



Generation Z needs resources and media for marine biology learning based on local potential



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ABSTRACT

A needs analysis required to be done before developing a product. This research aims to analyze the need for learning resources and learning media in marine biology courses based on local potential from the perspective of students who are Generation Z. The respondents in this research were 87 students. Questionnaires are distributed via Google Forms. Data is presented quantitatively by looking at the percentage of answers from respondents. According to students, learning resources and teaching materials based on local potential need to be developed. To suit Generation Z, the recommended learning resources and learning media are digital-based and have challenging activities.

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INTRODUCTION

A classroom learning process requires a learning resource and a learning media. Samsinar (2019) states that learning resources are all sources or various sources in the form of data, people, methods, media, and places where lectures take place, which are used by students to facilitate the lecture process. Meanwhile, learning media is a tool used as a tool or transmission of information in the lecture process so that material that is unclear can be more easily understood by students (Sam et al., 2023; Hawa, 2023; Hasan et al., 2021; Audie, 2019; Wulandari et al., 2023).

The most important aspect of the teaching process is the provision of the correct information from the lecturer effectively so that the student can understand the material of the lesson well established by the Graduate Learning Achievement. Learning resources play a crucial role in the delivery of such material. Learning resources can enhance the learning productivity of both teachers and students, increase the motivation and interest in learning, improve the completion of learning by focusing on individual learning, and provide the realization of systematic learning as well as the use and use of multimedia for learning. (Samsinar, 2019).

The importance of such resources and learning media makes the development of learning resources and media necessary, including the resources and the learning media in the Marine



Biology courses. For the time being, the lecturer only develops learning sources and media such as PowerPoint presentations and practicum manuals or field lectures based on local potential; the rest of the lecturers and students use resources that have been created and developed by others. As a form of effort to improve student learning and understanding related to marine biology learning, it is necessary to develop learning resources and learning media based on local potential. Research on the local potential that can be used as a basis for the development of learning resources of marine biological courses was carried out last year, so that in the next year will be conducted research R&D.

According to Borg and Gall, the first phase in research R & D is the collection of information. This stage includes a needs analysis (Zakariah et al., 2020). Needs analysis is defined as the process of collecting and analysing information about the needs and wishes of the user (Hardiyansah, 2017). To conduct a needs analysis, there are criteria such as the urgency of product development, the availability of competent Human Resources, and sufficient time in producing the product (Sumarni, 2019).

The product developed must be tailored to the user. The teaching faculty is the millennial generation, while the students are the Z-gen. Generation Z is the generation born between 1996 and 2010. Of course, the sources and media of learning must also be in line with the characteristics of the generation where the Z gene dominates the use of multimedia and various forms of technology in everyday life (Nawawi, 2020).

Based on the above description, this research will analyze the need for learning resources and learning media in marine biology courses based on local potential so that the learning resources and learning media created will follow the needs of Z-gen students and faculty students. The results of this needs analysis research will serve as a basis for product development.

RESEARCH METHODS

Research Design

The approach used is descriptive quantitative with an internet interview survey method (Jogiyanto, 2014) using Google Forms. The internet interview survey method is used with the aim that researchers can obtain an interpretive picture from the source without having to meet face to face. This can save time, money, and energy. Some of the questions asked are open-ended so that they allow for deeper data mining and help researchers understand the context.

Population and Samples

The instrument uses a questionnaire provided via Google Forms, consisting of ten questions. The questions included: (1) Has the implementation of marine biology learning so far been enjoyable? (2) From the following materials, which material do you think is difficult for you to understand? (You can choose more than one option.); (3) In your opinion, does marine biology lecture material need to be linked to local potential?; (4) Choose the learning resources that your lecturer has used so far when teaching marine biology courses! (you can choose more than one); (5) Based on question number 4, in your opinion, what learning resources have been used so far by your lecturer?; (6) Related to question number 4, in your opinion, does your lecturer need to add learning resources for marine biology courses? If so, as Generation Z, recommend the learning resources that you want and are appropriate to use in marine biology lectures! (7) In your opinion, is it necessary to develop learning resources for marine biology courses based on local potential? (8) Choose the learning media that your lecturer has used so far when teaching marine biology courses! (You can choose more than one); (9) Based on question number 8, what do you think about the learning media used so far by your lecturers?; (10) Related to question number 8, do you think your lecturers need to add learning media for marine biology courses? If so, as a Generation Z,

recommend the learning media that you want and are appropriate to use in marine biology lectures!.

