Introduction of marine ecosystem and conservation as a form of early childhood education: a preliminary study

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Abstract. Marine environment is one of the world parts that affected by the human activities. Overexploitation, pollution and marine debris are some problems faced globally. The issues are caused by human behaviors and actions, intentionally or accidentally. However, not every person in the world realize the problems in marine environment. The objective of this study is to found out about how far parents were already introduce the marine conservation as early education for the children. The data was collected through questionnaire and analyze with simple math analysis. Results shows that not every parent join in marine conservation program and so do their children. However, most parents were already introducing the marine ecosystem and the importance of marine conservation to their children since early age.

1. Introduction
Nowadays, environmental degradation has become issue globally. Global warming, ocean acidification, and marine debris has become problems in the world [1] Aquatic ecosystem, especially marine ecosystem also faces these problems. Indonesia is one of the biggest archipelago state in the world. Three-quarters of our country area is cover by water. However, not every people realize the problems face by our marine environment [2]. Several problems that affected our marine and coastal area are overexploitation, pollution, marine debris, sea level rise, acidification and land conversion.

Marine debris defined as “any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment or the Great Lakes. It may enter directly due to human action, or indirectly when washed out to sea via rivers, streams and storm drains” [3]. Marine debris has become one of the problems globally facing many countries in the world. Indonesia is one of the top contributors for marine debris in the world (Purba, et al. 2019; ). The source of marine debris could be from land-based and marine-based. Some things in the top of marine debris list are cigarettes, caps, plastic bottles, plastic bags, food wrapper/containers, straws, stirrers, beverages cans and paper bags. Most of the marine debris are plastic [1,4-6].

Human behaviors and actions – intentionally or accidentally- is not only source of marine debris but also source of marine pollution. Aquaculture, tourism and fishing are several from many human activities that became source of the problems. Years has been passed before human realizes the effects of the actions. The government regulation no 19. about ‘Pollution Control and/or Sea Damage’ was issued on 1999. However, Indonesia government regulation no. 83 about ‘Handling Marine Waste’ just issued in 2018. Before 2011, not many research conducted related to marine debris [2]

Nowadays, many parties, including school and higher education, has already started to give information and early education about marine ecosystem. However not so many parties or activities has been done to introduce methods or how we can generally conserved the nature, especially marine ecosystem and the biotas. Even less, specific program created for young children in Indonesia. Kids,
especially in young age, will be next generation, who will inherit this world. It is very important for the children to recognize the marine and coastal environment, and also to have early childhood education about marine and coastal management or conservation.

This study aims to found out how far parents, as the first teacher for the children, has been introduce marine environment, and give the information about marine environment conservation.

2. Methodology
The data for this study was collected using questionnaire survey. The questionnaire made by using google form. The questionnaire was randomly distributed through social media and networks of colleague on February 2020. A simple math analysis was done to get the percentage of data. The questionnaire data was combined with literature review conducted for this study.

3. Results and discussion
3.1. Respondent personal information
Respondents of the questionnaire for this study are 68 persons. We did ask several questions to gain basic information about the respondent. We did ask if the respondent is a mother or a father, their age, educational background, work, also how many kids they have and age of the children. From 68 respondent, 35 persons are a mother, 31 persons are a father and 2 persons did not answer. The range age of the respondent mostly between 31-40 years old (53 persons or 71.9%). For educational background, 56.1% (37 persons). The respondent mostly are working (87.8%) with various field of work (educator, private company worker, entrepreneur, etc), and only 12.1% are housewife or housefather (Figure 1).

![Figure 1. Respondent basic information](image)

3.2. Information source
Most parents (97%) are know or ever seen the information about marine and coastal conservation (Fig, 2a.). These information they got from social media (44 answers) and television (42 answers). The rest are from leaflet or brochure (23 answers), books and college (3 answers) and from friends (1 answers) (Figure 2b).
These results indicate that many information related to marine environmental conservation has been presented to the public. Since the environment’s degradation number have become a problem, many institutions had talked about the effort to do the conservation and rehabilitation [7–9]. Many kinds of information about the rehabilitation and conservation has been shown in social media, television and websites [10,11]

3.3. Parents efforts

One of the questions from the questionnaire asking about efforts parents has been done to introduce marine ecosystem, marine organisms, or marine environment to their children. Results shows that most parents have brought their children to the beach (95.5% or 63 respondent) (Figure 3). Several reasons for the respondents bring their children to the beach were for recreation, to introduce the nature, especially the beauty of Indonesia’s coastal, and also to transfer knowledge and to teach the children about marine organism and ecosystem. Some of the respondent are educator (Figure 1). So, it could be one habit that has been shared to their own kid. They eager to share what is important or what the kids need to know. Some of the parents has marine science as educational background (personal information). This become one reason for the parent to introduce marine environment to the kid.

There are three respondent who have never brought their children to the beach and two persons without answer (Figure 3). The reason were parents were busy and also the kid was still to young (less than 1 year old). Furthermore, there are parents who afraid for the windy situation.

Figure 2. Information about marine environment conservation; (a) if parents ever see the information, (b) source of information for the parents.

Figure 3. Numbers of respondent bring their children to the beach.
In line with the result about numbers of respondent bring their children, other result from this study show that most respondent were already introducing the marine organism and ecosystem to their children (97% or 64 respondent). Several methods from the respondents were direct introduction, visit the aquarium, books, television and social media (youtube), etc. It shows most respondent as parents already try to introduce the marine ecosystem and organism to their children.

This study shows that less than 50% of the respondent has been join to any activity related to marine conservation and rehabilitation (Figure 4a). Parents (respondents) who join the marine conservation activity was mostly the ‘clean beach’ activity. Furthermore, not many respondents as parents involve their children in conservation activities or environmental conservation activities (Figure 4b).

![Figure 4](image).

**Figure 4.** Involved in marine conservation activities (a) parents (b) children.

However, 80% of the respondents has already share and taught their children about the importance to keep the marine environment healthy and maintained (Figure 5a). Also, most of the respondents answer shows that it is very important to introduce the marine environment and marine conservation to their kids since early age. (Figure 5b). The research of Kusumawaty et al. in Aceh (2018) shows us that not every people in Indonesia recognize marine debris as problem yet in Indonesia. It says that 59,2 percent of the respondent in West Aceh City did not consider marine litter as a problem in Indonesia. So, the results of this research shows us a hope, that there are still parents who cares about marine environment and willing to taught their kids about the situation.

![Figure 5](image).

**Figure 5.** (a) Parents taught their children about marine environment and conservation, (b) The importance to introduce marine environment since early age.
4. Conclusion
Family as the first school, have parents who responsible to be the first teacher for the children. This study shows that most of respondents as parents even though they themselves were not actively join the marine conservation activities, and also not every parent involved their children to the marine conservation activities, they were already introducing the marine ecosystem, marine organism, and the importance to keep it clean and safe. It is also important as a note that many parents think that it is important to introduce the conservation of marine environment since early age of a child. Therefore, this is can be seen as a good opportunity to use marine environment and marine conservation theme as early education program activities for children, especially in Indonesia.

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