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DEVELOPING OF WORKSHEETS ON SINGLE AND GROUP DATA WITH A BASKETBALL CONTEXT

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ABSTRACT

This study aims to develop worksheets in the context of basketball on single data and group data with valid and practical criteria, which have the potential to have a positive impact on mathematics learning. The research used a development studies type of design research approach, which included three stages, namely the introduction stage, the prototype stage, and the assessment stage. Formative evaluation was applied through self evaluation, expert review, one-to-one evaluation, small group trials, and field test. The research instruments included documentation, interviews, and practicality questionnaires that were analyzed. The research subjects were eighth-grade students at a junior high school in Karawang. The results showed that the developed worksheet met the criteria of validity, practicality, and effectiveness. Students showed high enthusiasm in participating in learning activities because the basketball context used made learning activities more meaningful, enjoyable, and easy to understand. Based on data analysis, the basketball-based worksheet was declared valid and practical for use in statistics learning in junior high schools. This product has the potential to improve the achievement of learning objectives related to data types in statistics.

Keywords: Basketball, Sport, Statistics, Worksheet

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PRELIMINARY

Mathematics education plays an important role in shaping students' logical, critical, and analytical thinking skills. One of the main objectives of education is to develop logical, analytical, systematic, critical, and creative thinking skills, which form the basis for students to solve various problems in life (Arnidha & Fatahillah, 2021) Mathematics, as one of the core subjects, contributes greatly to achieving this goal because it not only teaches calculation skills but also hones rational thinking and reasoning abilities. Students who study mathematics must have two important skills, namely the ability to pose problems and the ability to think logically in mathematics (Puspitasari, 2018). Mathematics learning at the junior high school level is often considered difficult and uninteresting because the learning is still abstract and not contextual. Students must understand mathematical concepts contextually and concretely because mathematics is abstract

(Hamidah, Ardiansyah & Misrani, 2024). One of the subjects that often causes difficulties is statistics, especially on the topics of single data and group data, because students tend to only memorize formulas without understanding their application in real life (Sari, Oktafia & Ningsih, 2021).

In the Merdeka Curriculum, mathematics learning emphasizes strengthening numeracy and conceptual understanding through contextual and collaborative activities. This curriculum requires students to be able to think critically, reason, and solve problems based on real situations they encounter (Fauzi, 2022). Therefore, teachers need to develop learning tools that encourage students to actively build knowledge through meaningful learning experiences that are relevant to their lives. In line with the research by Effendi, Zulkardi, Putri & Yaniawati, (2020) stated that student worksheets often do not incorporate information from real everyday life, which makes mathematical concepts seem more abstract. Student worksheets are written learning guides designed specifically for students, covering important learning material and activities to help students become more active and understand what they are learning (Marina, Hapizah & Hartono, 2025).

One of the learning tools that can be used to achieve this goal is a student worksheet that serves as a self-study guide for students in exploring mathematical concepts through structured and targeted activities. Well-designed student worksheets can increase learning activities, make it easier for teachers to manage learning, and help students understand the material more effectively (Basri et al., 2020). In addition to being valid in terms of content and construct, student worksheets also need to fulfill the aspect of practicality, namely ease and suitability of use in the learning process (Samosir & Simatupang, 2022).

Integrating basketball into student worksheets on single and group data is expected to make mathematics learning more interesting, meaningful, and easier to understand. Using sports contexts in mathematics learning will make it more meaningful, interesting, and enjoyable (Yansen, Putri & Zulkardi, 2018). Students feel more comfortable and confident when discussing mathematical concepts in a sports context (Sanchal & Sharma, 2017). In mathematics learning, sports can be used as a context for analyzing mathematical material because students' understanding and thinking skills can develop through the use of a sports context (Effendi, Zulkardi, Putri & Yaniawati, 2018). Any sports activity related to mathematics can be used in class because it is usually done by students (Boleng & Rudhito, 2025). Basketball is one of the most popular sports among the public, from children to adults (Wijaya et al., 2024). The use of familiar contexts will make students

more enthusiastic, active, and creative in solving the problems given. Therefore, it is important to develop and assess the practicality of student worksheets based on the context of basketball in order to determine the extent to which these worksheets are effective, efficient, and can be easily used by teachers and students in junior high school learning.

METHODS

A design research approach with a development studies type was employed because this method is specifically intended to systematically develop, validate, and evaluate educational products through iterative formative evaluation stages (Plomp & Nieveen, 2013; Marina, Hapizah, & Hartono, 2025). This approach was selected because the research aimed not only to produce a valid worksheet on single and grouped data within a basketball context, but also to examine its practicality and effectiveness in authentic mathematics learning settings for eighth-grade junior high school students.

The research consisted of three stages: preliminary analysis, prototyping, and assessment (Plomp & Nieveen, 2013). During the preliminary analysis stage, curriculum needs, students' characteristics, statistical content, and the relevance of basketball contexts were examined to support meaningful mathematics learning. The prototyping stage applied formative evaluation through self-evaluation, expert review, one-to-one evaluation, and small group evaluation. The expert review involved four validators: one mathematics education lecturer, one basketball practitioner, and two junior high school mathematics teachers, who evaluated the worksheet based on content, construct, and language validity. One-to-one evaluation involved three students to assess readability, clarity, and usability.

