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Implementation of Worksheet Based Inquiry Lesson to Improve Student Numeracy Ability in Human Digestive System Material

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Abstract. The lack of student's numeracy skills is caused by low inquiry abilities in the learning process. This problem is one of the factors that affect students' learning independence. To improves students' thinking or numeracy skills, this study aims to investigate students' preliminary science and numerical literacy in one of public school located in Bandung Regency. Students' literacy skills were assessed prior to the implementation of learning strategies or media aimed to promote their literacy ability. This research aims to analyze the improvement in numeracy literacy skills through the implementation of Inquiry Lesson-based worksheets focused on the topic of human digestive system. The research employed a quasi-experimental method with a pre-test and post-test non-randomized control group design. Participants were selected from two science classes in 11th grade (XI MIPA) using cluster random sampling technique. The results showed that there was a significant difference with the experiment group demonstrating a higher increase in numeracy ability compared to control group, indicated by the N-gain value. Therefore, the implementation of Inquiry Lesson-based worksheets able to improve students' numeracy skills.
Keywords: Numerical literacy, inquiry lesson, student worksheet, human digestive system material.

Introduction

In the 21st century, literacy skills are one of the most important abilities for students. These skills, particularly in literacy and numeracy, are closely tied to the ability to comprehend contextual reading, which in turn connects to a student's capacity to analyze information. This analysis fosters a sense of skepticism, critical thinking, and innovative problem-solving skills in everyday life (Faizah et al., 2016). The independent learning curriculum aligns with this concept, emphasizing the freedom of thinking, questioning, identifying problems to the process reflection and elaboration of concepts as a whole (Cigdemoglu et al., 2017). This approach encourages students to find concepts with their own discovery process, otherwise known as inquiry skills. Educators are sought to be able to assist students in collecting data, interpreting data to interpret and design a meaningful learning process (Tahrir et al., 2020). An important ability for students to master in the 21st century is numeracy (Fuadi et al., 2020). Therefore, implementing the appropriate the learning strategy that is viable solution to enhance students' numeracy skills (Hartatik, 2020).

According to the PISA results, Indonesia scored 379 in the math ability category Indonesia ranking 73rd, below Thailand (ranked 58th) and Singapore (ranked 2nd) (Schleicher, 2018) In addition, the mathematics and science skills of Indonesian students are approximately 71% and 60%, respectively, which are still in the low category (OECD, 2018). Mutasam et al. (2021) suggest that the lack of learning habits to emphasize the numeracy literacy process, such as providing discourse to indentify information and to analize problem, affects students' learning independence. Therefore, Indonesia needs to map the quality of education comperhensively in improve learning quality and analyzing various appropriate to improve students' thinking or numeracy skills (Widya et al., 2019).

In Kurikulum Merdeka, the minimum completeness assessment is adaptive, meaning that each student works on questions according to his or her abilities (Maryuliana, 2021). This assessment measures the fundamental competencies that all students need to learn without differentiating their specialization (Aisah et al., 2021). Therefore, all students will get questions that can measure the same competencies. Minimum Completeness Assessment set by the government is part of the government's target to prepare students for the 21st century, namely having critical thinking skill, creativity, communication skill and collaborative skill where one of the abilities tested is numeracy (Yanuar & Anggraeni, 2020). Numeracy skills are increasingly important with the rapid advancement of technology, where students can easily find information to produce knowledge and understanding (Winata et al., 2021). Therefore, it is also necessary to develop inquiry skills so that students have numeracy literacy as part of the 21st century skill (Winata et al., 2021).

