DE_JOURNAL (Dharmas Education Journal)
http://ejournal.undhari.ac.id/index.php/de_journal
E-ISSN : 2722-7839, P-ISSN : 2746-7732
Vol. 5 No. 1, 1391-1403

THE EFFECT OF INTEGRATION OF BATAK MUSICAL INSTRUMENTS IN STUDENT WORKSHEETS (LKPD) ON MATHEMATICAL INTERESTS OF HIGH SCHOOL STUDENTS

Marissa Nurianna Panggabean[1], Ruth Mayasari Simanjuntak[2], Rani Farida Sinaga[3], Tutiarny Naibaho[4], Lolyta Damora Simbolon[5]
Email : marissanurianna.panggabean@student.uhn.ac.id
Pendidikan Matematika, Fakultas Keguruan Dan Ilmu Pendidikan, Universitas HKBP Nommensen, Medan, Indonesia

Abstrak

Penelitian ini mengkaji pengaruh pengintegrasian alat musik Batak dalam Lembar Kerja Siswa (LKPD) terhadap minat belajar matematika siswa SMA. Pengintegrasian tersebut bertujuan untuk meningkatkan minat belajar matematika siswa melalui pendekatan budaya lokal. Metode penelitian yang digunakan adalah kuantitatif dengan Posttest-Only Control Group Design. Sampel terdiri dari dua kelompok, yaitu kelompok eksperimen yang menggunakan LKPD berbasis alat musik Batak dan kelompok kontrol tanpa perlakuan yang sama. Data dikumpulkan melalui angket minat matematika dan dianalisis menggunakan uji normalitas, uji homogenitas, dan uji-t. Hasil penelitian menunjukkan bahwa data berdistribusi normal dan terdapat perbedaan minat matematika yang signifikan antara kedua kelompok. Siswa yang menggunakan LKPD berbasis alat musik Batak menunjukkan minat matematika yang lebih tinggi dibandingkan dengan kelompok kontrol. Simpulannya, pengintegrasian alat musik Batak dalam LKPD berpengaruh positif terhadap minat matematika siswa.
Kata Kunci : LKPD, Alat Musik Batak, Minat, Pembelajaran, Kontekstual

Abstract

This study examines the influence of integrating Batak musical instruments in Student Worksheets (LKPD) on high school students' mathematical interest. The integration aims to increase students' interest in learning mathematics through a locally-based cultural approach. The research method used is quantitative with a Posttest-Only Control Group Design. The sample consists of two groups: the experimental group using Batak musical instrument-based LKPD and the control group without a similar treatment. Data were collected through a mathematical interest questionnaire and analyzed using normality tests, homogeneity tests, and t-tests. The results indicate that the data is normally distributed and there is a significant difference in mathematical interest between the two groups. Students who used the Batak musical instrument-based LKPD showed higher mathematical interest compared to the control group. In conclusion, the integration of Batak musical instruments in LKPD has a positive effect on students' mathematical interest.
Keywords: LKPD, musical instruments, Batak, interest, learning, contextual

INTRODUCTION

Student Worksheet (LKPD) is one of the learning aids designed to help students in the learning process as emphasized (Taufik, 2023) is a tool designed by teachers to help students in learning and in research (Sit & Rakhmawati, 2022) LKPD can be developed to facilitate students' problems in the learning process. Good LKPD not only provides information, but also encourages students to be actively involved in the learning process. In an effort to use LKPD in the learning process, various innovations have been developed, one of which is through the integration of local culture which has the potential to have a positive impact on solving students' mathematical problems (Harianto, 2023). The development of LKPD needs to pay attention to the validity aspect to ensure good quality in terms of content, practicality, and effectiveness in improving student understanding. In the practice of mathematics learning in high school, the use of LKPD has become an important component in the teaching and learning process. However, although the integration of Batak musical

Info Artikel : Diterima April 2025 | Disetui April 2025 | Dipublikasikan Juni 2025

instruments into LKPD already exists and has been tested, challenges still exist in overcoming the low mathematical interest of high school students, especially in subjects that are often considered difficult such as mathematics (Purba et al., 2022).

