 2022; Syamsuddin, 2021; Vantamay, 2018). This causes interactions that have mutual impacts, such as helping each other, exchanging information, providing input, or even creating behavior that hinders each other or creates conflict.

#### 4. CONCLUSIONS

The innovation diffusion process needs to continue to be improved by collaborating with related stakeholders, for example the Environmental Service, Education Service and Health Service in Tanjungpinang City in the Adiwiyata program. Elements of the Diffusion of Innovation Theory: There is already high enthusiasm for the diffusion of innovation by improving school community communication patterns in shaping the behavior of students who carry out sustainable waste management in the school environment. Therefore, there is a need for more incentive assistance and communication, especially by activating the role of committees at each school in forming the character of students. This can also be improved by collaboration between stakeholders.

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