Procedures

The steps of survey research refer to Maidiana (2021), namely 1) Determining the problem; 2) Determining the research objectives; 3) Determining the Type of Survey; 4) Determining the Sample Design; 5) Determining the Sample Size; 6) Creating Questions and Choosing What Test Tools to Use; 7) Determining the form of "Data Collection" According to the Conceptual Definition of Research Tools; 8). Processing Data, 9) Conducting Data Analysis, and 10) Discussion of Results.

Data Analysis

The collected data was analyzed by finding the percentage using the formula (Sugiyono, 2016):

$$P = F / N$$

Description:

P: Percentage of student scores

F: Frequency of student scores

N: Number of students

RESULTS

87 students filled out the Google form. Before knowing the learning resources and learning media students need, researchers consider it necessary to first find out students' perceptions regarding learning marine biology. The results are presented in the following Figure 1.

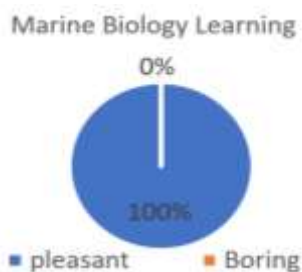


Figure 1. Student Perceptions Regarding Marine Biology Learning

From the Figure 1, it is known that 100% of respondents stated that learning marine biology was fun. Even though it is fun, there is still material that students consider difficult. The material that is considered difficult is presented in the following Figure 2.

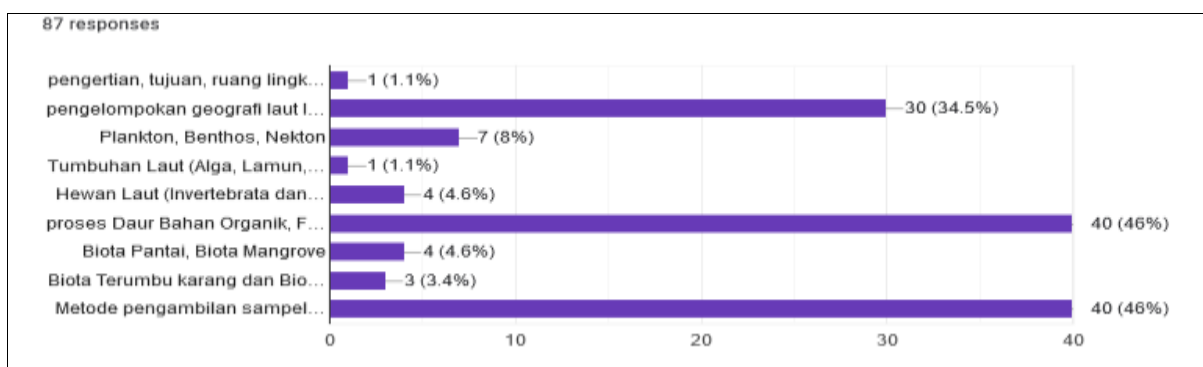


Figure 2. Material that students consider difficult

From the Figure 2, it can be concluded that the material that many students consider difficult is 1) the cycle process of organic matter, phosphorus, nitrogen, silicon, primary productivity, food chains in tropical marine environments, 2) sampling methods and calculation methods for plankton, benthos, and nekton in tropical regions, and 3) geographical classification of Indonesian seas, marine zoning, ecological and biological aspects of the sea, and Indonesian marine biological resources. Furthermore, according to students studying marine biology, it needs to be linked to local potential, as presented in the following Figure 3.