Patricia et al (2024) in their research found that students' interest in learning mathematics in working on problems was still relatively low, with only 59.09% of students showing interest in mathematics problems. Interest in learning, especially interest in mathematics, plays an important role in student success. According to the research results of Nihaya et al (2023), ethnomathematics in mathematics learning can influence students' interest in learning by 78.5% higher compared to conventional learning. Lack of interest can have an impact on low learning outcomes, even when the LKPD used has been tested for its effectiveness. One approach that is considered potential is the integration of local culture. Research by Rizal et al (Ansya & Salsabilla, 2024)revealed that the integration of Batak cultural elements in mathematics learning can influence students' interest to be higher. By linking mathematical concepts with cultural elements that are familiar to students, such as traditional Batak musical instruments (tagading, flute, ole - ole), it is hoped that students can see the real relevance of mathematics in their daily lives (Astuti, 2021).

This study is aimed at Senior High School (SMA) students, who often have difficulty in building interest in mathematics lessons. By using existing LKPD and integrating Batak musical instruments, students are expected to not only understand the material better, but also be motivated to deepen the concept of mathematics through the introduction of their own culture (Effendi et al., 2021).

This research will be conducted at SMA N 4 Medan which is located in an area with a strong Batak cultural influence. The use of local cultural elements is very relevant for students in the area, so that students can feel more connected to the material they are learning in class. The integration of Batak musical instruments into this LKPD is carried out in the context of mathematics learning in the current semester, especially in topics related to the concepts of the volume of rotating objects or other materials that allow for a relationship with traditional music patterns and structures (Brutu, 2024).

This study will use LKPD that has been integrated with Batak musical instruments and has been tested valid in terms of content and structure. Through this approach, it is expected that students can see the relationship between mathematics and local culture, so that they are more motivated and interested in learning mathematics. This study will measure the effect of cultural integration on students' mathematical interests through questionnaire instruments and observations during the study (Sihombing, 2022)

METHOD

The type of research used in this study is quantitative research with a quasi-experimental approach. This study was designed to measure the effect of the integration of Batak musical instruments in Student Worksheets (LKPD) on the mathematical interest of high school students. With this approach, researchers collected numerical data through questionnaires to assess students' interest before and after the implementation of the integration of Batak musical instruments on LKPD. The data obtained were analyzed statistically to determine the significance of the influence caused by the integration of local culture in mathematics learning. The experimental design was applied by dividing students into experimental groups and control groups, so that the results of mathematical interest between the two groups could be compared (Satria et al., 2020).

The research design used was an experiment with Posttest-Only Control Group Design: Subjects were divided into two groups, namely the experimental group that received treatment and the control group that did not receive treatment. The experimental class received learning treatment with cultural integration while the control class was only given a post-test to measure their

mathematical interest (Wulandari et al., 2021). Measurement at the post-test stage of the experimental class to assess the effect of treatment from the integration of Batak musical instruments on LKPD in mathematics learning (Sari, 2024).

This research was conducted at SMA 4 N MEDAN, located in Medan, Medan City, North Sumatra Province. This research activity was conducted in the even semester of the 2024/2025 academic year (Nurhayati et al., 2019).

The population in this study were all students of grade XII at SMA N 4 Medan, located in Medan City, North Sumatra Province. This population includes around 264 students enrolled in grade XII in the 2024/2025 academic year. All students in this population are domiciled in Medan which is strong in Batak culture, so it is relevant to be used as a research subject regarding the integration of Batak Toba musical instruments in mathematics learning (Rufaidah, 2019).

This study was taken from the population of 12th grade students at SMA N 4 Medan using purposive sampling technique. Two classes were selected as samples, namely class XII IPA I and class XII IPA IV. Class XII IPA I became the experimental group that used Student Worksheets (LKPD) based on Batak musical instruments, while class XII IPA IV became the control group. The selection of this class aims to ensure that students involved in the study have characteristics that are relevant to the research objectives, so that they can evaluate the effect of the integration of Batak musical instruments in LKPD on students' mathematical interest (Khafiza et al., 2023).