Following revisions based on expert and student feedback, a small group evaluation involving 12 eighth-grade students was conducted to assess practicality in terms of attractiveness, usefulness, and ease of use (Samosir & Simatupang, 2022). Subsequently, the final field test involved 40 eighth-grade students at a junior high school in Karawang to examine the worksheet's effectiveness in supporting students' understanding of single and grouped data concepts in classroom practice.

This study uses a design research approach with a development studies type (Plomp & Nieveen, 2013). This study is a type of research that aims to assess the practicality of student worksheets on single and group data with a basketball context for 8th grade junior high school students. This study uses the stages of introduction, prototyping, and evaluation (Plomp & Nieveen, 2013). Formative evaluation is used in the prototyping stage, which consists of a self evaluation phase, an expert review consisting of four

experts, namely mathematics education lecturers, basketball practitioners, and two junior high school mathematics teachers, followed by one-on-one discussions with three students. This stage has been published in the National Conference on Mathematics Education (NaCoMe) 2025. The next stage is a field test in a small group consisting of 12 students. The next stage is a field test consisting of 40 students.

Documentation, field reviews, questionnaires, interviews, and tests are the methods used to collect and analyze data in this study. Field reviews were conducted during the validation of the first prototype by expert reviewers. The purpose of this stage was to gather feedback and opinions from the expert reviewers. In collecting data, documentation was carried out, including comments and suggestions from validators, comments and suggestions from students, and the results of students' answers. Interviews were conducted during the one-on-one, small group, and field test stages. The fieldtest used questionnaire and test. The results of the walkthrough, documentation, questionnaire sheets, and interviews were analyzed qualitatively. Meanwhile, the test results were analyzed quantitatively using descriptive statistical analysis to determine the mean, median, mode, minimum score, maximum score, and standard deviation of students' conceptual understanding abilities.

RESULT AND DISCUSSION

This study has produced valid and practical worksheets for students on single and group data in the context of basketball. The stages used in this study included the introduction stage, the prototype stage, and the assessment stage. Formative evaluation was used in the prototype stage, which consisted of a self-evaluation phase, an expert review consisting of four experts, namely mathematics education lecturers, basketball practitioners, and two junior high school mathematics teachers, followed by one-on-one discussions consisting of three students.

In the introductory stage, researchers analyzed the composition of student worksheets in junior high school, students' abilities in mathematics learning, and students' interest in basketball. In addition, researchers analyzed aspects of basketball competition relevant to the material to be presented, namely single data and group data in junior high school statistics.

The next stage is Prototyping. At this stage, researchers design prototypes of Student Worksheets that use basketball as a starting point for learning statistics on single data and group data. The principles of Realistic Mathematics Education emphasize the use

of real-world contexts as a path to formal mathematical concepts. These principles are applied in the design of worksheets. Formative evaluation methods are used to produce prototype worksheets. This evaluation process consists of three stages, namely self-evaluation, expert review, and one-to-one evaluation.

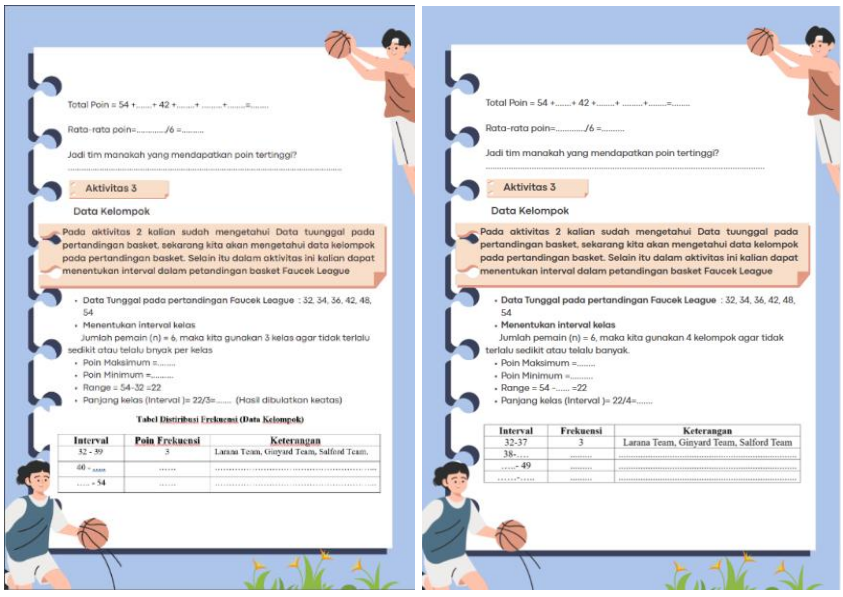
Researchers conducted self-evaluations by reviewing the design of worksheets in terms of content, construction, and language to ensure they were in line with the statistical learning objectives in junior high school. After that, expert evaluation was carried out by junior high school mathematics teachers, junior high school physical education teachers, and mathematics education teachers as validators to assess the suitability of the statistics content with the curriculum, the correctness of the concepts, and the suitability with the statistical learning objectives.

Based on the validation results from the three validators, it can be concluded that worksheets with statistics material on baskets are highly valid and suitable for use in mathematics learning in junior high schools. The excellent validation results from all three aspects indicate that the worksheets meet the standards of content, construction, and language quality. Therefore, the worksheets are suitable for use as a learning medium. These findings are in line with the research by Effendi, Zulkardi, Putri & Yaniawati, (2019) which produced interactive student worksheets based on Liveworksheets and found that the validity of the media, material, and readability were excellent. Table 1 and Figure 1 show the comments, suggestions, and follow-up actions of the validators as well as the revised worksheets.

