



STEM Integrated Sciencepreneurship in Science Learning to Shape the Entrepreneurial Character of the Z Generation

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ABSTRACT

The character of entrepreneurship is a character that must be cultivated from school age to form the attitude and mentality of students, therefore it is necessary to adapt learning to the needs of the current of the Z generation. The research aims to apply STEM learning integrated sciencepreneurship in the students of the 8th grade MTs Nurul Izzah Kalamisu as the Z generation to shape the character of entrepreneurial from school age. Research design using one case study, data collection using questionnaires and observations, data analysis is carried out using descriptive quantitative analysis. Research results show that 64% of students agree with STEM learning integrated sciencepreneurship, this learning is able to shape the student's entrepreneurial character that includes confidence, task- and outcome-oriented, daring to take risks, spirit of leadership, having originality and future oriented.

Keywords: Character, Entrepreneurial, Sciencepreneurship

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INTRODUCTION

The results of the population census for 2020 provide a picture of Indonesia's demographic that has undergone a lot of changes compared to ten years ago. Indonesia is now on a demographic bonus condition that is more productive age than non-productive age, where the Z generation holds an important role in the development of the nation today and in the future. (Asman dkk., 2023) The Z generation is the youngest generation to enter the workforce, called the I-generation or the Internet generation because they grew up with technology and the Internet (B. Beribe, 2023). One of the advantages of the Z generation is its adaptability to the use of technology so it is categorized as a creative generation. (Adhella, 2021).

Nowadays, most the Z generations are in school age, which means it is important to make adjustments to the learning system by considering the characteristics of the Z

generation to suit their needs (Makniyah & Khotimah, 2023). In the world of education, it is important to understand the characteristics of generations to establish effective educational strategies in cultivating the character of students (Yeltriana dkk., 2023). But in reality, education in Indonesia only managed to make students go to school but not really learn (school without learning), on the other hand, the school has not been able to fully understand the characteristics of students, (Muhamba, 2021; Rakhmah, 2020).

Entrepreneurship character is a character that the Z generation must have as the key to producing quality Indonesian human resources. (Prasetyo, 2019; Sudarmin et al., 2019). This is supported by the government program to increase the number of Indonesian entrepreneurial needs by 2024 by 3.95% in line with the national target (Lumban Gaol, Hansrainer, dkk., 2023). As the nation's successor, the Z generation is demanding to be able to think creatively about the various opportunities that exist and is expected to be capable of being the motivator and creator of jobs, not just as job seekers even becoming unemployed (Minarti dkk., 2023). Therefore, instilling an entrepreneurial character from the beginning has an important role in shaping the mental attitude, innovation, creativity, courage, perseverance and hard-working spirit of students (Mustajab dkk., 2023). Such character must be possessed by the student and can be implemented in science lessons.

Sciencepreneurship is learning that interacts the concepts of science with entrepreneurship through the design and manufacture of economically valuable products. Sciencepreneurship-based learning guides students to create and innovate so that in the process they can shape their entrepreneurial character (Ulum dkk., 2023). The main achievement expected in this learning is the ability of students to apply the concepts of Science in creating economically valuable products. This ability needs to be strengthened by integrating STEM (Science, Technology, Engineering and Mathematics) into the learning process, this integration has a positive impact on learning because it can enhance the knowledge and skills of students through the planning and engineering design process (Roshayanti dkk., 2023). The learning concept with the integrated STEM approach of sciencepreneurship is expected to be able to shape and enhance the entrepreneurial character of students as the Z generation that is the future of the nation.

RESEARCH METHODOLOGY

This research uses a quantitative approach with experimental research methods without a control class (Pamungkas & Halimah, 2023). The research design used is one shoot case study, on this design only done one time treatment that is expected to have an impact on the post test (Fuadi & Mirsal, 2023). The population in the study is this total student MTs Nurul Izzah Kalamisu with the sample selected purposively sampling is class VIII. The learning equipment used consists of a curriculum and a learning implementation plan (RPP) that is arranged in accordance with the STEM syntax integrated sciencepreneurship on science subjects in particular materials structure and function of plants.

