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Inquiry Ability Profile of SMAN 8 Pontianak Students on Salt Hydrolysis Subject Material

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Abstract
The inquiry ability is an ability to obtain information through observation or experimentation to solve a problem by using critical and logical thinking skills which include several stages, namely the stages of formulating problems, formulating hypotheses, analyzing data, and concluding. This study aimed to determine student's ability to inquire about the salt hydrolysis material at SMAN 8 Pontianak. The type of research used is descriptive research using the case study method. The research subjects were 20 students of class XI science at SMAN 8 Pontianak. The instrument used is an inquiry-ability test in the form of 4 essay questions and interview guidelines as a supporting instrument. The results showed that the average ability to inquire of students was included in the good category. The results of the analysis on each aspect stated that the average student inquiry ability in the aspect of formulating problems obtained a value of 80.6% and was classified as a good category. The aspect of formulating a hypothesis has an average value of 73% with a good category. The aspect of analyzing the data has a value of 55.8% with a fairly good category. While the aspect of formulating conclusions has a value of 60.6% with a fairly good category.

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INTRODUCTION

Education is a real and planned effort to form a good person and develop existing potential in an effort to realize the ideals and goals expected. It is expected that through education there is an increase in the quality of human resources in order to respond to global changes that hit the world. The purpose of education is to prepare quality human resources, have noble character and have the ability to think at a high level.

Science plays a role in achieving educational goals. Science is basically a process (sciences as process) and products (science as products) and attitudes (sciences as attitude). In Indonesia, this science is called IPA (Science of Nature). According to Kalogiannakis, et al (2021) Science education as a whole is considered one of the most structured parts of education today. Because it is responsible for creating citizens who are able to apply science abilities in solving problems at hand and promoting important 21st century skills such as adaptability or problem solving. The steps that can be taken to discover science concepts are by asking questions, proposing hypotheses, planning experiments, collecting data, interpreting data, and drawing conclusions. The main goal of science education is to support a person to become science literate and make them learn about events that occur in everyday life by linking them to the subjects they study (Yadigaroglu et al., 2021).

In the 2013 curriculum, science is one of the subjects in which physics, chemistry and biology are contained. The implementation of the 2013 curriculum is because it is accommodated by one of the fields of science, namely chemistry. In implementing the 2013 curriculum, a teacher has a very important role. One of the most basic roles of teachers in the learning process is to guide students to think creatively and critically. And also in this curriculum emphasizes that learning that develops should be student-centered with active learning patterns. According to Citra, et al (2017) in the 2013 curriculum, students can be said to be complete in accordance with the Minimum Completion Criteria (KKM) provided that students must master knowledge competencies. In creating a network Saputra, et al (2019) said the 2013 curriculum emphasizes that students have better skills in observing, questioning, reasoning, communicating what they get or know after carrying out the learning process. Learning in the 2013 curriculum strengthens the learning process and authentic assessment to achieve attitude, knowledge, and skills competencies. Authentic assessment includes student readiness to participate in learning, the process, and overall learning outcomes (Wijayanti et al., 2019).

Scientifically, learning is widely contained in the field of science so that by being guided by the scientific approach, the field of chemistry is very suitable for application in the 2013 curriculum in the learning process (Winda et al., 2018). Chemistry is a science that studies matter and its changes. Chemistry research must be able to represent microscopic, macroscopic and symbolic. Therefore, chemistry research is expected to include the characteristics of science, namely scientific products and processes, as well as the characteristics of chemistry, namely microscopic, macroscopic and symbolic.

To understand these characteristics requires a learning process that is packaged in a learning model. The inquiry learning model is one of the learning models that can advance chemistry learning based on science characteristics. Guided inquiry learning model is a model of learning where the teacher guides students to find answers to the initial questions given and directs students to a discussion (Naswir et al, 2017). According to Irham, et al (2017) stated that inquiry learning prioritizes the teacher not as a learning source, but as a facilitator and motivator of student learning.

