



Mapping Student Character Education on Biotechnology Material

Radeswandri^{1*}, Rian Vebrianto², Sri Wahyuni³ 

¹ Universitas Terbuka, Jakarta, Indonesia

^{2,3} Tadris IPA, Universitas Islam Negeri Suska Riau, Pekanbaru, Indonesia

*Corresponding author: radeswandri@ecampus.ut.ac.id

Abstrak

Pendidikan karakter siswa sangat penting dalam menghadapi tantangan abad ke-21. Penelitian ini bertujuan untuk mengetahui tingkat pendidikan karakter siswa. Oleh karena itu, penelitian ini bertujuan untuk menganalisis pendidikan karakter siswa pada siswa kelas IX. Metodologi dalam penelitian ini menggunakan metode survei dengan melibatkan 75 siswa yang diambil secara acak (random). Instrumen yang digunakan adalah soal pendidikan karakter yang disebar melalui Google Forms. Data yang diperoleh dianalisis dengan menggunakan aplikasi Statistical Program for Social Science (SPSS). Berdasarkan hasil survei diketahui jumlah subjeknya terdiri dari 43 perempuan dan 32 laki-laki. dan terdiri dari 4 suku yaitu Melayu, Minang, Batak, dan Jawa. Berdasarkan hasil survei diketahui pula bahwa rata-rata kemampuan pendidikan karakter siswa berada pada kategori baik dengan skor sebesar 7,4 yang dapat dijelaskan secara rinci dalam 4 konstruk yaitu religius, jujur, disiplin, kreatif, demokratis, rasa ingin tahu, peduli lingkungan, peduli sosial dan tanggung jawab. Kesimpulannya, konstruk dengan nilai rata-rata tertinggi adalah kepedulian dan tanggung jawab lingkungan serta orisinalitas dengan nilai rata-rata yang sama yaitu 8,0, dan yang terendah adalah demokrasi dan kreativitas yaitu 7,2. Rekomendasi dari penelitian ini adalah pengembangan pendidikan karakter siswa masih perlu ditingkatkan, dan guru dapat menggunakan instrumen yang digunakan.

Kata Kunci: Pendidikan Karakter, Teknologi, Instrumen, Survei

Abstract

Student character education is very important in facing the challenges of the 21st century. This research aims to determine the level of student character education. Therefore, this research aims to analyze student character education in ninth-grade students. The methodology in this research uses a survey method involving 75 students who were taken at random (randomly). The instrument used was character education questions distributed via Google Forms. The data obtained was analyzed using the Statistical Program for Social Science (SPSS) application. Based on the survey results, it is known that the number of subjects consisted of 43 women and 32 men, and consisted of 4 tribes, namely Malay, Minang, Batak, and Javanese. Based on the survey results, it is also known that the average student's character education ability is in a good category with a score of 7.4, which can be explained in detail in 4 constructs, namely religious, honest, disciplined, creative, democratic, curious, caring for the environment, social caring and responsibility. In conclusion, the construct with the highest average value is environmental care and responsibility and originality with the same average value, namely 8.0, and the lowest is democracy and creativity, namely 7.2. The recommendation from this research is that the development of student character education still needs to be improved, and teachers can use the instruments used.

Keywords: Character Education, Technology, Instruments, Surveys

1. INTRODUCTION

The world of technology is developing very rapidly and is being developed with various interesting features. This rapid technological progress means that today's technology is almost alongside our daily lives (Ahmad et al., 2021; Kesumaningsari et al., 2022). In today's increasingly advanced era, education should be able to improve students' abilities and skills to impact students' character education positively. Character education is an educational method implemented by teachers to influence the character of students (Martin et al., 2020; Ritonga, 2022). This shows that teachers must deliver material and be role models. For this reason, a solution to this problem is needed, one of which is utilizing types of learning media that can adapt to learning conditions and environments (Godfrey et al., 2018; Tay et al., 2018).

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In the Industry 4.0 era, technology is often used in daily activities, one of which is in the world of education by creating various learning media that attract students' attention when studying in the classroom (Ghosh et al., 2018; Zanatta, 2019). The use of learning media that is monotonous and less interesting will cause problems that will have an impact on students who are lazy and reluctant to pay attention to the teacher's explanations when studying (Bakri et al., 2021; Hartayani & Wulandari, 2022). This also affects the character of some students because they are reluctant to listen to the teacher's lecture. The students start looking for fun activities, so there is noise in the class because they are engrossed in their other activities rather than listening to the teacher (Ardika et al., 2022; Ramadhani et al., 2019).