Table 1. Validator Comments, Suggestions, and Follow-up Actions

Validator	Comments and Suggestions for Improvement	Follow-up in Worksheet Revision
Mathematics Education Lecturer	1. When determining classes in group data, do not make them too small so that the number of intervals is not too large, with the aim of building or constructing students' understanding in determining class intervals. 2. The conclusion is written in full as "Conclusion of Material."	1. In group data, determine a larger class size so that students can follow the steps properly, making it easier for them to understand the concepts. 2. The conclusion is written in full so that students understand the material they have learned.
Basketball Practitioner	This statistical material is very appropriate and relevant to real life. For a coach, it is very	Strengthen real-world applications, such as adding case studies related to

Validator	Comments and Suggestions for Improvement	Follow-up in Worksheet Revision
	important to measure and know how well an athlete is performing in contributing to the team. The advice could be further strengthened by contextualization and real-world application.	basketball: input real or simulated statistical data from the world of basketball.
Fellow Junior High School Mathematics Teachers	The worksheet meets the learning objectives and learning needs in terms of content, structure, and language. The suggestion of "3 classes" in determining class intervals often confuses students. Perhaps it could be replaced or supplemented with several stages that can help students construct their understanding.	The class sentences in the group data were changed to groups and stages were added in solving mathematical problems.
Fellow Junior High School Mathematics Teachers	The LKPD is compliant and ready for use. The completion stage for group data has been added.	Providing one stage in determining class intervals, so that students can understand mathematical problems.



(a) **(b)**

Figure 1. (a) Student Worksheet Before Revision and (b) Revised Student Worksheet

Next, readability tests were conducted individually on three students from the eighth grade of junior high school. At this stage, students were asked to read and complete the student worksheet, then provide feedback on readability, clarity of instructions, and the questions provided.

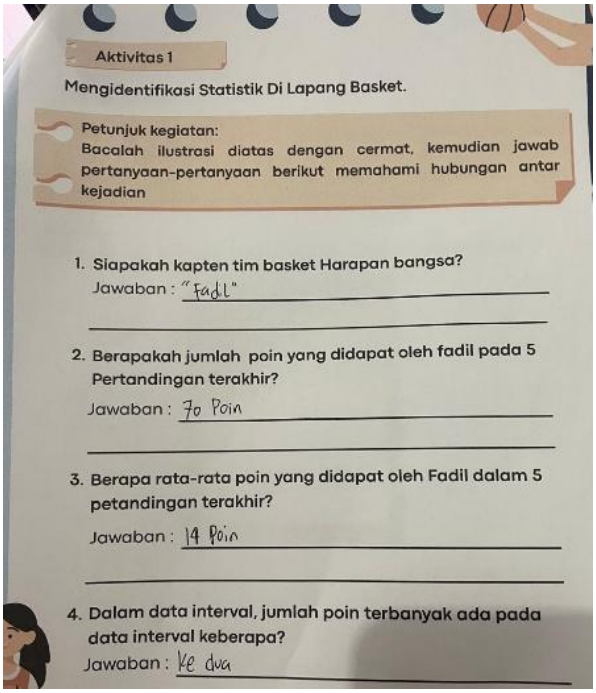
The readability aspect of the students assessed that the clarity of the language used was easily understood, and the appropriateness of the sentences did not cause confusion. Students did not experience difficulties in understanding the content of the worksheets. This is in line with previous research findings which show that contextual worksheets have a high level of readability and clarity and can build students' conceptual understanding well, Rahman, (2018); Deda & Maifa, (2021).

In terms of clarity, students assessed that the instructions in the worksheets were easy to understand, and that the pictures and illustrations in the stories helped them understand the material. Students prefer worksheets that are interesting and structured, as well as relevant because they relate to everyday life. Research by (Effendi, Zulkardi, Putri & Yaniawati, 2019). shows that interactive digital liveworksheets can improve the clarity of instructions and make them easier for students to understand.

The second prototype, which will be tested on a small group consisting of 12 students with the initials FJR, RAPR, CCA, PA, DFM, ANA, FBSS, HCQ, BRP, DKR, KYG, ABL, an eighth grader from a junior high school in Karawang who is not a subject of the study, is the first prototype that has been revised at the Expert Test and One-on-One Test stages. The purpose of this small group stage is to determine whether the product that has been made is feasible for use (Effendi, Zulkardi, Putri & Yaniawati, 2019). The researchers used documentation, questionnaires, and interviews to determine whether the student worksheets with a basketball context were suitable for mathematics learning. The feasibility of the student worksheets was indicated by their attractiveness/likability, usefulness, and ease of use (Effendi, Zulkardi, Putri & Yaniawati, 2019).

The questionnaire results show that the attractiveness aspect scored 83%, the usefulness aspect scored 88%, and the ease aspect scored 75%. Practicality is considered an important quality because something that is not practical will not last long, regardless of its validity and reliability (Effendi, Zulkardi, Putru & Yaniawati, 2019). Practical products can last a long time because they are comfortable to use.