Numeracy skills are not only useful for calculating questions but can also be used to adapt to a wider level and connection to solve math problems in daily life (Widiastuti, 2021). Simply put, numeracy skills are the ability to use, understand and analyze mathematics in different contexts to solve different problems in everyday life. Therefore, to overcome problems that are close to numeracy, efforts must be made, including determining the right learning strategies and media according to the conditions and characteristics of students. According to Aisah et al. (2021), considering the importance of numeracy skills, educators must improve their ability to train students to think critically and build their knowledge with the application of everyday life in it. The learning model used as a standard for the learning process is scientific learning with the inquiry method, which includes observing, questioning, processing, presenting, concluding, and creating activities (Winata et al., 2021). Numeracy skills are not only applied in mathematics, physics or chemistry subjects, but can be trained in biological material which is not only qualitative. In fact, many studies in the field of biology highlight the quantitative nature, thus encouraging students to acquire quantitative skills in the field of biology (Mohammad et al., 2022). Some research on numeracy literacy has been conducted in certain materials, namely on plant anatomy material (Ardiansyah et al., 2014), growth material (Munawaroh, 2014), coordination system material (Harianto *et al*., 2017), respiratory system material (Angreani, 2017), and in addition the strategy used by teachers in teaching is still conventional; teacher centered which tend to be authoritarian and does not stimulate student learning activities optimally through inquiry learning model laboratory based on reflection of the light material (Rahmati et al., 2017).

Inquiry learning can improve numeracy skills and encourage curiosity about science and technology issues. It is a learning approach that applies the ability to investigate, develop attitudes, expand ideas, and develop science process skills (Wiwi et al., 2022). The inquiry lesson learning model can be used to improve numeracy skills. It aims to measure students' numeracy skills by assessing their understanding of learning objectives, their thinking process, and their ability to interpret data (Fadilah et al., 2020).

The inquiry lesson stage is a transition from interactive demonstration to inquiry lab, where teacher involvement is still necessary. During this stage, students engage in guided inquiry activities, where they are given inquiry questions to design an experiment (Wenning, 2010). Additionally, the use of students' worksheet with inquiry learning model can facilitate students' learning process abilities such as scientific and quantitative skill (Saidaturrahmi et al., 2019).

Based on the result of preliminary research, teachers are not able and adaptiveto use students's worksheet that can facilitate numeracy skills stated and adjusted to the stages of the learning model to guide students' activities when learning the human digestive system. During learning, he always asks questions related to everyday life so that students are trained to analyze information that occurs in the surrounding environment with the concepts learned. According to Anggraeni et al., (2020). Learners will have difficulty analyzing information and performing basic calculations to solve problems related to quantitative data if students are not accustomed to being provided with numeracy literacy skills through LKPD (Huang et al., 2020). In addition, based on several indicators of numeracy literacy skills such as the mathematical ability to use various numbers and symbols related to basic mathematics to solve everyday problems is low, then based on indicators of mathematical ability to analyze information displayed in various forms (tables, graphs, diagrams, charts, etc.) is low (Eslinger & Kent, 2018). Literacy abilities especially in digital and numeracy have some indicators such as under-tanding math formulas, information from graphs, tables, or images, symbols the point is that students are able to draw new conclusions on information obtained through digital media without having to do experiments (Suryana et al., 2023).

According to Faridah et al. (2022) the mathematical ability to analyze information displayed in various mathematical forms (tables, graphs, diagrams, charts, etc.) will be low if it is not applied in learning, especially in science, so it needs a guiding tool that can facilitate numeracy skills through LKPD integrated with a learning model that is in accordance with the learning objectives to be achieved (Widiastuti et al., 2021). Many biological problems are related to the digestive system in everyday life. It has been proven that the study of this topic is connected to numeracy, specifically material on energy needs and balance. This includes the calculation of basal metabolic rate, determining ideal body weight, body mass index, and understanding the factors that affect the energy needs of each individual (Tasyari et al., 2021). Efforts to support the implementation of each stage of the inquiry lesson require the use of appropriate learning media. One type of media available is LKPD, which is a printed learning media or work-sheets that teachers can use in their lessons. LKPD can be used as a support for learning activities so that effective interaction is formed between students and teacher which can increase student's scientific and numeracy learning (Fadilah et al., 2020). Therefore to support students' 21st century skills, the use of inqury lesson is important to maintain and against the background of low numeracy literacy skills, then overcome with the AKM program as part of an independent curriculum and learning process. The suggestion is to apply the inquiry model with the inquiry lesson type. The learning stages are guided by LKPD based on inquiry lesson. The results of inquiry research aimed at developing numeracy skills have not integrated their learning activities with LKPD, so based on the findings above, LKPD based on inquiry lessons to develop numeracy skills has not been tested. Therefore, this research needs to be applied theoretically and empirically to improve students' numeracy skills.