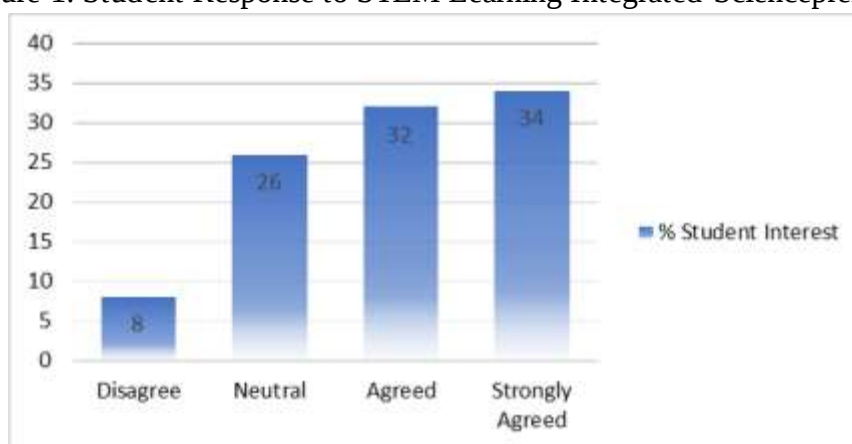
Data collection is carried out using a questionnaire to know the interests and character of students, while observation lembar is used to evaluate the skills of students in

completing the assigned tasks (Suryaningsih, 2021). Data analysis uses quantitative descriptive analysis of questionnaire results and observations used as the material to analyze student entrepreneurial characteristics and draw conclusions based on their average results.

RESULT AND DISCUSSION

The learning process that has been carried out during three meetings by applying RPP in accordance with the STEM syntax integrated sciencepreneurship (Mutalib & Dylan, 2021), students are then given a questionnaire sheet to know their responses to the learning methods that have been done, the results can be seen in Figure 1 below.

Figure 1. Student Response to STEM Learning Integrated Sciencepreneurship



The graph shows the percentage of students' responses to STEM integrated sciencepreneurship learning (Lumban Gaol, Morales, dkk., 2023): 8% of students said they disagree, 26% said they are neutral, while 32% agreed and 34% said strongly agreed (Mudinillah & Rizaldi, 2021). From the data it can be concluded that the average student of class VIII has a high interest in the application of STEM integrated learning sciencepreneurship (Muhammadong dkk., 2023), with the learning model expected to be able to form and train the student's entrepreneurial character.

The next activity is to provide practical tasks to students divided into four groups to create simple technologies that are inspired by the networking structure. When students perform practicum activities, direct observation is carried out to see the activity and skills of each student in their group (Arsul dkk., 2021). After the practicum activities are completed, subsequent students are given a questionnaire to know the knowledge and character of student entrepreneurship. Results of observations and questionnaires in the following table 1.

Table 1. Students after STEM Application integrated sciencepreneurship on Materials Structure and Function of Plants

Character of Entrepreneurship Assessed	Percentage
Confidence	84%
Tasks and results oriented	80%
Dare to take risks	82%

Leadership	80%
Originality	82%
Oriented to the future	80%

Table 1 shows the outcome of the percentage of entrepreneurial character students who at the ratio among other things confidence students have a percentage of 84%, task oriented and outcome-orientated have 80%, daring to take risks have 82%, leadership has 80%, originality has 82% and oriented of the future has 80% (Gusvita & Alon, 2021). From these results it can be concluded that STEM learning integrated sciencepreneurship is able to shape the student's entrepreneurial character. The most prominent character based on Table 1 is self-confidence.

Self-confidence means that basically students have confidence and optimism in working and completing assigned tasks (Afifah dkk., 2023). To be task- and outcome-oriented means that students have perseverance and need to achievement (Rahmah & Martin, 2022). Dare to take risks means that students love the challenge in completing assigned tasks (Yennizar dkk., 2022). Leadership means students are able to collaborate with fellow friends and receive input (Amirudin dkk., 2022). Originality means students are innovative and creative and have a broad perspective. Future-oriented means that students have a forward-looking perspective and guidance.

CONCLUSION

Based on the results of the study, it can be concluded that 64% of students agree with STEM based learning integrated sciencepreneurship, this learning has proven to be able to shape the student's entrepreneurial character that includes confidence, task and outcome oriented, daring to take risks, spirit of leadership, having originality and future oriented.

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