The worksheet for the practical stage consists of three activities and one individual question. In the first activity, students are given an illustration titled “Statistics on the Basketball Court” from the short story. Students identify the events that occur in the story and answer questions prepared by the researcher related to the illustration. The students' answers are shown in Figure 2.


Aktivitas 1

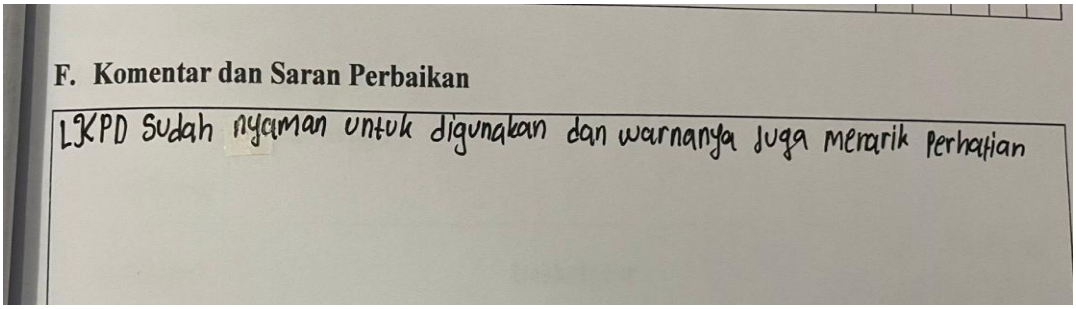
Mengidentifikasi Statistik Di Lapang Basket.

Petunjuk kegiatan:
Bacalah ilustrasi diatas dengan cermat, kemudian jawab pertanyaan-pertanyaan berikut memahami hubungan antar kejadian

1. Siapakah kapten tim basket Harapan bangsa?
   Jawaban : "Fadil"
2. Berapakah jumlah poin yang didapat oleh fadil pada 5 Pertandingan terakhir?
   Jawaban : 70 Poin
3. Berapa rata-rata poin yang didapat oleh Fadil dalam 5 petandingan terakhir?
   Jawaban : 14 Poin
4. Dalam data interval, jumlah poin terbanyak ada pada data interval keberapa?
   Jawaban : ke dua

Figure 2. Students' answers to Activity 1

In the text entitled "Statistics in Basketball," students are asked to analyze player performance by looking at the number of points scored in a game, determining the average points, and the interval data in the highest number of points. From this text, students can correctly answer the questions given by the researcher on the worksheet. Students can retell the content of the text, showing that they enjoy the text they read (Effendi, Zulkardi, Putri & Yaniawati, 2019). Students express their opinions about the appeal/likability listed on the worksheet in the context of basketball. The worksheets were designed to be as interesting as possible according to the needs of the students so that they would be more enthusiastic in participating in mathematics learning (Zulkarnain & Suryaningsih, 2023). This can be seen from the student practicality questionnaire shown in Figure 3.


F. Komentar dan Saran Perbaikan

LKPD Sudah nyaman untuk digunakan dan warnanya juga menarik perhatian

Figure 3. Student Comments

In Worksheets 2 and 3, students can determine individual and group data using the image "Faucek League standing table." Students can determine the total points and average

points in the basketball game, as well as determine which team scored the most points. The basketball game is shown in Figure 4.

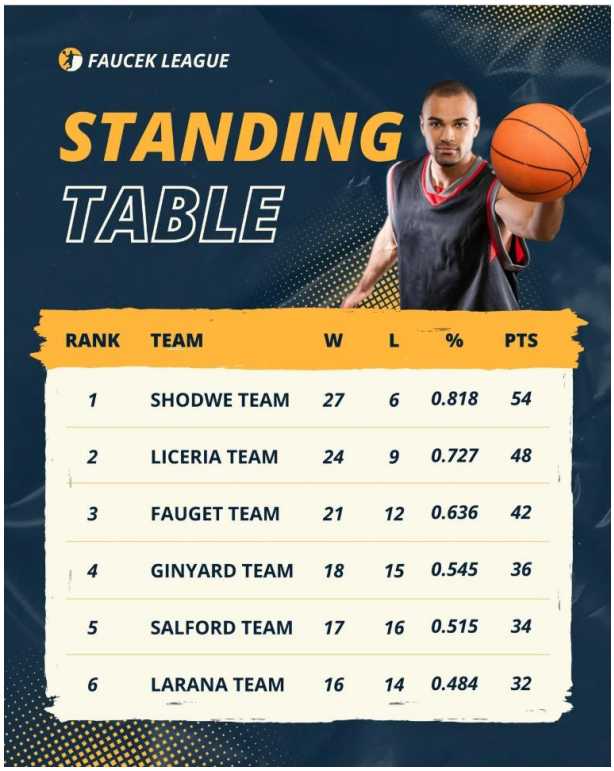


Figure 4. Basketball game

The Fauceck League contains data on six participating teams: Shodwe Team, Liceria Team, Fauget Team, Ginyard Team, Salford Team, and Larana Team. The data presented includes the number of wins (W), losses (L), winning percentage (%), and total points (PTS). Based on the table, Shodwe Team ranks first with 27 wins, 6 losses, a winning percentage of 0.818%, and a total of 54 points. Meanwhile, the team with the lowest performance is Larana Team, with 16 wins, 14 losses, a winning percentage of 0.484%, and a total of 32 points.