Methods

The research method used was quasi-experimental with pre-test and post-test non-randomized control group design. This study used 2 classes with the specifications of the experimental class and control class. The participants of this study came from two classes from 11th grade science class. Researchers collected data on students' science literacy through pretest of learning the human digestive system with inquiry lesson-based LKPD media, then collecting posttest data after the learning was completed. LKPD was developed by following the steps of preparing LKPD, including analyzing basic competencies, compiling a needs map, determining the title, and writing / compiling LKPD, first the feasibility test of LKPD was carried out by conducting expert judgment or validation. The suitability of the items with the indicators measured resulted in an Aiken's V coefficient index of 0.81 with a valid category. In addition, the feasibility of LKPD was tested based on aspects of substance, construction and language, resulting in an average percentage of feasibility from each aspect of 83.3% in the good category.

Numeracy problems are based on three indicators, namely, analyzing information presented in mathematical form (e.g. equations, graphs, diagrams, tables), having skills related to the use of formulas, symbols and numbers in mathematics and solving problems related to quantitative data. Numeracy skills questions were prepared based on contextual problems regarding the body's energy needs and balance through the calculation of ideal body weight, Basal Metabolic Rate and Body Mass Index nutritional content in food, organ function structure and disorders or diseases of the human digestive system. Before being used in research, the test instrument has been tested so that it meets the valid and reliable criteria. The score data from the pre-test and post-test were then analyzed by conducting prerequisite tests, hypothesis tests and N-gain tests to determine the effectiveness of the application of LKPD and the improvement of students' numeracy skills on the material of the human digestive system can be seen in the following Table 1.

Table 1. Students' numerical literacy skills criteria

Score	Criterion
80-100	Excellent
66-79	Good
55-65	Moderate
40-55	Low
<40	Very low

(Mohammad et al., 2022).

All 34 students and one of their teachers were interviewed. Their answers were then analyzed based on their logical reasoning. The interviews revealed some factors contributing to students' numerical literacy skills. The research instrument was validated using the construct and content validity for constructing the scientific and numerical literacy test and contextualizing all items with the human digestive system material. The item distribution and description can be seen in the following Table 2 and Table 3.

Table 2. Scientific literacy test item distribution (human digestive system)

	Scientific literacy Indicator	Item	Description
1	Describing phenomena scientifically	1	Analyzing relevant information regarding food consumption and their effect on digestive system
		2	Analyzing information regarding stress factors affecting the stomach's functions and relate them with the stomach's functions
		3	Describing how the human digestive system reacts to food deficiency or fasting based on the provided information
2	Scientific research planning	4	Applying knowledge regarding food to select nutritionally balanced food and choose the right time to consume them
		5	Addressing issues in digestive system based on daily knowledge and experience
		6	Investigating the human digestive system reacting to food deficiency or fasting based on the provided information
3	Interpreting data and evidence scientifically	7	Calculating BMI based on the provided data and interpret the data
		8	Describing information provided in a mathematical form (e.g. in a form of equations, graphs, diagrams, and table)
		9	Performing mathematical calculations based on the provided data (e.g. in a form of equations, graphs, diagrams, and table)
		10	BMI based on the provided data and interpret the data

(OECD, 2018).