The urgency and main basis of character education is to develop a quality personality with good morals, honesty, responsibility, respect, and discipline (Fikri, 2022; Yulianti et al., 2021). Character is the main thing in interaction in the classroom. The use of technology in the world of education needs to be implemented in learning in schools to improve character education and student learning outcomes (Adesita et al., 2019; Halim & Mokhtar, 2015). To achieve this goal, teachers are expected to be able to create creative and innovative learning media. With the various types of information technology that are increasingly advanced today, it will certainly be easy to obtain the desired learning media.

This proves that technology implemented in the education world only sometimes negatively impacts students but can also benefit students if implemented well (Citra Ningrum et al., 2019; Dewi et al., 2022). Previous research concluded that implementing technology, especially gadgets and computers, in the world of education can provide various benefits for students and overcome students' low level of moral and character education (Sajed et al., 2019). Other researchers also expressed the same opinion, stating that gadgets' effects are sometimes good (Suratmi & Sopandi, 2022). To implement technology in education, researchers developed an instrument in the form of a Google form to determine and measure students' level of character in the education (Apriyanti et al., 2020; Göçen Kabaran & Altıntaş, 2022). Instilling character education in students will automatically change student learning outcomes for the better. To overcome this problem, researchers have designed flipbook learning media to assist learning that can improve students' character education.

Character education can also help improve student academic achievement. The level of character education itself is one of the 21st-century skills that, if students possess, can improve their performance in the school (Novitasari et al., 2019; Panggabean et al., 2022). Therefore, this research aims to analyze the character education of ninth-grade students at SMPN 23 Pekanbaru.

2. METHODS

The model for developing character education instruments in this research uses a survey method applied to biotechnology material Fields (Braun et al., 2021). This research continues the Flipbook learning media that researchers developed previously. This survey instrument was conducted to test whether using flipbook learning media was effective and useful. The flipbook learning media developed is research and development and development carried out is the development of flipbook learning media based on a problem-based learning (PBL) approach using the 4D development model.

The survey method is carried out in several stages, namely determining the research problem, creating a survey design, developing a survey instrument, determining the sample, conducting a pre-test, collecting data, checking data (editing), coding data, data entry, data processing and analysis, data interpretation and make conclusions and recommendations (Funa et al., 2021). Each question has an answer tailored to the student's opinion but is still related to biotechnology material. The development of the character education test instrument

consists of 8 essay questions, and each construct consists of 2 questions. The instrument used has been developed by researchers and assessed by experts. It is known that the instrument is valid and reliable with a Richardson Kuder value of 0.8, similar to the calculation steps carried out by (Amin et al., 2022). The research was conducted on grade 9 students at SMPN 23 Pekanbaru in October 2022. Data was collected using a Google form involving students, teachers, and lecturers. Then, the data will be analyzed with the help of analysis and the statistical program for social science (SPSS) application.

The preparation and method for developing character education instruments in this assessment was carried out using the survey method. Meanwhile, in the development of previously created media, the approach used is problem-based learning, where through this approach, students are given questions or problems regarding biotechnological processes in human life, after which students are asked to carry out investigations collaboratively until they can solve problems and get their solutions after that is evaluated with the teacher. Students will be able to find questions and solutions after mastering all the topics presented in the flipbook learning media that has been developed.

This research begins by determining the problem, namely the need for more character education for students, which also negatively impacts the value of the learning process in the classroom. Based on a study of various theories about character education, four character education constructs were finally formulated: 1.) Religious, honest, and disciplined 2.) Creative and democratic 3.) Curiosity, 4.) Caring for the environment, social care, and responsibility. This research hopes to improve students' character education and make learning enjoyable by applying the existing flipbook media. The grid of instruments measuring character education is shown in Table 1.

Table 1. Grid of Evaluation Instruments for Flipbook Use

No.	Construct	Question Number
1	Religious, honest and disciplined	1,2
2	Creative and democratic	3,4
3	Curiosity	5,6
4	Caring for the environment, caring socially, and being responsible	7,8

Table 1 above shows that the number of questions is eight items spread across four constructs. The first construct comprises three: religion, honesty, and discipline. The second construct is composed of creative and democratic attitudes. The third construct is composed of curiosity. The fourth construct comprises environmental care, social care, and responsibility.

3. RESULTS AND DISCUSSION

Results

This instrument was tested on 75 ninth-grade students at SMPN 23 Pekanbaru so that the level of character education students at the SMP could be known. Research subject data is shown in Table 2.

Table 2. Research Subject Data

Subject Data	Category	The number of Students	Percentage
Gender	Man	32	42.5%
	Woman	43	57.5%

Subject Data	Category	The number of Students	Percentage
Institution	Junior High School	75	100%
Grade	Ninth	75	100%
	Melayu	32	42.5%
Ethnic group	Minang	15	20%
	Batak	12	16%
	Java	16	21.5%

Based on [Table 2](#), it is known that the number of subjects was 75 ninth-grade students at SMPN 23 Pekanbaru, consisting of 32 male students and 43 female students, and divided into four tribes, namely 32 people from the Malay tribe, 15 people from the Minang tribe, 12 people from the Batak tribe and 16 people from the Javanese tribe, with the largest ethnic percentage, namely the Malay tribe at 42.5%. The results of the student character education assessment are shown in [Table 3](#).