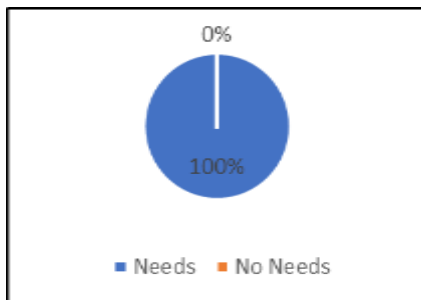


Figure 3. Student perceptions regarding the need for marine biology material are linked to local potential

Then, the following is data on learning resources that have been used by course lecturers so far, presented in the Figure 4.

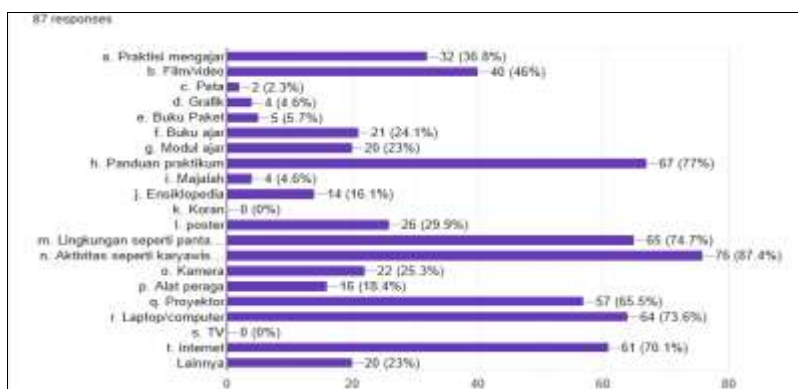


Figure 4. Learning resources that have been used by course lecturers

From Figure 4, it can be seen that the learning resources that have been used by lecturers so far have varied, such as field trip activities in the form of field lectures, practical guides, laptop environments, internet, LCD, learning videos, and so on. This course has collaborated with a teaching practitioner, namely an oceanographer from BRIN. Furthermore, the learning media used by lecturers so far are presented in the following Figure 5.

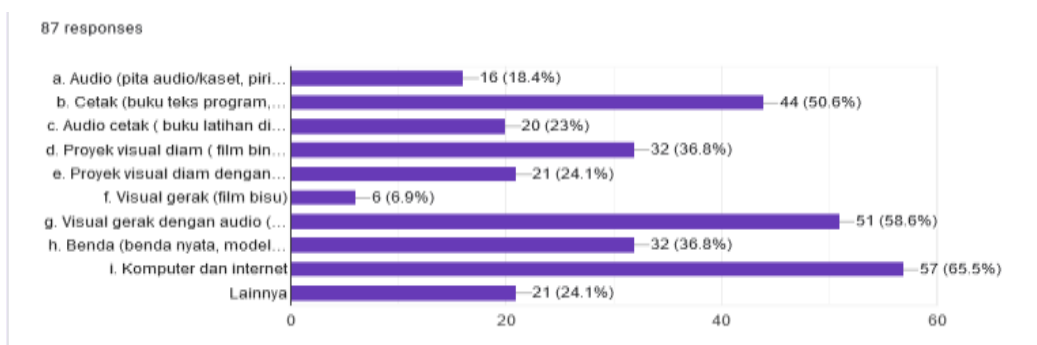


Figure 5. Learning media used by lecturers

Figure 5 provides information that so far in teaching, lecturers have used computer and internet-based media, learning videos, print media, still visuals, real objects, and so on. Even though the learning resources and learning media used have varied, the dominant students think that learning resources and learning media for marine biology still need to be developed to suit Gen Z learning. This data is presented in the following Figure 6.