Table 3. Numerical literacy test item distribution (human digestive system)

No	Numerical Literacy Indicator	No	Description
1	Analyzing information in a mathematical form (e.g., equations, graphs, diagrams, and table)	1	Interpreting data in a table regarding factors contributing to ideal food intake and ideal body weight
		2	Restating data textually and strengthen the

			claim with supporting arguments based on a graph showing a malnutritional child
2	Mastering mathematical formulae, symbols and number	3	Performing a mathematical calculation to address an issue regarding the ideal weight of a person to reach his/her ideal weight and balanced energy intake
		4	Performing a mathematical calculation to address an issue regarding Body Mass Index (BMI) of a person to reach the ideal weight and balanced energy intake
		5	Performing a mathematical calculation to address an issue regarding calorie intake based on gender, activities, and nutritional intake to reach the ideal weight and balanced energy intake
3	Addressing problems based on quantitative data	6	Making a decision and providing a solution to a problem regarding the ideal body weight and ideal food intake using quantitative data of a female's calorie needs based on her body weight and age

(OECD, 2018).

Results and Discussion

The level of numeracy literacy skills among students is divided into five categories: very good, good, sufficient, less, and very less. The preliminary research study revealed that each numeracy literacy indicator falls into two categories: less and sufficient. Table 4 presents a comparison of the percentage of students' numeracy literacy skills based on each indicator.

Table 4. Criteria for the level of students' numeracy literacy skills

Indicator	Literacy skills (%)	Criteria
Analyze information presented in mathematical form (e.g. equations, graphs, diagrams, tables)	43	Low
Have skills related to the use of formulas, symbols and numbers in mathematics	55	Moderate
Solve problems related to quantitative data	47	Low
Average	48	Less

Based on Table 4, it can be seen that through the initial knowledge test there are different percentages on each indicator. The percentage results on the indicator of analyzing information have insufficient criteria with a percentage of 43%, indicators of skills related to the use of formulas, symbols and numbers with sufficient criteria with a

percentage of 55%, and indicators of solving problems have insufficient criteria with a percentage of 47%.

The following are the results of the analysis of the numeracy skills of students who worked on 10 numeracy questions on the digestive system material on energy needs and balance in problems in the field of science. The results of the assessment of students can be seen in Figure 1.

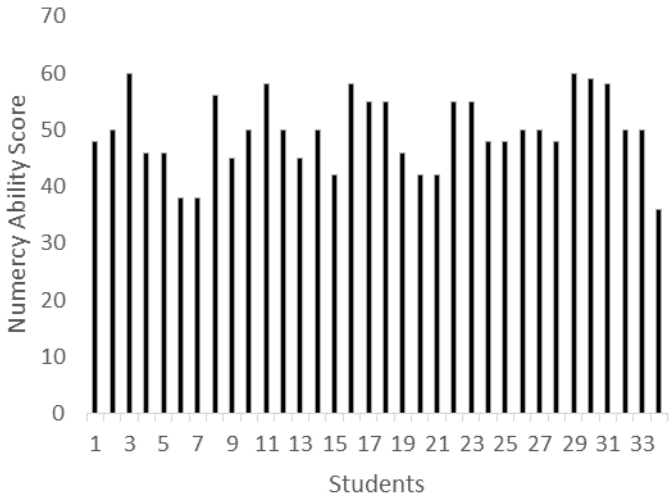

Figure 1. Initial knowledge score of student numeracy

Achievement of the students who took the numeracy test, about 60% of the students still had scores below 50%. This shows that more than the entire number of students have numeracy skills that are included in the low criteria. The ability of students with low criteria indicates that students are still weak in analyzing information presented using numbers, mathematical symbols or mathematical presentation forms and solving problems related to quantitative data. Out of all 34 students, about 60% students reached a score below 50. This shows that more than half of the students were still lacking in terms of their numerical skills. This further indicates that students' skills were generally inadequate, particularly in analyzing information in forms of numbers, mathematical symbols, or in a mathematical form in general and in solving problems based on numerical data.