In learning chemistry, many subjects are abstract and complex, one of which is salt hydrolysis material. In addition, chemistry also studies numerical or number problems. Chemistry cannot be separated from mathematical calculations, where students are required to be skilled in solving problems mathematically. Salt hydrolysis is a chemical material that requires students' mathematical abilities in solving its problems and also requires an understanding of the material in a way that during the learning implementation process students must have the opportunity to seek the widest possible knowledge. In the salt hydrolysis material, students find it difficult to solve the problems given, because to solve these problems, students are expected to be able to react to compound/element formulas first and another reason is that students' ability to understand chemical concepts is still lacking, so students tend to memorize more. without being accompanied by a deep understanding of the concept. Salt hydrolysis material has an abstract material concept but is closely related to everyday life. Constructing knowledge through direct experience using a guided inquiry learning model with a contextually based approach can improve students' abilities in solving problems at both macroscopic, microscopic and symbolic levels in salt hydrolysis material (Mutia et al., 2020). Curriculum 2013 requires students to be active in learning activities. The dominance of the teacher in the learning process results in less active students, therefore students' activities in the classroom are limited to material activities explained by the teacher, rather than seeking and finding their own knowledge, skills, and attitudes they need (Astuti et al., 2018). (Albanani et al., 2020) said that in learning, students must actively process material, digest, think, analyze, until finally the student can summarize the material as a complete understanding. The characteristics of salt hydrolysis material are algorithmic and abstract, so it is suitable for students' understanding when using an inquiry

learning model. This is because inquiry provides opportunities for students to discover and compile concepts independently through experiments in the laboratory and cooperative discussions, therefore helping students in developing science process skills, higher order thinking skills and conceptual understanding. Ideally learning on this subject matter, according to the description above, is through inquiry learning.

This learning model is one of the models using the scientific method. Bermawi, et al (2016) stated that the scientific approach is learning designed so that students actively construct concepts, laws or principles through the stages of observing (to identify and find problems), formulating problems, proposing or formulating hypotheses, collecting data with various techniques, analyzing data, drawing conclusions, communicating concepts and laws and principles found. Inquiry learning can stimulate and improve brain intelligence by learning to formulate problems, propose or formulate hypotheses, collect data with various techniques, analyze data, draw conclusions, and communicate them.

In research conducted by Said, et al (2021), the inquiry learning model based on the scientific approach guides students to be active in the process teaching and learning and trying to apply the scientific method so that learning is no longer teacher-driven. However, in chemistry learning, this inquiry ability is not used as an index to measure the success of students in learning chemistry. For example, from document analysis, only a few or even some questions cannot be categorized as testing inquiry skills. Information related to students' inquiry skills is very important for evaluation of chemistry learning. Therefore, based on the description above, this study aims to determine the profile of high school students' inquiry skills on salt hydrolysis material at SMAN 8 Pontianak.

METHOD

This research uses a case study method with a descriptive research type. The method with this form of case study only focuses on the case to be studied. The final result of this research is to provide a description or descriptive related to the problem under study, namely the profile of students' inquiry ability on salt hydrolysis material at SMAN 8 Pontianak. Based on the results of research conducted by Safitri, et al (2015) the inquiry learning model can improve student learning outcomes where the science learning outcomes of SMPN 10 Malang on the knowledge aspect obtained through daily tests show that the percentage of the number of students from the whole reached completeness of 14.71% (5 students out of 34 students) and after the use of inquiry learning models student learning outcomes have increased. So that the subjects of this study were 20 students from class XI IPA in the 2021/2022 school year who had test scores above 80.

The data collection technique uses measurement techniques with research instruments in the form of student inquiry ability test questions that have been validated by two experts and interview guidelines as supporting instruments. The validation results are used as a reference in improving learning tools and research instruments. Based on the conclusions of the validation results of the inquiry ability test and the interview guide, it was declared suitable for field trials with revisions according to suggestions. Interviews were conducted with 1 teacher at SMAN 8 Pontianak. The inquiry skill test question consists of 4 questions in the form of an essay. Item number 1, 2, 3, and 4 in each question have aspects of inquiry, namely formulating problems, formulating hypotheses, analyzing data, formulating conclusions. The next step is to analyze the data obtained based on the assessment rubric that has been made. The value obtained by students is then calculated using the following equation.

$$NP = \left(\frac{R}{S}\right) \times 100\%$$

Description, NP : Percentage Value; R : The score obtained by the learner; S : Maximum Score (Purwanto, 2010).

The percentage data obtained is then categorized to determine the level of students' inquiry skills. The category of inquiry skills level can be seen in the following table:

Table 1. Category of Inquiry Ability

Assessment Score Interval (%)	Category of Inquiry Ability
81-100	Excellent
61-80	Good
41-60	Fair
21-40	Poor
0-20	Very Poor

(Riduwan, 2010).