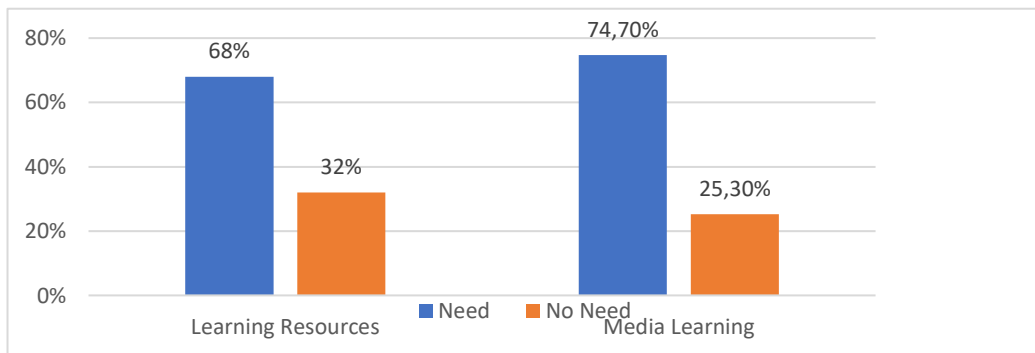


Figure 6. Student responses regarding the need to develop learning resources and marine biology learning media

Then, the learning resources recommended by students according to Generation Z are summarized in the following Figure 7.

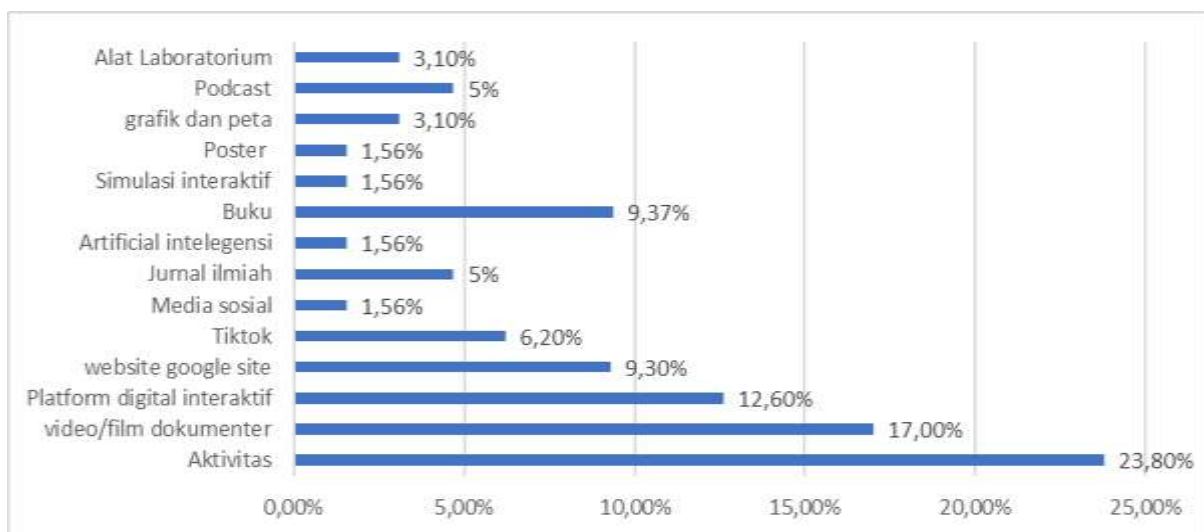


Figure 7. Student recommendations regarding Marine Biology learning resources that can be developed according to Generation Z in the Marine Biology Course based on Local Potential

Figure 7 above illustrates that students recommend learning resources in the form of activities such as field trips, observation, beach cleaning, conservation, research, projects in the field, and case studies directly in the field. Learning sources that are recommended for further development are videos/documentary films, such as from YouTube with the channel names "Scishow" and "National Geographic". Then, many people also recommend digital internet-based learning sources in the form of Google sites, interactive simulations, podcasts, interactive digital platforms, Artificial Intelligence, TikTok, and other social media.

The following learning media recommended by students according to Generation Z are summarized in the following Figure 8.