In line with previously mentioned findings, students' poor numerical literacy could be caused by many factors, such as their unfamiliarity to solve contextualized problems that should obviously be promoted by their teacher. This condition contributed to students' difficulty in solving numerical literacy test items (Dewayani et al., 2021). This further indicates that generally students had not mastered numerical skills such as using numbers, understanding symbols, or analyzing quantitative information, along with solving problems, predicting, and making decisions in the same context. Thus, referring to this finding, it can be concluded that students have to be trained in analyzing quantitative data (the third indicator) compared to analyzing numerical information (e.g., equations, graphs, diagrams, and tables) that fell on the 'moderate' criteria.

Moreover, students' ability in analyzing information in forms of graphs, tables, charts, diagram, etc. reached the lowest percentage among the three previously mentioned indicators. This was caused by the fact that graphs, charts, and diagrams

require high reasoning and analytical abilities (Hartatik & Nurfiah, 2020). It is only after they are able to analyze information that students will be able to interpret analysis results to predict and make decisions and solving daily-life problems. It is worth noting that these particular skills are part of metacognitive skills (Cigdemoglu, 2020).

Learners' initial numeracy skills were analyzed on each indicator. n the indicator of analyzing information presented in mathematical form (such as equations, graphs, diagrams, and tables), students face difficulty in re-explaining the information presented in a graph. For example, they struggle with interpreting body mass index data and can only describe the data without fully understanding it. This finding aligns with the research conducted by Mahmud et al. (2019), which suggests that analyzing information and interpreting data requires two important steps: reading a diagram or graph to gather information and manipulating the information to derive the desired answer. Therefore, in this case, students lack complete interpretation skills (Taylor, 2019). Learners with proficiency indicators related to the use of formulas, symbols and numbers in mathematics have insufficient criteria because students have not been able to understand information from graphs in which the data is quantitative.

Low numeracy literacy skills can be attributed to various factors, such as the lack of practice provided by teachers to solve numeracy-related problems. This lack of practice makes it challenging for students to effectively solve numeracy literacy problems (Dewayani et al., 2021). Students with low criteria demonstrate a weakness in using numbers, understanding symbols or mathematical representations, problem-solving, prediction, and decision-making. Therefore, it can be concluded that students need continuous training in analyzing information presented in quantitative data (indicator 3) as compared to analyzing information presented in mathematical forms (e.g., equations, graphs, diagrams, tables), which falls under the medium criteria. Based on the initial assessment results of students' abilities, it is necessary to implement treatments or interventions aimed at improving students' numeracy skills in science and mathematics. Considering the factual and ideal conditions surrounding the problem, the implementation of inquiry lesson-based LKPD is expected to address the issue of low literacy and numeracy skills among students.

The results of the pre-test and post-test are processed statistically, including prerequisite tests, assumption tests or hypothesis tests, and finding the value of improvement with the N-gain test. The prerequisite test consists of normality and homogeneity tests, the normality test is carried out to determine whether the distribution of ability value data is normal or not, while the homogeneity test is carried out to determine whether there is a variance in the pre-test value data of the control class and the experimental class. The normality test used in this study is the Liliefors (L) test. The significance level used in this study is $\alpha = 0.05$. The results of the calculation of the normality test of the control class pretest resulted in L^2 count < L^2 table, namely 0.0726 < 0.1562 and the normality test in the experimental class resulted in L^2 count < L^2 table 0.1325 < 0.1562. This means that with a significance level (α) of 5% the class comes from a normally distributed population.

Based on the results of the normality test of pretest and posttest data for the control class and experimental class, both dependent variables obtained normally distributed data, so that a homegenity test can be carried out to determine whether the data both have homogeneous variances or not. This study uses the Fisher (F) test. Two groups are said to be homogeneous if $F_{count} < F_{tabel}$. The results of the general homogeneity test on pretest and posttest data show F_{count} (1.622) < F_{tabel} (1.76). then H_0 is accepted. That is, with a significance level (α) of 5%, the pre-test and post-test data in the experimental and control classes of each ability measured both have homogeneous

variances. The increase in numeracy skills is done by finding the N-gain value of the numeracy skill indicator by comparing the average initial score and the final score obtained by students. The acquisition of n-gain for numeracy literacy skills in the experimental class and control class as a whole can be seen in Table 5.