Through this data, students can learn to process and analyze group data in the real context of basketball. For example, students can calculate the average points for the entire team, determine the teams with the highest and lowest performance, and make simple statistical interpretations about the relationship between the number of wins and points scored. Activities like this help students understand that statistical concepts such as averages, ranges, and frequency distributions are not only abstract, but also have practical uses in sports and real life.

In the image of the basketball game "Faucek League standing table," students can correctly determine the single data. From the standing table image, students identify the points for each basketball team. The following are the students' answers shown in Figure 5.

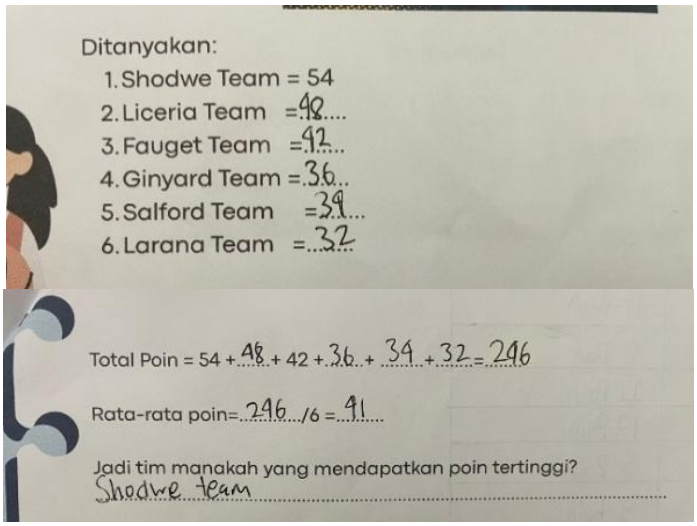


Figure 5. Students' answers to Activity 2

Based on the students' answers, all 12 students (100%) were able to correctly identify single data, calculate total scores, and determine the mean accurately. These findings indicate strong conceptual understanding of single data and show that students were able to systematically apply statistical concepts in meaningful basketball contexts.

The students were then able to calculate the total points and determine the average score. Figure 5 shows that the students were able to correctly understand the mathematical problems presented in the basketball game.

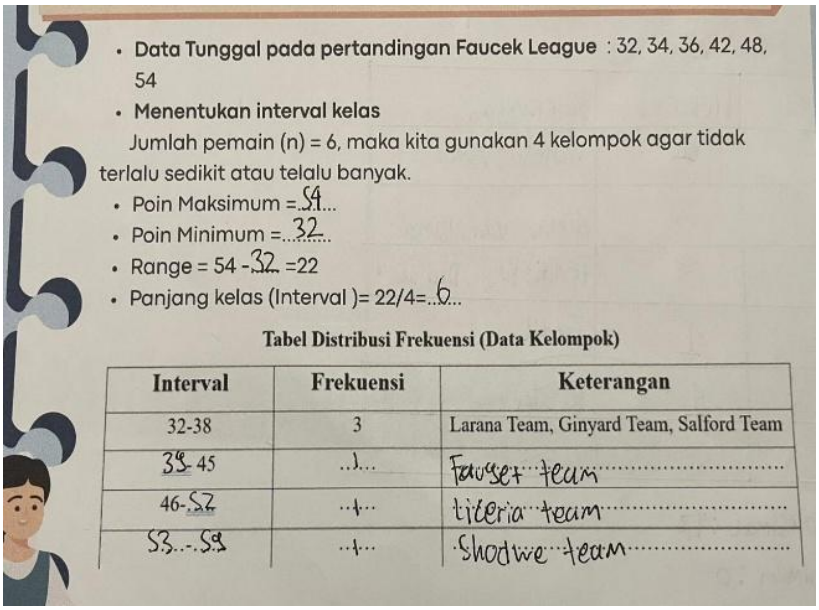
In activity 2, students demonstrated their ability to process data sourced from the results of basketball matches between teams, namely Shodwe Team, Liceria Team, Fauget Team, Ginyard Team, Salford Team, and Larana Team. The students were able to correctly record the points for each team, namely 54, 48, 42, 36, 34, and 32, then add up all the data to get a total of 246 points. After that, they were able to determine the average points of 41 and conclude that the Shodwe Team scored the highest points compared to the other teams.

This process shows that students have understood the basic concepts of single data, particularly in calculating the mean and comparing quantitative data. Students can answer questions independently by following systematic steps, starting from identifying data, calculating the total amount, to drawing conclusions from the calculation results.

This activity has real-world applications in the context of basketball games, as the data collected reflects each team's performance. Students learn how statistical data is used

to analyze game results, assess the success of strategies, and determine the best-performing teams. Learning that connects subject matter to real-life contexts can accustom students to planning problem-solving strategies, implementing them, monitoring them, and evaluating the results (Zakiah, Sunaryo, & Amam, 2019).

The ability of students to perform these steps independently demonstrates logical thinking skills, accuracy, and conceptual understanding of the material. Activities such as this also support contextual learning, where mathematics is linked to real-life experiences so that students can more easily understand the meaning of the concepts being studied. Thus, through activity 2, students are not only able to solve group data problems independently, but also understand the usefulness of statistics in analyzing match data, while fostering curiosity and a deeper conceptual understanding of mathematical material. In Activity 2, students learned about single data in basketball games. Next, students will learn about group data presented in basketball games. In Activity 3, students can also determine class intervals. The following are the students' answers shown in Figure 6.


