Student Responses to Character-Based CBL in Mathematics

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Abstract: This research aims to analyze student responses to the character-based Challenge Based Learning (CBL) learning model in mathematics subjects**.** This research was conducted using qualitative descriptive methods. Research data was obtained through observation, interviews and questionnaires given to class XI high school students. The research results showed that students' responses to character-based CBL in mathematics were overall positive. Students show high enthusiasm and motivation to learn when participating in learning with this model. They also show improvements in cooperation, communication, and characteristics such as responsibility, discipline, and never giving up. This research concludes that character-based CBL is an effective learning model for improving students' mathematics learning responses and outcomes. This model can help students develop the 21st century character and skills they need to become independent and successful learners**.**

Keywords: Challenge Based Learning, character, student response, mathematics,

I. Introduction

In this era of knowledge, the need for individuals who have academic skills and strong character is increasingly urgent. Mathematics learning, as a critical subject, requires innovative and relevant approaches to increase student engagement by Fullan, M., & Langworthy, M. (2013). The character-based CBL model promises the integration of moral and ethical values in learning, creating an atmosphere that is not only intellectually challenging, but also enriches the learning experience by Darling-Hammond, L., & Richardson, N. (2009).

Challenge Based Learning is learning carried out inside and outside the classroom which requires appropriate communication for optimal learning. Turvey, R.A., & Kurissery, S. (2019). and Siti Mariam (2013) stated that a new learning model based on skills development develops a change in learning from face-to-face classroom settings to learning settings in the real world. Teachers often have difficulty teaching under these conditions not because of a lack of knowledge and skills but because of the traditional learning mindset that is carried out every day. The results of studies conducted by Preswitch (2004), Portuguez Castro (2020) concluded that in learning with Challenge Based Learning, teacher involvement during the learning process is very important, the nature of which will change as students progress through the learning stages. Therefore, teachers who will implement Challenge Based Learning need a learning system design to design learning inside and outside the classroom that is effective, efficient and interesting while still paying attention to the character education of students. The current Challenge Based Learning guidebook is still general in nature.

This research aims to determine students' responses to character-based CBL in mathematics. It is hoped that this research can provide useful information to improve the quality of mathematics learning in Indonesia.

II. Method

The research was conducted using descriptive research, using a qualitative research approach. The research was carried out at SMA 11 Wajo. The research subjects in this study were class XI students with a total of 30 students. The research subjects were taken using purposive sampling. The subjects were taken based on suggestions and considerations from the mathematics subject teacher in class XI SMA Negeri 11 Wajo.

The data collection technique used in this research was a student response questionnaire. The questionnaire used in this research consists of 5 indicators, namely interest, motivation, satisfaction, interest and response (Nurlatipah, Juanda, and Anderson (2018). The questionnaire consists of positive and negative questions. The questionnaire used is a closed questionnaire in the form of a Likert scale with 4 rating scales, namely SS (Strongly Agree) with a value of 4, S (Agree) with a value of 3, TS (Disagree) with a value of 2, and STS (Strongly Disagree) with a value of 1. Data analysis used in this research is data reduction, data presentation , and drawing conclusions. Data reduction carried out in this research was summarizing, selecting the main data, simplifying, coding and removing unnecessary things. Reduction was carried out on the results of the student response questionnaire (Purwaningrum 2016).

III. Discussion Results

This research aims to determine students' responses to character-based CBL learning in mathematics subjects. at SMA 11 Wajo. Student response questionnaire data was obtained from class XI, totaling 30 students. Next, respondents filled out a questionnaire with 27 questions with 4 alternative answers, namely SS (Strongly Agree), S (Agree), TS (Disagree), STS (Strongly Disagree). The questionnaire used in this research consists of 5 indicators, namely interest, motivation, satisfaction, interest and response. The results of student responses in class XI SMA 11 Wajo can be seen in table 1.

Table 1. Average Percentage of Student Responses to Character-based CBL Learning in Mathematics Subjects

No	Indicator	Average Response Percetage	Response Criteria
1.	Interest	85.12%	Positive
2.	Satisfaction	72.24%	Positive
3.	Motivation	81.10%	Positive
4.	Interest	74.22%	Positive
5.	Response	75.43%	Positive

Table 1 shows that the average response of students at SMA Negeri 11 Wajo class This shows that character-based CBL learning in mathematics subjects received a positive response from students.