In this study, variable X1 is class XII IPA I which is used as an experimental class, while variable X2 is class XII IPA IV which acts as a control class. The experimental class (X1) is given certain treatments in accordance with the objectives of the study, while the control class (X2) does not receive such treatments so that it can be used as a comparison to measure students' mathematical interest (Yusuf et al., 2017).

In this study, various research instruments were used to collect comprehensive data on the influence of the integration of Batak musical instruments in mathematics learning. In accordance with Sugiyono's opinion (Syahril et al., 2021), a research instrument is a device specifically designed to quantify natural and social phenomena in a scientific study. To measure the influence of the integration of Batak musical instruments in increasing students' mathematical interest, this study used a combination of instruments including questionnaires and documentation. A specially prepared questionnaire was used to measure changes in students' mathematical interest quantitatively before and after being given learning treatment that integrated Batak musical instruments. Documentation of various learning artifacts was used to complement quantitative and qualitative data, as well as to provide empirical evidence regarding the effectiveness of the learning carried out. Thus, this study is expected to be able to see the influence of the integration of Batak musical instruments in LKPD on the mathematical interest of high school students.

To obtain complete data and information on the matter to be studied through this research, a data collection technique is needed. According to (Fitri et al., 2023). Data collection techniques are the most strategic step in research because the main purpose of research is to obtain data. So in this research there are four data collection tools, namely:

A questionnaire is a data collection technique that is carried out by giving a set of written questions or statements to respondents to be answered. In this study, researchers compiled a questionnaire using a Likert scale, consisting of positive and negative statements. The statements submitted, both positive and negative, were assessed by the subjects with Strongly Disagree, Disagree, Agree, and Strongly Agree (Prasetyo et al., 2022).

Documentation is a data collection technique that is not directly shown to the research subject, but through documents. Documentation aims to obtain the required data and photos of activities as evidence of the implementation of the research (Nasution & Rasyidah, 2022).

The data analysis method used is quantitative data analysis. Quantitative analysis means that all collected data is processed statistically to describe the situation of the research results. This analysis is carried out to process the results of observations of student activities and questionnaires or surveys (Putra et al., 2022).

RESULT AND DISCUSSION

Research result

This research was conducted at SMA N 4 Medan which is a quantitative descriptive research with the aim of determining the effect of the integration of Batak musical instruments in Student Worksheets (LKPD) on the mathematical interests of high school students.

This research activity was conducted on March 8 to March 10, 2025. There were two meetings for two classes, namely the experimental class and the control class. The experimental class consisted of 30 students in class XII IPA 1 who were taught by the researcher using the *contextual teaching and learning model* while the control class consisted of 30 students in class XII IPA 4 who were taught by the teacher using the conventional learning model (Mahardika Arsa Putra & Tri Agustiana, 2021).

The material taught by the researcher is the volume of rotating objects with the integration of Batak musical instruments. To find out the students' mathematical interests, a final test (*post-test*) was given in the form of a questionnaire consisting of 19 items in the form of a linear scale.

Questionnaire Instrument Trial Results

Before the questionnaire was used to analyze the data, the test questions that had been prepared were first tested to SMA BRIGJEND KATAMSO 1 MEDAN with a total of 66 students. The implementation of the test instrument trial was carried out to determine the validity and reliability of the questionnaire instrument (Umar & Pamuti, 2022).

1. Questionnaire Validity Test

The validity test of this research test was conducted using the *Product Moment Correlation formula* in processing the researcher's data using the assistance of *the SPPS 22.0 for Windows program* with the provision that $r_{count} > r_{table}$, then the test items are valid at the $\alpha = 5\%$ level with n = 66.