• Data Tunggal pada pertandingan Faucek League : 32, 34, 36, 42, 48, 54
• Menentukan interval kelas
Jumlah pemain (n) = 6, maka kita gunakan 4 kelompok agar tidak terlalu sedikit atau telalu banyak.
• Poin Maksimum = 54
• Poin Minimum = 32
• Range = 54 - 32 = 22
• Panjang kelas (Interval)= 22/4= 6

Tabel Distribusi Frekuensi (Data Kelompok)

Interval	Frekuensi	Keterangan
32-38	3	Larana Team, Ginyard Team, Salford Team
39-45	1	Fauset Team
46-52	1	Liberia Team
53-59	1	Shadwe Team

Figure 6. Student Responses to Activity 3

Figure 6 shows the answers of students who are able to independently compile group data based on single data from the Fauceck League match with points of 32, 34, 36, 42, 48, and 54. Students can accurately determine the maximum value (54) and minimum value (32), then calculate the range of 22 and determine the class length (interval) of 6. Furthermore, students are able to group the data into four intervals, namely 32–38, 39–45,

46–52, and 53–59, and compile a complete frequency distribution table with the corresponding team information for each interval.

League with points 32, 34, 36, 42, 48, and 54. Students can determine the maximum value (54) and minimum value (32) accurately, then calculate the range of 22 and determine the class length (interval) of 6. Next, students are able to group the data into four intervals, namely 32–38, 39–45, 46–52, and 53–59, and compile a complete frequency distribution table with the corresponding team information for each interval.

Based on the students' answers, 10 out of 12 students (83.3%) correctly completed the grouped data procedures, including determining range and class intervals. This demonstrates good understanding of grouped data concepts and supports the view that conceptual understanding is closely related to students' cognitive development (Febriyani, Hakim, & Nadun, 2022).

These findings indicate that most students were able to transition from single data analysis to more complex grouped data representation. Starting from determining the range to the class length/interval, which means that the students' understanding of mathematical concepts is good. Cognitive level and the ability to understand mathematical concepts are interrelated, because understanding a mathematical concept requires good cognitive abilities (Febriyani, Hakim & Nadun, 2022).

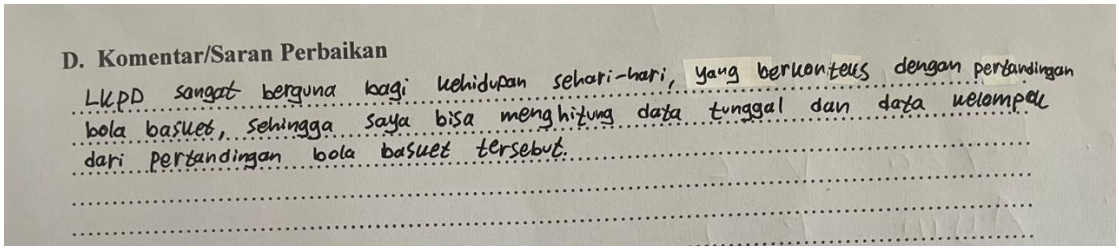
This skill demonstrates that students have understood the basic concepts of group data, including determining class intervals, ranges, and presenting data in frequency tables. Students can also relate this activity to a real-world context in basketball games, where each team's score data is used to compare performance and analyze the consistency of play between teams. Through these activities, students understand that statistics have practical uses in the world of sports, such as analyzing game results and evaluating team strategies based on numerical data.

Students demonstrate independent learning in processing data without relying directly on teacher assistance. They are able to use systematic steps from data collection to compiling frequency distribution tables. This process strengthens analytical and interpretive thinking skills, which are an important part of contextual mathematics learning.

According to Rahmadani et al., (2023) mathematics learning based on real-life contexts can improve critical thinking skills and conceptual understanding because students can see the relevance of the material to everyday situations. Sports can be used as a context for analyzing mathematical material because students' ideas and thinking skills

can arise through the application of a sports context in mathematics learning (Effendi, Zulkardi, Putri & Yaniawati, 2019). The application of a sports context in statistics learning can increase students' motivation and independence in learning because these activities feel more meaningful and applicable. In this activity, students are not only able to answer questions independently, but also understand the usefulness of statistics in real-world contexts and relate it to activities that are close to their lives, such as basketball games.

Students express their opinions about the usefulness listed on the worksheet with a basketball context. The basketball-themed worksheet provides more meaningful learning in line with the independent curriculum's deep learning approach, whereby students can feel the relevance of what they learn to real life. Students are able to construct new knowledge based on old knowledge and apply their knowledge in real life (Regina Putri Novia Rani et al., 2023) Students' comments on the questionnaire sheet regarding usefulness are shown in Figure 7.


D. Komentar/Saran Perbaikan

LKPD sangat berguna bagi kehidupan sehari-hari, yang berkaitan dengan pertandingan bola basket, sehingga saya bisa menghitung data tunggal dan data kelompok dari pertandingan bola basket tersebut.