Table 5. Improvement of numeracy literacy skills control class and experimental class

Description	Pretest	Posttest	N-Gain Criteria
Control	63.75	78.43	0.47 (Moderate)
Experiment	65.87	87.00	0.70 (High)

Based on the data in the Table 5, it is known that the average pre-test value for the control class is 63.75 and the average pre-test for the experimental class is 78.43. After implementing the inquiry lesson-based LKPD and scientific learning in the control class and the experimental class respectively, there was an improvement in numeracy skills in both classes. The control class showed an increase in numeracy skills, with an average post-test score of 65.87. On the other hand, the experimental class demonstrated a greater improvement in numeracy skills, with an average post-test score of 87 and an N-gain index of 0.7. The N-gain value in the experimental class was found to be higher than that in the control class 0,47, indicating that the use of inquiry lesson-based LKPD in the experimental class can improve students' numeracy skills.

To determine if there is a significant difference in numeracy skills between the control class and the experimental class after the N-gain test, a hypothesis test is conducted. Hypothesis testing is done with a two-party t-test using the paired t-test assuming both variances are homogeneous (equal variances assumed) with a significance level of 0.05. Hypothesis testing aims to determine whether two population averages are identical (have similar variances) or not from several samples observed. The results of the hypothesis test of students' science literacy skills can be seen in Table 6.

Table 6. Student numeral ability hypothesis test

Class	2-tailed	t-count	Test criteria	Conclusion
Control (1.998)	0.000	18.17	H_a is accepted	t-count>t-table
Experiment (1.998)		23.20		t-count>t-table

Based on the two calculations above, namely in Table 4. about the paired sample t-test test on numeracy literacy skills in the experimental class and 4. about the Paired Sample T-test test on numeracy skills in the control class. There is a difference in t-count experimental class and t-countcontrol class. The t-count of the experimental class is greater than the t-count of the control class, namely 23.20>18.17 So it can be concluded that the experimental class using the inquiry lesson-based LKPD can improve numeracy skills compared to learning in the control class. This is because the inquiry lesson model is effective and efficient for designing a learning process that becomes the foundation for students to make scientific discoveries and numeracy skills), because students are encouraged to be able to develop the ability to think systematically, critically, logically and analytically with investigative activities.

The increase in numeracy skills in the experimental class in the graph above can be influenced because the inquiry lesson learning that is integrated into the LKPD is a learning that trains the abilities of observation, manipulation, generalization, verification to the application of concepts. In these stages the inquiry abilities of students will experience scaffolding from the ability to observe, identify, design experiments, analyze problems to implement effective and solutive alternative problem solving based on relevant scientific studies. Learning is a process that must be passed to obtain relevant information (Bustami & Kurniasih, 2022; Maghfiroh et al ., 2021). The findings above are reinforced by previous findings which state the application of inquiry lessons with mind mapping to improve students' numeracy skills in evolutionary material (Mohammad et al., 2022).

Improving students' numeracy skills in the ability to analyze information obtained an N-gain of 0.57 in the medium category, the ability to understand mathematical symbols and formulas was 0.67 in the medium category, and the ability to solve problems in quantitative data was 0.73 in the high category. The increase in numeracy skills assumes that most students are accustomed to solving numeracy literacy questions which trigger students to identify problems and find solutions, and students are accustomed to solving questions derived from quantitative data presented in text, tables or diagrams. Meanwhile, according to Evans et al. (2020) stated that good literacy skills can be one of the supports for learning outcomes in science so that numeracy literacy skills are an aspect that needs to be improved through habituation of student learning through inquiry learning The achievement of numeracy literacy skills in each activity in the LKPD during the learning process at each meeting is reviewed through the average value obtained by students in the experimental class can be seen in the Figure 2.