From the results of the validity test calculation using *the SPPS 22.0 for Windows program* , the results of the questionnaire item validity test in the table show that all questionnaire items are valid, with 19 valid items that will be used in data collection (Harzuliana et al., 2022). The results of the calculation of the questionnaire item validity test (*attachment 3).*

Table 1. Validity of Questionnaire Instrument Test

Questionnaire number	r *count*	r *table*	Information
1	0.562	0.242	Valid
2	0.539	0.242	Valid
3	0.319	0.242	Valid
4	0,321	0,242	Valid
5	0,691	0,242	Valid
6	0,369	0,242	Valid
7	0,558	0,242	Valid

8	0,378	0,242	Valid
9	0,692	0,242	Valid
10	0,271	0,242	Valid
11	0,535	0,242	Valid
12	0,343	0,242	Valid
13	0,448	0,242	Valid
14	0,568	0,242	Valid
15	0,533	0,242	Valid
16	0,393	0,242	Valid
17	0,514	0,242	Valid
18	0,397	0,242	Valid
19	0,286	0,242	Valid

For item 1 on mathematical literacy skills, $_{the\ calculated}r$ was 0.562 and $_{the\ table}r$ was 0.242. When compared to $r_{\ h\ itung}$ at the critical price of r *Product Moment* with a significance level of α = 0.05, then obtained $r_{\ count} > r_{\ table}$ or 0.562 > 0.242 with *n* = 66, so that from the total of 19 items given, all the questions are valid. So it can be used as a *post-test research questionnaire instrument* to measure students' mathematical interest (Anggreani & Mitarlis, 2021).

2. Questionnaire Instrument Reliability Test

The technique used to determine the reliability of the test is by using the *Cronbach Alpha formula* in processing the researcher's data using the help of *SPSS 22.0 for Windows (appendix 4)* with the provision that if $r_{\ count} > r_{\ table}$ then the test item is valid at a significance level of α = 0.05 with *n* = 66.

Table 2. Results of reliability calculations

r_{hitung}	$r_{\ table}$	**Information**
0.841	0.242	Tall

The mathematical interest of students is obtained by $r_{\ count}$ = 0.841 with the price of *Product Moment (attachment 5)* for *n* = 66 with *α* = 0.05, then obtained $r_{\ table}$ = 0.242. A question is said to be reliable if $r_{\ count} > r_{\ table}$ by paying attention to the criteria, then obtained $r_{\ count} > r_{\ table}$ or 0.841> 0.242 which means that the questions used for *the post-test* are reliable, meaning that the instrument can be trusted, and the data is correct until it is tested several times at different times and the measurements are carried out by different people and the results will remain the same, then it is declared suitable for use as an instrument to measure students' mathematical interest (Noorhidayati et al., 2021).

Data analysis

1. Students' mathematical interests

post-test questionnaire instrument was used in the control class to determine students' mathematical interest without being given treatment, while *the post-test* in the experimental class was conducted to determine students' mathematical interest after being given treatment assessed from a 19-item *post-test questionnaire (attachment 6.a) that had been tested for validity. The post-test* results data for each experimental class and control class can be seen in table below:

Table 3. Percentage Data of Post-test Results for Experimental and Control Classes

Post-test **Result Data for Experimental Class and Control Class**						
NO	**Experimental Class**	**Score Percentage %**	**Interest Category**	**Control Class**	**Score Percentage %**	**Interest Category**
1	U1-1	97.18	Very Interested	U2-1	63.38	Not Interested
2	U1-2	94.37	Very Interested	U2-2	71.83	Less Interested
3	U1-3	95.77	Very Interested	U2-3	69.01	Not Interested
4	U1-4	94.37	Very Interested	U2-4	64.79	Not Interested
5	U1-5	90.14	Interested	U2-5	71.83	Less Interested
6	U1-6	97.18	Very Interested	U2-6	74.65	Less Interested
7	U1-7	97.18	Very Interested	U2-7	67.61	Not Interested
8	U1-8	98.59	Very Interested	U2-8	60.56	Not Interested
9	U1-9	88.73	Interested	U2-9	66.2	Not Interested
10	U1-10	94.37	Very Interested	U2-10	61.97	Not Interested
11	U1-11	92.96	Very Interested	U2-11	64.79	Not Interested
12	U1-12	91.55	Very Interested	U2-12	63.38	Not Interested
13	U1-13	90.14	Interested	U2-13	70.42	Not Interested
14	U1-14	92.96	Very Interested	U2-14	61.97	Not Interested
15	U1-15	88.73	Very Interested	U2-15	71.83	Less Interested
16	U1-16	92.96	Very Interested	U2-16	63.38	Not Interested
17	U1-17	91.55	Very Interested	U2-17	69.01	Not Interested
18	U1-18	92.96	Very Interested	U2-18	69.01	Not Interested
19	U1-19	92.96	Very Interested	U2-19	66.2	Not Interested
20	U1-20	92.96	Very	U2-20	67.61	Not