Figure 7. Student Comments

Students can complete the basketball-themed worksheet by reading the illustrative text, which is a short story, so that they can answer the questions provided by the researcher. Finally, students can construct their understanding independently by presenting a problem on the worksheet. Students can complete individual exercises related to the learning objectives, namely determining single data and group data correctly. Learning that begins with reading activities related to mathematics material increases students' interest in learning and their literacy skills because the context presented is more varied and the learning context becomes more interesting (Effendi, Zulkardi, Putri & Yaniawati, 2019). The following are the students' answers shown in Figure 8.

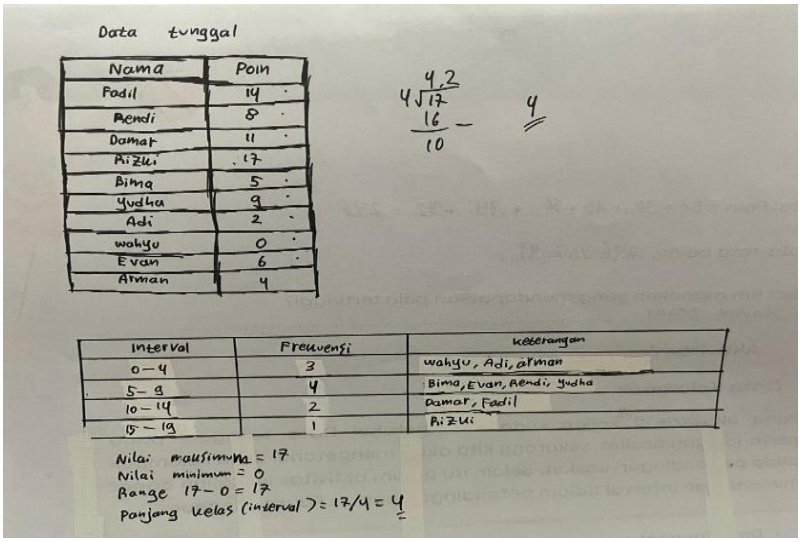


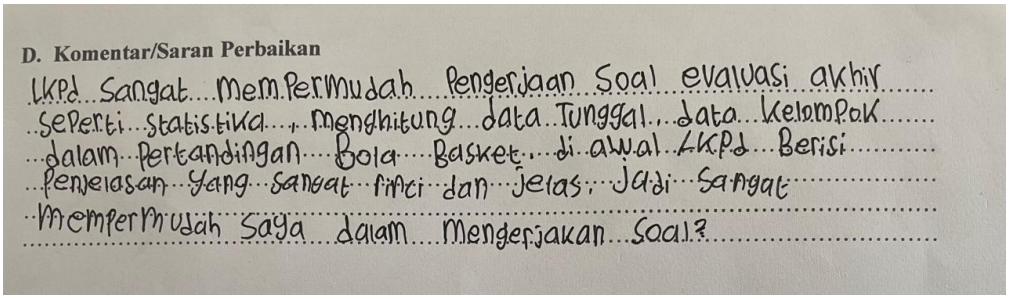
Figure 8. Students' Answers to Individual Evaluation Questions

Figure 8 shows the worksheet containing the students' answers to the self-assessment questions. Based on the learning activities on single data and group data, the students were able to complete the assessment questions independently. This can be seen from the students' ability to group the data points obtained into several class intervals and determine the frequency of each interval accurately. For example, students can determine that the data has a maximum value of 17 and a minimum value of 0, so that the range = 17 and the class length (interval) = 4. Furthermore, they are able to create a frequency distribution table with intervals of 0–4, 5–9, 10–14, and 15–19 along with information on the names included in each interval.

Students also demonstrated ease in understanding basic statistical concepts, such as determining maximum, minimum, and range values, as well as creating simple frequency distributions. This understanding indicates that students have mastered the basic skills of analyzing single data before moving on to group data. This ability also shows that students are not just memorizing formulas, but are able to apply statistical concepts contextually and logically.

In addition, this activity provides a meaningful learning experience because students can relate theory to real data that they process themselves. According to Hulu, Harefa & Mendrofa, (2023) it will be easier to achieve an understanding of mathematical learning concepts if students are actively involved in the process of discovering this knowledge for themselves. In line with this, Brinus, Makur & Nendi, (2019) explains that meaningful mathematics learning occurs when students understand the relationship between concepts and are able to apply them in real-life situations.

Thus, it can be concluded that students have demonstrated independent learning, ease of understanding concepts, and the ability to think logically and systematically in completing evaluation questions on single and group data. The following are students' comments in the practicality questionnaire, shown in Figure 9.


D. Komentar/Saran Perbaikan

LKPd Sangat Mempermudah Pengerjaan Soal evaluasi akhir seperti statistika menghitung data Tunggal, data kelompok dalam pertandingan Bola Basket. di awal LKPd Berisi Penjelasan yang sangat rinci dan jelas. Jadi sangat memPermudah Saya dalam Mengerjakan Soal?