RESULTS AND DISCUSSION

Inquiry ability is an ability to obtain information through observation or experimentation to solve a problem by using critical and logical thinking skills which include several stages, namely the stages of formulating problems, formulating hypotheses, analyzing data and concluding. So that the ability to inquire is one of the important abilities that each individual must have. So that each individual is able to compete globally in the current century. Inquiry ability can be measured through a test that is seen from the aspects of formulating problems, formulating hypotheses, analyzing data, and concluding. This study involved 20 students of SMAN 8 Pontianak class XI IPA in 2021/2022 and were asked to work on the question of inquiry ability on salt hydrolysis material. The questions that have been completed by students are then analyzed according to the assessment rubric. The results of the analysis that has been carried out to determine the inquiry ability of students in class XI IPA in the 2021/2022 school year on salt hydrolysis material based on the results of the test answers given can be seen in Figure 1.

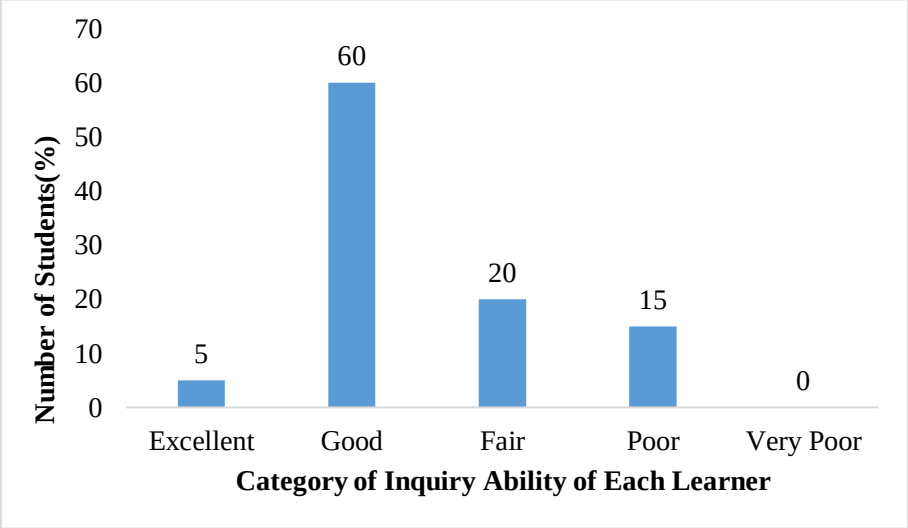

Figure 1. Category of Inquiry Ability of Each Learner

Based on Figure 1, it can be seen that learners' inquiry skills in the good category have the highest percentage of 60%. In addition, it can be seen in the figure that more than 50% of the total number of students belong to the good and very good categories, which means that it can be concluded that the average students' inquiry ability is in the good category. One of the causes

of students' inquiry skills can be categorized as good because in chemistry learning the teacher has used an inquiry learning model.

Based on interviews conducted with SMAN 8 Pontianak teachers that students have been accustomed to doing practicum in chemistry learning, and it is known that during the practicum they have applied the inquiry learning model so that students have been trained to hone all aspects of inquiry skills. Therefore, most students are categorized as good in each aspect of inquiry skills. However, based on interviews with teachers, there are still obstacles in carrying out practicum due to PTM so that it only has limited time. In Candra's research, et al (2020) said that if the practicum is not carried out properly, students experience difficulties in using practicum equipment, lack of proficiency in analyzing and solving existing problems, and do not understand the type and function of the equipment applied during the practicum.

Learners basically already have good inquiry skills. In order to have an ability that is categorized as very good, students must be trained with an inquiry learning model using the practicum method. Therefore, with the understanding and knowledge of a chemical concept and included with good inquiry learning practices, it will contribute to the improvement of inquiry skills. This is supported by the opinion of Sukmadinata (2004) that a person can have the ability of various things if a person has a clear concept or theory and is supported by good practice. A school whose students have good inquiry skills will have good insights and understanding in the learning process practicing these aspects in science learning and especially chemistry learning.

The data analysis that has been done indicates the results of the distribution of values in each aspect of inquiry skills, namely formulating problems, formulating hypotheses, analyzing data, formulating conclusions. The results of data analysis on all aspects of inquiry skills can be seen in Figure 2.