			Interested			Interested
21	U1-21	90.14	Interested	U2-21	67.61	Not Interested
22	U1-22	100	Very Interested	U2-22	69.01	Not Interested
23	U1-23	95.77	Very Interested	U2-23	71.83	Not Interested
24	U1-24	94.37	Very Interested	U2-24	67.61	Less Interested
25	U1-25	90.14	Interested	U2-25	66.2	Not Interested
26	U1-26	85.92	Interested	U2-26	67.61	Not Interested
27	U1-27	87.32	Interested	U2-27	63.38	Not Interested
28	U1-28	98.59	Very Interested	U2-28	71.83	Not Interested
29	U1-29	91.55	Very Interested	U2-29	64.79	Less Interested
30	U1-30	95.77	Very Interested	U2-30	70.42	Not Interested
Average		93.239	Very Interested		67.324	Not Interested

post-test results of students in class XII IPA I who were given treatment using the integration of Batak musical instruments in LKPD and students in class XII IPA 4 who were given treatment using conventional learning, it shows that the data on the average percentage of *post-test* scores of students in class XII IPA 4 as the control class is 67.324 with less interest (*attachment 6.b)*. While in class XII IPA 1 as the experimental class, the average *post-test score* was stated to be more interested with an average percentage of 93.239 with a very interested category (*attachment 6.b)*. Based on the difference in the average percentage of students' mathematical interest in the control and experimental classes, it is concluded that the integration of Batak musical instruments in LKPD has an effect on students' mathematical interest in SMA N 4 Medan (Gumono et al., 2022).

Normality Test

From the data of the *post-test research results of* the mathematical interest of students in the experimental class and control class in the normality test with the help of *SPSS 22.0 for windows (attachment 7)* using the *Shapiro-Wilk test* , it was obtained that the *post-test data* of the experimental class obtained a significant value of 0.856 so that 0.856> 0.05 was obtained and the *post-test data* of the control class obtained a significant value of 0.446 so that 0.446> 0.05 was obtained. Table 4.4 shows the results obtained from the calculation of the normality test using the *Liliefors normality test.* The criteria for normality testing for the control and experimental classes are if $L_{count} < L_{table}$ at a significance level of $\alpha = 5\%$ with $n = 30$ in the experimental class and $n = 30$ in the control class. From the calculations in (*attachment 7), a summary of the results of the normality test for the posttest*

from the experimental class and the control class is presented .

Table 4. Results of Normality Calculation

Class	(n)	($\bar{X}$)	(S)	L_{count}	L_{table}	Information
Experiment	30	66.2	3.22	0.11749	0.1559	Normal
Control	30	47.8	3.64	0.1371	0.1497	Normal

From table 4.4, it is obtained that the experimental class $L_{count\ data}$ has a significant value of 0.111749 so that 0.111749 <0.1559 is obtained. Then the control class $L_{count\ data}$ has a significant value of 0.1371 so that 0.1371 <0.1542 is obtained. Because from the data obtained, the $L_{count\ value} < L_{table}$, it can be concluded that the experimental and control class data are normally distributed.