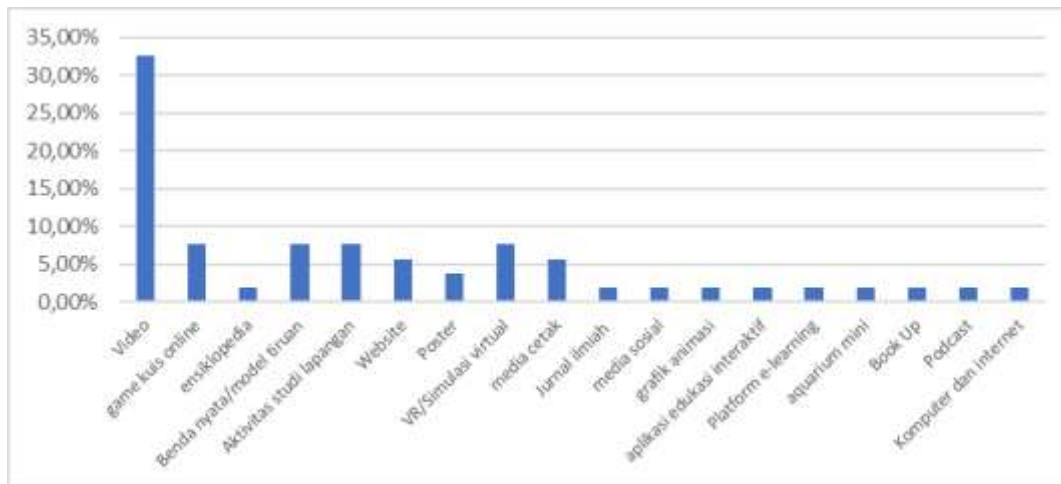


Figure 8. Student recommendations regarding Marine Biology learning media that can be developed according to Generation Z in Marine Biology Courses based on Local Potential

From the figure 8 above, it can be seen that the widely recommended learning media are learning videos from YouTube, Netflix with the titles "Our Planet" and "National Geographic". Furthermore, from the picture above it can also be concluded that Generation Z currently recommends digital internet-based learning media such as online quiz games, websites, VR/digital simulations, social media, interactive educational applications, e-learning platforms, and podcasts.

DISCUSSION

According to Borg and Gall, the first stage in R&D research is information gathering. One of these stages includes a needs analysis (Zakariah et al., 2020). Needs analysis is defined as the process of collecting and analyzing information about user needs and desires (Hardiyansah, 2017). To carry out a needs analysis, there are criteria, namely the urgency of product development, the availability of competent human resources, and sufficient time to create products (Sumarni, 2019).

Before analyzing student needs, researchers consider it necessary to find out their perceptions regarding learning marine biology. All students think that learning biology is fun. This is because in marine biology lectures, there are field lectures held in Tarakan City and the Derawan Islands, so that students can study outside of class while relaxing. Learning outside the classroom makes students closer to nature, increases knowledge and experience, and makes learning more contextual. Students also like project-based learning. Apart from that, from the lecturer's perspective, students consider the lecturer's teaching to be fun, exciting, the class atmosphere is fun, interactive, the learning model used makes students creative and active, and the lecturer's delivery method when teaching is easy to understand and often provides questions and answers and feedback to students.

The results of the questionnaire filled out by all students also stated that marine biology learning needs to be linked to local potential. Then the dominant students stated that there was still a need to develop learning resources and learning media for marine biology, even though so far the learning resources and learning media that had been used were good and varied, and could make the lecture process more enjoyable.

Learning resources can come from something that is deliberately designed or that is already available and can be used individually or in groups for learning (Hawa, 2023). Local potential-based marine biology learning resources that are widely recommended by students according to their generation are activities such as field trips, observations, beach cleaning, conservation, research, field projects, and direct case studies in the field. So far, lecturers have used field lecture activities and projects in the Tarakan City and Derawan Islands areas as learning resources, but

students consider that these learning resources are still relevant and suitable for use. This is because the existence of activities outside the classroom in the form of field lectures allows students to learn directly (more contextually), increasing their experience and at the same time refreshing them.

Gen Z prefers challenges. If they feel they are only being given transactional work or tasks and not strategic challenges, then they may leave the job. Gen Z also likes a work atmosphere that provides added value (Mahapatra et al., 2022). However, Gen Z is susceptible to mental health disorders such as depression, anxiety, bipolar disorder, and ADHD (Thahir et al., 2023). Psychologically, generation Z needs a holiday to relieve stress due to the many tasks they have on campus and they work (Haratikka & Silitonga, 2023). Therefore, having activities outside the classroom, such as field lectures in the Tarakan City area and the Derawan Islands, can also be a place for them to refresh or heal.