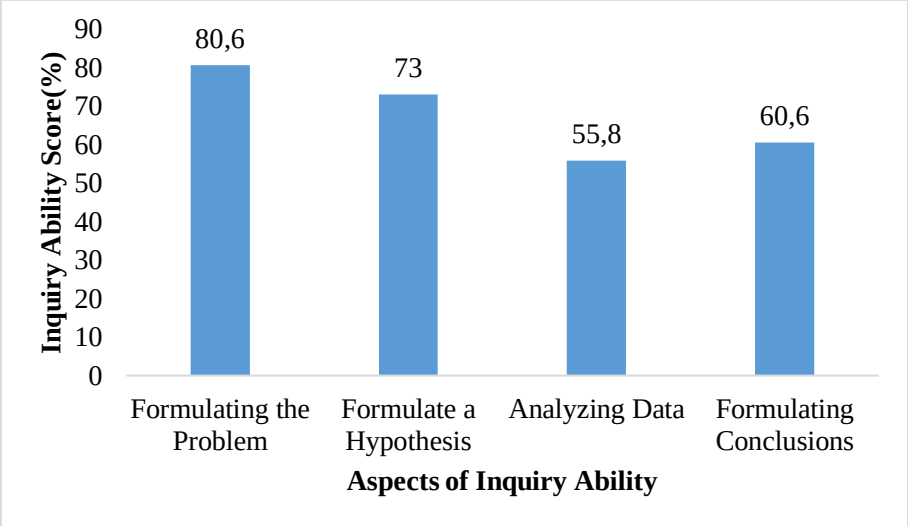

Figure 2. Categories of inquiry skills in each aspect

Based on Figure 2, it can be seen that the highest average of students' inquiry skills is 80.6% and is included in the good category. For the aspect of formulating hypotheses has an average of 73%. Furthermore, the aspect of analyzing data has the lowest average compared to other aspects, which is 55.8% and is in the sufficient category. As for the aspect of formulating conclusions, the average obtained is 60.6% with a sufficient category. There is a difference in the value of the percentage of some aspects of inquiry skills and there are aspects that are in the good enough category. Therefore, it is necessary to develop inquiry learning at school. The

goal is for students to develop their thinking skills and creativity. Therefore, inquiry learning is very important to develop students' thinking skills and creativity, as well as a modern learning model that replaces conventional learning models dominated by teacher lectures in front of the class.

Aspects of Formulating Problems

Formulating a problem is an action that brings students to a problem that contains a question mark. It is said that the question mark in the formulation of the problem to be investigated is because the problem certainly has an answer and students are encouraged to find the right answer. According to Sanjani (2019) the process of finding answers is very important in the inquiry strategy, therefore through this process students will gain very valuable experience as an effort to develop mentally through the thinking process. That way A question mark that becomes a problem in inquiry is a question mark that contains a clear design that must be sought and found. This aspect of formulating problems can be seen from the answers given by students contained in the inquiry ability test. The results of the inquiry skills test on the aspect of formulating problems can be seen in table 2.

Table 2. Inquiry Ability on the Aspect of Formulating Problems

Aspect	Indicator	Precentage Skor (%)	Category	Average (%)	Category
Formulating the Problem	1. Make an interrogative sentence	81,3	Good	80,6	Good
	2. Ask questions that are relevant to the topic	80	Good		

Based on table 2, the percentage in the first indicator is higher than the second indicator. Where in the first indicator is making an interrogative sentence while in the second indicator is questioning things that are in accordance with the topic. The average indicator obtained is 80.6% and is in the good category. This means that students can already formulate problems. This is supported by the opinion of Seratih, et al (2022) which says that the aspect of formulating problems increases with the application of guided inquiry learning models and most students are in the highly skilled category. The ability of students to formulate problems shows a good category because the learning process with the practicum method allows students who are motivated by the teacher to formulate problems by making questions that will be sought answers through the practicum process.

This aspect of formulating good problems shows that students can not only ask questions by making question sentences but can also question things that are in accordance with the topic. The distribution of inquiry skills scores with aspects of formulating problems in the first indicator in point 1 indicates that students do not make sentences using question words and question marks and do not lead to the inquiry process. Meanwhile, learners who have good aspects of formulating problems will provide answers by making sentences using question words and question marks that lead to the inquiry process. Meanwhile, the second indicator for point 1 shows that students do not question things that are on topic. And if, participants If students have a good aspect of formulating problems, they will provide answers by questioning two things that are interconnected according to the topic being discussed. The distribution of inquiry skills scores on the aspect of formulating problems can be seen in Figure 3.