Figure 9. Student Comments

The researcher also conducted interviews with two students. The following is an excerpt from the interview regarding improvements to the second prototype:

Researcher : *"Did you encounter any difficulties when working on the worksheet?"*
FJR : *"No, ma'am, I understood the step-by-step instructions on the worksheet, so I was able to do the problems easily and understand the material on the sheet."*

Based on the interview excerpts above, students can understand mathematical concepts in single and group data material, and students do not experience difficulties in completing evaluation questions or activities contained in the worksheet. Next are interview excerpts from students who can be categorized as average. The following are interview excerpts related to improvements for the second prototype:

Researcher : *"Did you encounter any difficulties in completing the activities on the worksheet?"*
ABL : *"I had difficulty doing activity 3, which was group data."*
Researcher : *"I had difficulty doing activity 3, which was group data."*
ABL : *"Determining the interval, but after my mother guided me, I understood how to determine the interval limits."*

Based on the students' written comments and interviews, it appears that worksheets with a basketball context have practical uses through revisions to the instructions or steps for determining group data, particularly in determining class intervals. Practicality is considered a key quality because impractical assessments will not last long, even if they are valid and reliable (Hulu, Harefa & Mendrofa, 2023). With a practical product, users

will feel comfortable using it so that the product can last a long time. In developing basketball-themed worksheets, practicality is demonstrated by the interest/liking, usefulness, and ease for students in understanding the activities available in the worksheet.

The final stage of developing worksheets with a basketball context in mathematics learning is a field test to determine the potential effect of using basketball context worksheets on learning outcomes. The field test was conducted after obtaining the third prototype, which was considered practical and valid. Eighth-grade students from a junior high school in Karawang, with a total of 40 students, were the subjects of the field test. This field test was conducted in three activities listed in the worksheet. In the first activity, students read illustrations in the form of short stories related to the basketball context in the single data and group data materials. In the second activity, students understood and answered the steps in the worksheet on single data material. In the third activity, students understood and answered the steps in the group data material worksheet and conducted a self evaluation. The results of the evaluation test were analyzed quantitatively using descriptive statistical analysis. The analysis showed that the students obtained a mean score of 82.45, a median of 84.00, and a mode of 85. The minimum score achieved by students was 60, while the maximum score was 98. In addition, the standard deviation was 8.72, indicating that students' conceptual understanding scores were relatively consistent.

Students in the field test took an evaluation test with the aim of determining the achievement of learning objectives, namely that students can correctly determine single and group data. The results of the field test showed that most students achieved the Learning Objective Completion Criteria (KKTP) at the research location, namely 78. Permendikbudristek Number 12 of 2022 states that assessment is the process of collecting and processing information to determine the learning needs and developmental achievements or learning outcomes of students (Satria, 2024). KKTP is the learning achievement threshold for students at school. The following are the results of the students' evaluation test answers shown in Figure 10.

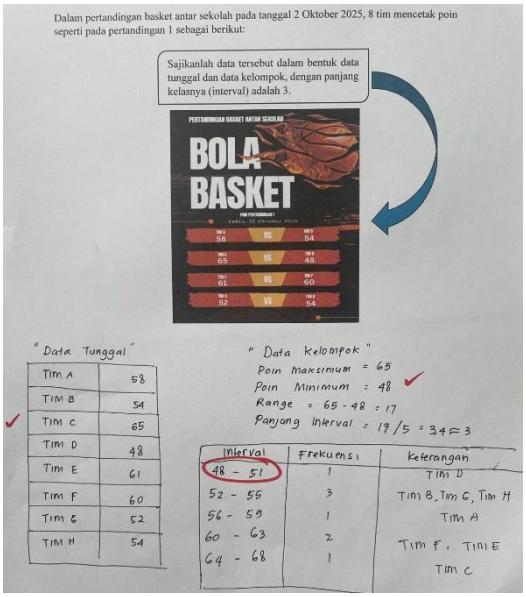


Figure 10. Student evaluation test answers

Based on Figure 10, students can determine single and group data. Students are able to perform several steps correctly even though there are errors in calculating class length (interval). Conceptually, students already understand, but there is a lack of accuracy in calculating class length, which can affect the determination of class frequency. Errors in problem solving can be caused by inappropriate representation (Hardianti & Effendi, 2021). Based on the results of interviews during the field test stage, students stated that they were able to solve the problems given in the evaluation test because the instructions on the worksheet helped them understand the material. The basketball-themed worksheet made students more interested in learning and had an impact on the achievement of learning objectives.

CONCLUSION

The worksheet consists of text and questions arranged according to the stages on the worksheet in accordance with the learning objectives. There are three student activities and one individual question related to determining single and group data correctly. The validator assessment shows validity in terms of content, construct, and language. Practicality is demonstrated by the results of a trial test in a small group consisting of 12 students, namely a worksheet that covers the three aspects of practicality, namely attractiveness, usefulness, and ease of use. The questionnaire results show that the attractiveness aspect is 83%, the usefulness aspect is 88%, and the ease of use aspect is 75%. Effectiveness was demonstrated in grade VIII with a total of 40 students. Students

were able to complete the evaluation test, with most students achieving the KKTP threshold at school. After conducting this study, the researcher suggests that students frequently complete worksheets in real-world contexts in accordance with the independent, in-depth approach curriculum, which is more meaningful. Thus, the context-based basketball worksheet developed is declared valid and practical, with the potential to help students understand statistical concepts concretely while increasing their motivation to learn mathematics in junior high school. The implication of this study for mathematics learning is that contextual worksheets based on sports contexts, particularly basketball, can serve as an alternative learning resource to support meaningful and student-centered learning. The integration of real-life contexts into statistics learning helps students connect mathematical concepts with everyday experiences, increases student engagement and participation, strengthens conceptual understanding, and supports the development of numeracy skills in accordance with the objectives of the Merdeka Curriculum.

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