Recommended learning resources to be developed are videos/documentary films, such as from YouTube with the channel names "Scishow" and "National Geographic". Then, many people also recommend digital internet-based learning sources in the form of Google sites, interactive simulations, podcasts, interactive digital platforms, Artificial Intelligence, TikTok, and other social media. The results of this research are not much different from the learning media they suggest. The learning media recommended by Generation Z are digital internet-based learning media such as videos from YouTube, Netflix, National Geographic, online quiz games, websites, VR/digital simulations, social media, interactive educational applications, e-learning platforms, and podcasts. It's just that to support the utilization of local potential, it is recommended that the material content address more problems or examples of utilization in the Tarakan City area and its surroundings. According to Suastra (2010), the creation of teaching materials and media cannot be separated from the role of the immediate environment, both natural and socio-cultural. The background of environmental problems that students have and bring into the classroom during the lecture process plays an important role in the process of mastering lecture material. This is by the results obtained by Hairida (2010), learning based on local potential (local wisdom) makes students more independent, and students have the opportunity to explore their abilities, both their previous knowledge and their beliefs in the concepts of lecture material.

The digital-based learning resources and learning media recommended by students are very suitable for Generation Z, namely the generation born between 2007-2012, the generation that grew up in the digital era (Urba et al., 2024), also known as the digital native generation. Gen Z can take advantage of technological changes in various aspects of life. Technology is used as if it were breathing (Fitriyani, 2018). Electronic devices commonly used daily are smartphones, iPads, tablets, and laptops. The learning needs of Gen Z are data content, graphic visualization, kinesthetic activities, problem solving, speed, ease of obtaining information, interactive multimedia integration, multi-tasking, working in small groups, engaging in activities that require creativity and collaboration, and flexibility to learn according to needs (Chun et al., 2017).

The audio-visual learning style is more ideal for Gen Z in the digital era. Learning materials presented in the form of video tutorials, animations, or infographics can help them understand concepts better. Technological advances also allow them to access these materials more easily (Ichsan et al., 2021). The audio-visual learning style must of course, be in harmony with learning resources and audio-visual learning media. Digital-based learning resources and learning media, such as learning videos, documentary videos, animations, interactive digital platforms, and so on, are suitable for Gen Z. These learning resources and learning media can be uploaded to YouTube, Instagram, TikTok, and so on. This is in line with the opinion O' Connor et al. (2018) that online platforms, learning applications, and smart devices can be used to present learning material innovatively and interactively.

Selecting the right learning resources plays many important roles in learning, because it can increase learning productivity, lectures are more effective and efficient, provide students with opportunities to develop according to their potential and abilities, learning programs are designed more systematically, strengthening learning (Samsinar, 2019), can increase students' interest in learning (Muis & S, 2021), can improve learning outcomes (Sugianto, 2023; Afandi et al., 2020; Irwandi & Hery, 2019), increase mastery of concepts (Susilawati et al., 2020), improve skills science process (Sriyati et al., 2021), and improving critical thinking skills (Evitasari et al., 2020). Specifically for students, learning media plays a role in improving learning outcomes (Murtado et al., 2023; Wahyuningtyas & Sulasmono, 2020), increasing learning activity (Sari et al., 2022), increasing interest in learning (Nurfadhillah et al., 2021), improving skills science process and learning motivation (Muftianti & Samsudin, 2020). Furthermore, based on the results of research conducted by Nawawi (2020), information was obtained that Generation Z students' interest in learning was higher after using varied learning media, including video/motion graphics, sli.do, illustrations based on problem-solving, and Kahoot.

CONCLUSION

Students (Gen Z) consider it necessary to develop learning resources and marine biology learning media based on local potential, especially for material that students consider difficult. The learning resources needed are digital-based learning activities and resources. Likewise, the learning media needed is digital-based learning media such as videos, interactive digital platforms, websites, social media, and so on.

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