Figure 3 shows that in the first indicator and the second indicator most learners get point 4. This can be interpreted that learners are able to make sentences using question words and question marks that lead to the investigation process and can question two interrelated things according to the topic being discussed. The causes faced by students when formulating problems are that they do not know if the problem formulation should be written with a question

mark and students have difficulty digesting the contents of the discourse presented, therefore students do not know the topic discussed in the discourse.

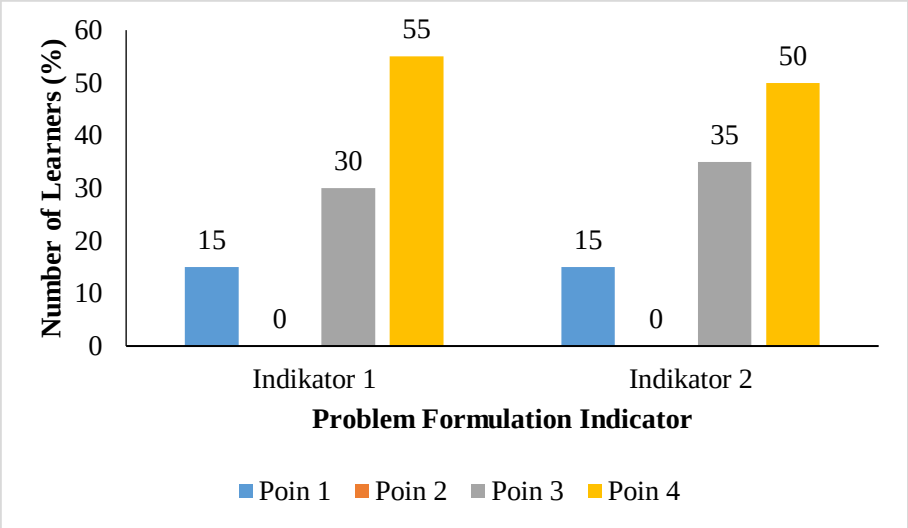

Figure 3. Distribution of Student Values in Aspects of Formulating Problems

Based on the explanation above, it can be seen that in the aspect of formulating problems, students must be skilled in understanding the problems that exist in the phenomena displayed, getting significant problems with the problems taught and formulating the right problems for related problems.

Aspect of Formulating Hypothesis

Hypothesis is a temporary conjecture of a problem that is being observed. As a temporary conjecture, its truth must still be proven. A person's skill or ability to think has generally been possessed since a person was born. The ability to think begins with everyone's ability to guess (hypothesize) from a problem. If a person can prove his guess, then he will arrive at a position that can increase further thinking. Therefore, the skill to foster the ability to guess in a person must be trained. One of the ways what teachers can do to improve the ability to guess (hypothesize) in each child is to present various questions that can encourage learners to be able to describe the temporary answer to a problem studied. This aspect of formulating hypotheses can be seen from the answers given by learners contained in the inquiry ability test. The results of the inquiry skills test on the aspect of formulating hypotheses can be seen in table 3.

Table 3. Inquiry Ability on the Aspect of Formulating Hypothesis

Aspect	Indicator	Precentage Skor (%)	Category	Average (%)	Category
Formulate a Hypothesis	1. Make statements about provisional answers	90,6	Excellent	73	Good
	2. Appropriate to the problem being investigated accompanied by clear and logical reasons	55,3	Fair		

Based on table 3, the percentage in the first indicator is higher than the second indicator. Where in the first indicator, namely making statements about temporary answers, while in the second indicator, namely in accordance with the problem being investigated accompanied by clear and

logical reasons. The average indicator obtained is 73% and is in the good category. This means that students can master this aspect. However, in the second indicator students are in the sufficient category. The average ability of students in formulating hypotheses shows a good category. Based on the results of interviews with teachers in the learning process at school, they have used the practicum method so that it requires students to formulate hypotheses (temporary estimates) to answer questions that have been asked before. This is also supported by the opinion of Prasetya, et al (2020) who said that in the aspect of the ability to formulate hypotheses, the ability of students in all classes was in the high category. Therefore, the aspect of formulating hypotheses is closely related to the aspect of formulating problems.