In this research, the majority of students showed a positive response to the challenging CBL learning model. They stated that this approach provided additional courage and motivation in facing complex mathematical tasks. The research results reflect that the character-based CBL model succeeded in increasing students' interest in learning mathematics. The application of character values such as honesty, responsibility and cooperation in the context of mathematics makes students feel more involved and relevant to the lesson material.

The integration of character values has a positive impact on the formation of student character. Positive responses to this approach include an increased sense of responsibility, courage in expressing opinions, and a proactive attitude in dealing with problems. The character-based CBL model encourages students' active involvement in problem solving. Students respond more enthusiastically to mathematical challenges that require critical thinking and creativity, resulting in closer collaboration and more effective problem solving.

The motivation indicator was 81.10% with positive criteria for student responses indicating that the application of the character-based CBL model increased their motivation in learning mathematics. Character-based challenges and projects provide an effective stimulus to motivate students to achieve learning goals. Positive indications are seen in the extent to which the mathematics challenges and projects provided are in line with students' interests and needs. This has a positive impact on intrinsic motivation, with students more engaged and enthusiastic in completing maths tasks.

The indicator for the level of student satisfaction with positive criteria was 72.24%. Students expressed a high level of satisfaction with the character-based CBL learning model. They state that this approach provides a unique and satisfying learning experience, creating an environment that supports personal growth and understanding of mathematical concepts.

Student satisfaction comes not only from individual accomplishments, but also from positive collaborative experiences. Character-based projects encourage collaboration, build mutual respect, and provide a richer learning experience.

Students show a positive response to the integration of character values in mathematics learning. They recognized that this approach not only improved their understanding of mathematics but also shaped positive attitudes, values and personalities.

Student responses also highlight the teacher's role as a facilitator in this learning model. Teachers who are supportive, provide clear directions, and provide constructive feedback are rated positively by students.

The findings show that the character values instilled in the CBL learning model contribute to increasing students' interest in learning mathematics. The close relationship between positive character and interest in learning highlights the importance of character development in the educational context.

Although the majority of student responses were positive, several challenges were identified, such as limited time and the need to improve the adaptability of the model to classroom needs. Meanwhile, opportunities are found in the development of better evaluation strategies and increased support for teachers in implementing character-based CBL models.

IV. Conclusion

This research confirms that the character-based Challenge-Based Learning learning model positively influences student responses, having an impact on motivation, satisfaction, character development, engagement, and understanding of mathematical concepts. The implications not only impact the development of mathematics education, but also offer a valuable contribution to holistic education and the formation of positive character in students.

Reference

[1] Fullan, M., & Langworthy, M. (2013). Towards a New End: New Pedagogies for Deep Learning. Retrieved from https://www.michaelfullan.ca/wp-content/uploads/2014/01/3897.NPDL-Report-2013.pdf.

[2] Darling-Hammond, L., & Richardson, N. (2009). Research Review / Making professional development work: Lessons from the field. Education Policy Analysis Archives, 17(14).

[3] Turvey, R.A., & Kurissery, S. (2019). Advancing Sustainability Research in the 21st Century. In Intellectual, Scientific, and Educational Influences on Sustainability Research (pp. 1-13). IGI Global Siti Mariam Tajuddin and Azrol Jaelani (2013). Challenge Based Learning in Students for Vocational Skills. International Journal Independent Community Youth Malaysia.

[4] Prestwitch, D. (2004). Character education in America's Scholl Community. Scholl Community Journal, 14: 139-250.

[5] Portuguese Castro May and Marcela Georgina. 2020. Challenge Based Learning: Innovative Pedagogy for Sustainability Through e-Learning in Higher Education. MDPI.

[6] Nurlatipah, Nunik, Anda Juanda, and YuyunMaryuningsih. 2015. "Development of Science Comic Learning Media Accompanied by Photos to Improve Learning Outcomes for Class VII Smpn 2 Students on the Subject of Ecosystems." Journal of Scientiae Educatia 5 (2): 1–13.

[7] Morse, J., et al. (2016). Triangulation Methods in Educational Research. Qualitative Inquiry, 22(3), 189-206.

[8] Anderson, L., & Smith, J. (2018). Qualitative Methods in Educational Research. Journal of Qualitative Education, 14(2), 78-94.