Homogeneity Test

The homogeneity test is used to determine whether the variance of the two research samples is homogeneous or not. In this study, the homogeneity test is used to determine whether the variance of the *post-test data* of the experimental class and the control class is homogeneous or not. The calculation of the homogeneity test is carried out using the help of *SPSS 22.0 software (appendix 8)* using the *Levene test* . The following are the results of the analysis of the homogeneity test results in the experimental class and the control class. Based on the results above, the significance value of the *Levene test* on *the post-test* of the experimental class and the control class based on the test value based on the mean of 0.720. So that 0.720> 0.05 is obtained and the average value based on the median is 0.729> 0.05, it is concluded that the *post-test data* of the experimental class and the control class are homogeneous (Suhartiningsih et al., 2024). Because the Sig. value> 0.05, the variance of the two classes is considered homogeneous . Based on the normality test of the data, the calculated L value of the mathematical interest of students in the control and experimental classes is normally distributed so that the analysis is continued by testing the homogeneity of the two variances between the *posttest results* of the mathematical interest of students in the experimental and control classes using the *F-test* (*attachment 8*) with a significance level of 0.05 to determine whether the variants of the two research samples are homogeneous or not (SARASWATI, 2021). The following are the results of the homogeneity test of the experimental and control classes.

Table 5. Results of the Post-Test Data Homogeneity Test for the Experimental Class and Control Class

Class	Number of Samples (n)	Variance (S^2)	F_{count}	F_{table}	Information
Experiment	30	10.37	0.783	1.86	Homogeneous
Control	30	13.25	0.783	1.86	

Based on the test criteria $F_{count} < F_{table}$ then the sample has the same variance or is

homogeneous. From the table above it can be seen that F *count* < F *table* so that the data obtained is homogeneous.

Hypothesis Testing

To show whether there is a significant difference between the experimental class and the control class on students' mathematical literacy skills, an independent sample *t- test was conducted* using the *post-test scores* from the experimental class and the control class. With the help of *SPSS software version 22.0* (*attachment 9), it is shown that the Sig. (2-tailed)* value of the independent sample t-test is 0.001.

Table 6. Results of t-test calculations

Category	Average (*Mean*)	Standard Deviation (SD)	- value	df	*Sig. (p-value)*	Conclusion
Experimental Class	75.42	5.86	5.87	58	< 0.001	There is influence
Control Class	68.15	4.92				

Based on the significant value, it is shown that the significant value <0.05 with a value of 0.001, so that the conclusion is drawn that H0 $_{is}$ rejected and Ha $_{is}$ accepted or it is concluded that there is an influence of the integration of Batak musical instruments in LKPD on the mathematical interest of high school students. In accordance with the provisions, decision making is based on several provisions, namely: If *Sig.* <0.05 or t $_{count}$ < t $_{table}$, then H_0 is rejected and Ha $_{is}$ accepted with a value oft_{hitung} is 5.87. For α = 0.05 and *db* = 60 – 2 = 58, then t is obtained $_{0.05.58}$ = 2.001 , then t_{tabel} = 2.001 is obtained . By comparing the values t_{hitung} And t_{tabel} obtained $t_{hitung} > t_{tabel}$ The conclusion is that there is an influence on students' mathematical interest in the experimental class and the control class. Where the influence is caused by the treatment of the integration of Batak musical instruments in LKPD in class XII IPA 1 as an experimental class.

Research Discussion

Based on the results of the research that has been conducted, it can be concluded that the integration of Batak musical instruments in Student Worksheets (LKPD) has a positive influence on the mathematical interest of high school students. The results of this study indicate that a local culture-based learning approach can have a positive influence on students' interest in learning mathematics, which has often been considered a difficult and less interesting subject.

Integration of Batak musical instruments in mathematics learning through culture-based LKPD provides a more contextual and relevant approach to students' lives. This is able to create a more interesting and meaningful learning experience. This finding is in line with the *Contextual Teaching and Learning (CTL) theory* which emphasizes that learning will be more effective if the material taught is linked to the environment and real experiences of students.

The results of the statistical test showed that the *Sig. (p-value)* was <0.001, which means that there is a significant difference between the mathematical interest of students in the experimental and control groups. Thus, the research hypothesis stating that the integration of Batak musical instruments in LKPD has an effect on students' mathematical interest is accepted. The results of the *t -test* showed that *the t* -count of 5.87 was greater than the t-table of 2.001 at a significance level of 5%, which

indicates a significant effect of the treatment given on students' interest (Afriana & Festiyed, 2022).