This aspect of formulating a good hypothesis shows that students can not only make statements about temporary answers but students can also formulate hypotheses according to the problem being investigated accompanied by clear and logical reasons. The distribution of the value of inquiry skills with aspects of formulating hypotheses in the first indicator at point 1 indicates that students only write answers in the form of salt names or salt properties but not accompanied by reasons. Meanwhile, for learners who have formulating a good hypothesis will provide answers by writing answers in the form of salt names, salt properties, and reasons. Whereas the second indicator for point 1 indicates that students only write reasons including the subject (salt name) or predicate (hydrolyzed or not) or (H3O + or OH- ions) or description (salt properties). And if students have a good hypothesis formulation aspect, students will provide answers by writing reasons including the subject (salt name), predicate (hydrolyzed or not), object (H3O+ or OH- ions), and description (salt properties) completely. The distribution of inquiry skills scores on the aspect of formulating hypotheses can be seen in Figure 4.

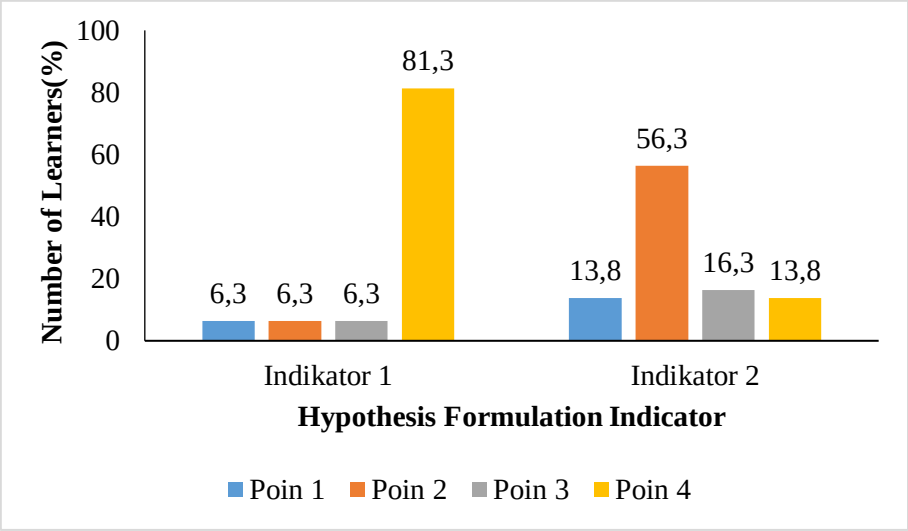

Figure 4. Distribution of Students' Values on the Aspect of Formulating Hypotheses

Figure 4 shows that in the first indicator, on average, students get 4 points, which means that students are able to provide answers by writing the name of the salt, the nature of the salt, and the reason. It can be concluded that more than 50% of students have not been able to formulate hypotheses in accordance with the problem being investigated accompanied by clear and logical reasons. The reason is that students are still fixated on the initial information contained in the book or the internet, causing students to only explain their reasons based on the nature of the ionic compounds that make up the salt.

According to Surakhmad (1978), formulating a hypothesis is a very important step in research. Therefore, formulating hypotheses will be actualized in students, so that students are trained to think rationally from all natural phenomena that occur, reviewing that everything that happens in life has a real explanation, and can be accepted procedurally.

Aspect of Analyzing Data

Analyzing data is the process of determining answers that are considered acceptable equivalent to data and information obtained based on data accumulation (Sanjani, 2019). In analyzing data, the most important thing is to observe the level of confidence of the learners or the answers shared. On the other hand, analyzing data also means improving logical thinking skills. This means that the validity of the answers given is not only based on argumentation, but must be supported by data obtained and can be accounted for. The aspect of analyzing data is seen from the answers given by students and then analyzed based on the rubric that has been made. The results of the inquiry ability test on the aspect of analyzing data can be seen in table 4.