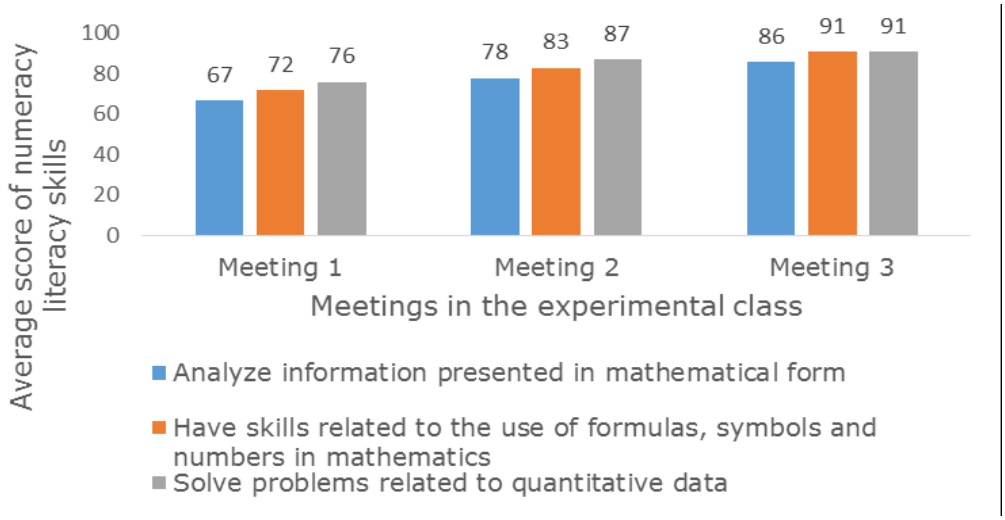

Figure 2. Average achievement of numeracy science literacy ability through inquiry lesson-based human digestive system material in experimental class

Numeracy skills in the experimental class after applying the inquiry lesson-based LKPD at each meeting experienced a significant increase in the average numeracy ability. This assumes that each student is able to solve the problems given in the LKPD, in the ability to analyze information in general, students are able to use various kinds of numbers and symbols related to basic mathematics to solve problems in various contexts of everyday life, this indicator is revealed when the subject is able to write down the steps to solve the problem and is able to solve the problem properly, analyze information displayed in various forms (graphs, tables, charts, diagrams and so on). The next numeracy skill, namely, skills related to the use of mathematical symbols and formulas, one of which is in activities where students calculate body mass index and basal metabolic rate then interpret the results of the analysis of these calculations to predict and make decisions, is revealed when the subject is able to write down what is known and asked in the problem and conclude the answer to the problem well.

The next numeracy skill is that students are expected to be able to solve problems related to quantitative data. Based on the average achievement of problem solving indicators, students begin to be able to be structured in elaborating solutions that can be done in everyday life related to energy needs and balance in the body, analyzing information obtained from problems and using analytical interpretations to draw conclusions. In line with Semilarski et al (2021) that students' ability to solve problems is influenced by teacher habituation by providing treatment to students to get used to being able to identify problems, and solve problems in various contexts of everyday life. According to Liu et al (2020) that numeracy skills can also be defined as digital literacy skills that are important for a person to formulate, apply and interpret mathematics in different contexts, especially here on biological concepts, including the ability to reason mathematically, and to use concepts, procedures and facts to describe phenomena / events scientifically which will be followed by literacy skills. The achievement of science literacy skills in each activity in the LKPD during the learning process at each meeting is reviewed through the average score obtained by students in the control class presented in the Figure 3.