Furthermore, the results of observations and questionnaires given to students showed that students who studied with LKPD based on Batak musical instruments showed more active participation in class discussions, were more enthusiastic in working on problems, and were more motivated to learn mathematics compared to students who used LKPD without cultural elements. The percentage of student involvement in the experimental class increased significantly compared to the control class, indicating that cultural integration in learning has a positive effect on student involvement in the learning process (Ariesta & Awalludin, 2021).

In addition, students in the experimental group showed higher mathematical interest questionnaire scores than students in the control class. The average percentage of students' mathematical interest questionnaire scores in the experimental class was 93.2%, while in the control class it only reached 67.3. This shows that the use of Batak musical instruments in LKPD can have a significant positive effect on their interest in mathematics. These results are consistent with the research of Astria et al. (Subakti et al., 2021), which found that the integration of cultural elements in mathematics learning can have a positive effect on student engagement and make them more enthusiastic in learning.

However, although this study shows positive results, there are some advantages and disadvantages that need to be considered. One of the main advantages of this study is the innovation in learning, where the use of Batak musical instruments as a context in math problems has been proven to have a positive influence on student interest. This method provides a new alternative for teachers in compiling more interesting and culture-based teaching materials, so that it can help improve the quality of learning in schools.

On the other hand, this study also has some limitations. The scope of the study is still limited to one school and one particular culture, so the results may not be generalizable to other regions with different cultures. In addition, this study only measures students' mathematical interest without evaluating the extent to which this approach influences the understanding of mathematical concepts in depth. Therefore, further research is needed that also measures aspects of conceptual understanding to get a more comprehensive picture (Laili et al., 2019).

Overall, this study proves that the integration of Batak musical instruments in LKPD has a positive influence on the mathematical interest of high school students. In other words, the culture-based learning method applied in this study has succeeded in providing a positive influence on students' interest in learning mathematics. Therefore, this approach is recommended to be further developed, both in a broader research scope and in learning practices in schools that have a rich local culture (Simanullang et al., 2022). Thus, this study is expected to be the basis for the development of other innovative learning methods that integrate cultural elements in mathematics education, in order to provide a positive influence on student involvement and motivation in learning mathematics more effectively and enjoyably (Susana et al., 2022).

CONCLUSION

Based on the results of this study, there are several conclusions that can be drawn:

1. The use of Student Worksheets (LKPD) integrated with Batak musical instruments has a positive effect on the mathematical interest of high school students. This is evidenced by the results of statistical tests showing that students who use culture-based LKPD have a higher interest compared to students in the control class. The results of the t-test show that the t-count of 5.87 is greater than the t-table of 2.001 at a significance level of 5%, and the Sig. (p-value) is <0.001, which indicates a significant difference between the two groups.
2. The integration of Batak musical instruments in LKPD not only creates more contextual and

meaningful learning but also has a positive influence on student involvement and motivation in the process of learning mathematics. The mathematical interest questionnaire score showed a significant increase in the experimental class compared to the control class, where the average score of the mathematical interest questionnaire in the experimental class was 93.2%, while in the control class it only reached 67.3%. This shows that a culture-based approach has a positive impact on students' learning interest.

Suggestion

Based on the results of this study, there are several suggestions that can be given:

1. For Teachers: It is expected that teachers can develop and apply local culture-based learning approaches in other subjects to increase students' motivation and interest in learning.
2. For Students: Students are expected to be more open to culture-based learning methods, and more active in exploring the relationship between local culture and the mathematical concepts they learn.
3. For Further Researchers: It is hoped that further research can develop a broader culture-based learning model by integrating various other cultural aspects to improve students' understanding of mathematical concepts and interests in greater depth.
4. For Schools: Schools can consider cultural integration in the curriculum as part of a strategy to improve the quality of education, so that learning becomes more contextual, interesting, and relevant for students.

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