Table 3. Results of Student Character Education Assessments

Construct	N	Score	Description
Religious, honest and disciplined	80	7.8	Good
Creative and democratic	80	7.2	Good
Curiosity	80	7.6	Good
Caring for the environment, caring socially, and being responsible	80	8.0	Good
Average	80	7.6	Good

[Table 3](#) shows that the average student character education score based on the test instrument is in a good category with a 7.6 (mean) score. Meanwhile, of the four constructs, the score for the religious, honest, and disciplined construct was 7.8 (good). For the creative and democratic construct, the score was 7.2 (good), the curiosity construct got a score of 7.6 (good), and lastly, for the constructs of environmental care, social care, and responsibility, it was 8.0 (good).

Discussion

Character education is very necessary nowadays because it can overcome various problems in the learning process. To have good character, it must be based on sensitivity, thoroughness, public speaking, and detail, as well as enthusiasm and strong determination that is full of challenges ([Desnita et al., 2021](#); [Ferreira et al., 2022](#); [Leite et al., 2018](#)). A score was satisfactory for the first assessment construct (Religious, honest, and disciplined). The results of this research are based on the opinion that character education is closely related to moral education, which aims to continue to shape and train individual skills for self-improvement toward a better life ([Heo et al., 2015](#); [Souza et al., 2017](#)). Jadi karakter erat kaitannya dengan moral.

Meanwhile, the second part of the construct (Creative and democratic) is also in line with the opinion expressed by previous research that there are several ways to improve character education, namely starting with commitment, then looking for inspiration from people with good character, and daring to try things something new, hanging out with creative people ([Ammade et al., 2022](#); [Ummah & Rifai, 2021](#)). Creativity is closely related to a person's character. It would be best to build self-confidence and responsibility, appreciate your abilities, and keep trying ([Lei et al., 2017](#); [Ngang et al., 2014](#)). Based on this information, everyone understands that character education is closely related to a sense of

responsibility in the fourth construct (care for the environment, social care, and responsibility).

Therefore, teachers and parents must always cultivate good qualities in children. In this research, the development of flipbook learning media in science learning was developed using the 4D development model, which consists of 4 main stages, namely: Define, Design, Develop, and Disseminate, so that the learning process teaching becomes easier and more effective. With character education using flipbook media, it is hoped that it will also have a good impact on student learning outcomes, especially in biotechnology learning material, as explained that all success begins with good character (Hartati, 2017; Sharpe et al., 2020).

Previous researchers believed that character education needs to be improved so that more and more students have noble characteristics that will influence their learning outcomes (Mohammadi et al., 2022). Meanwhile, according to other researchers, one way to improve character education is by exposing students to problem-based learning with the help of interesting learning media so that students will be triggered to move and work together to solve these problems (Rapi et al., 2022; Rear, 2017). The opinion above is based on the third part of the assessment construct (Curiosity), which is that a person's character is related to curiosity.

Through this character education, it is hoped that students can learn accompanied by thoughts that can help them learn. So by knowing that the average assessment of the instrument above is in a good category with a score of 7.6, it can be concluded that this flipbook-based learning media is one of the media that teachers in schools can apply to improve character education and learning outcomes for junior high school students (Junior High School), especially in biotechnology material. The first thing I would like to convey is the author's gratitude to the Almighty and to all parties who have helped and made it easier for the author to write this article. With everyone's help, the author finally got to the point of completing the research and compiling this article. In this article, there is evidence that shows that flipbook media can be used in the teaching and learning process in schools.

The author hopes that the survey instrument in the flipbook media can produce effective learning media in innovative and efficient teaching and learning to realize good character and learning values for students. In this way, students can become good leaders in the future who are successful in facing the picture of the 21st century successfully with good morals and attitudes, as according to the explanation that from an early age, students must be nurtured with strong and skilled characters in order to be successful in advancing the nation and state.

4. CONCLUSION

Based on the survey results, it is also known that the average level of student character education is in the good category. Suggestions for students are that they must continue to learn to practice character education to become individuals with superior character and skills in facing challenges in the 21st century with teacher creativity in creating and combining learning media that is attractive to students. Based on the research that has been carried out, this research will not only measure the level of student character education but also positively impact student learning outcomes. So, the point that can be learned from this research is that the flipbook learning media that researchers have developed is one of the learning media that teachers can use to improve students' character education so that it will also have a good impact on the process of obtaining student learning scores in the future. So, this flipbook learning media based on problem-based learning (PBL) can be distributed and applied in junior high schools or similar.

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