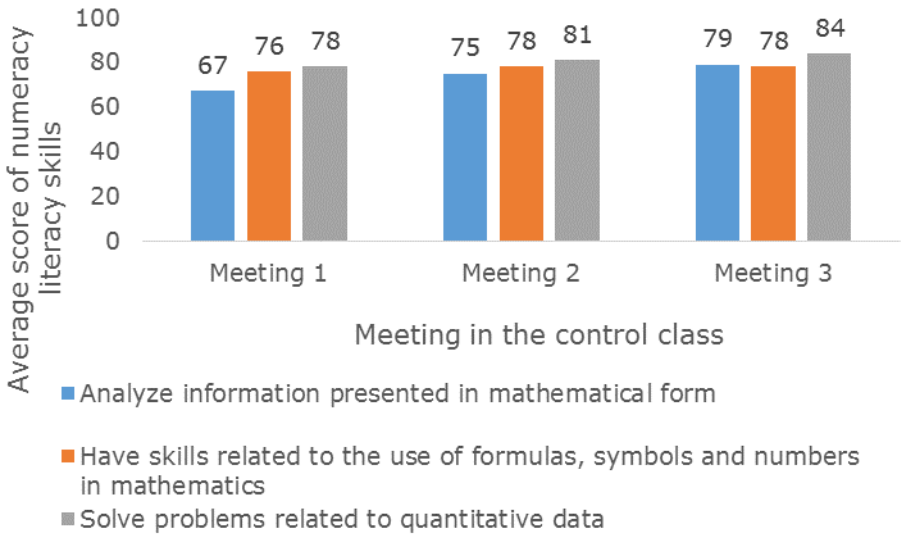

Figure 3. Average achievement of numeracy literacy ability of control class on human digestive system material

The graph above shows the numeracy skills of students in the control class while completing learning instructions in the LKPD which are not based on inquiry lessons but through a scientific approach to the material of the human digestive system. In the ability to analyze information in mathematical form, students are asked to explain the data in the table, but students have not been able to interpret the data on the graph and change the form of presentation to then represent it. Based on the explanation above, numeracy skills in the control class experienced an average increase that was not significant at each meeting, this is because the control class was not facilitated by inquiry skills as a whole. However, when viewed from each average achievement of student numeracy skills in the control class, it still increases but is still in the medium category.

Inquiry-based learning environments that are not integrated into LKPD are less able to facilitate and improve numeracy skills (Marliyani & Iskandar, 2022). The numeracy literacy of students in the control class has increased but is lower than the experimental class, this is because in the experimental class there is a series of inquiry lesson syntax that provides active students to learn to find concepts independently (Harefa, 2021). In learning through a scientific approach in the control class, students are also given problems that are contextual in nature so that students are interested in wanting and having learning experiences in finding solutions and alternative solutions to a problem, so that based on this graph, the N-Gain index is 0.71 with a high category.

The learning stages in the control class use a scientific approach that is usually carried out in schools, the scientific approach asks students to identify existing problems, it just does not trigger the emergence of students' inquiry process abilities in understanding problems authentically and providing alternative solutions scientifically (Yatimah et al., 2019), 2019) According to Kamaruddin, (2018) explains that students' numeracy literacy skills can increase when given contextual problems, such as analyzing factors that affect needs and balance by calculating body mass index, and calculating basal metabolic rate, how alternative solutions are possible when they are able to know the ideal weight.

Based on the explanation above, it can be assumed that the advantage of this inquiry lesson is that students must be skilled in communicating their findings to their friends in the classroom so that students feel challenged to be able and understand the findings of the problems given (Nurmayani et al., 2018). According to Winata et all., (2021) explained that numeracy literacy in students' science learning in the classroom can be done by providing stimulus to students through contextual-based problems. In addition, inquiry learning can improve literacy skills to be able to create logical ideas to solve problems (Ramadani et al., 2021).

Conclusion

Based on the results of hypothesis testing, it was found that the application of an inquiry lesson-based worksheet can improve students' numeracy skills. The experimental class and the control class showed an increase in the average pretest and posttest scores, with significant differences in numeracy skills. This study suggests that teachers can play a crucial role in promoting scientific and numerical literacy across all subjects, particularly in teaching biology and specifically in teaching the human digestive system. The study also highlights the impact of learning approaches/strategies on students' scientific and numerical literacy skills. Therefore, based on these findings, it is important to enhance students' literacy skills by using appropriate learning strategies and materials that promote scientific and numerical literacy, especially in biology education. The previous recommendation will be addressed in the next research with this current research's findings as the primary foundations.

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