Table 4. Inquiry Ability in the Aspect of Analyzing Data

Aspect	Indicator	Precentage Skor (%)	Category	Average (%)	Category
Analyzing Data	Explaining the meaning that corresponds to the data	71,6	Good	55,8	Fair
	Relate to the correct theory or concept without or raising doubts	40	Poor		

Based on table 4, it can be seen that the aspect of analyzing data shows a different category from the previous aspect. Where in the first indicator, namely explaining the meaning in accordance with the data. Students get a percentage value of 71.6% and are in the good category, which means that students are able to explain the meaning that matches the data well. While the second indicator only obtained a percentage value of 40% and was in the poor category. The cause of the low score on this second indicator is because students tend not to link their explanations to the theory and students only explain the nature of salt at the beginning, namely when explaining the nature of salt based on the nature of the ions that make up the salt. Thus, students are less skilled in linking it to the correct theory or concept without raising doubts. Therefore, the average percentage on the aspect of analyzing data obtained a value of 55.8% and was in the good enough category. Based on research by Seratih, et al (2022) said that there were still students in the unskilled category, due to lack of concentration during learning so that it was difficult to make analysis sentences regarding the data presented.

The aspect of analyzing good data shows that students are able to explain the meaning in accordance with the data and are able to relate it to the correct theory or concept without raising doubts. The distribution of scores the ability to analyze data in the first indicator in point 1 indicates that students can only compare hypothesis data with the results of their observations (can only write the equation of the two. For students who have good data analysis aspects, students are able to compare hypothesis data with observations (can write the equation of the two) and can provide reasons by connecting the two. As for the second indicator at point 1, it indicates that students can only explain the nature of salt based on litmus paper or pH but not link it to the theory. But to get good points, students can explain the nature of salt based on litmus paper and pH and relate it to theory. This is supported by Sholehat (2016) who says that students are not yet skilled in analyzing data because students have not connected the data obtained with the right theory or concept. Therefore, it is necessary to do a lot of practice so that students are accustomed to making data analysis based on observations and hypotheses. The distribution of inquiry skills scores on the aspect of analyzing data can be seen in Figure 5.

In Figure 5 in the first indicator shows that most students have been able to compare hypothesis data with their observations (can only write the equation of the two). Whereas in the second

indicator it is the opposite of the first indicator where in the second indicator the average learner only gets point 1 and point 2. This is because learners only explain the nature of salt based on pH or litmus paper and relate it to the nature of the compounds that make up salt. Therefore, students have not been able to explain the nature of salt based on pH and litmus paper and relate it to theory.

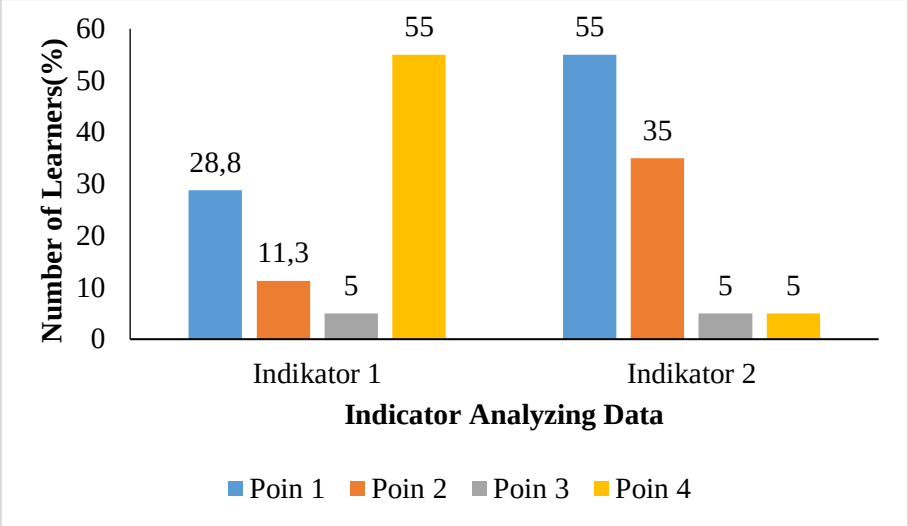

Figure 5. Distribution of Students' Values on the Aspect of Analyzing Data

Arohman, et al (2016) said that analyzing data will develop science literacy skills so that students have speculation and strong scientific attitudes can effectively communicate science and research results to the public. Therefore, in science learning, analyzing data is very important for students.

Aspects of Formulating Conclusions

Formulating conclusions is the process of describing the findings obtained based on the results of hypothesis testing (Sanjani, 2019). To manage the right conclusion, it must use existing data, facts and information as well as correct assumptions. This aspect of formulating conclusions is the last aspect of the inquiry process so that in this process students are expected to be able to connect the concepts obtained from the experiment with the problems posed earlier. This aspect of formulating conclusions can be seen from the answers given by students contained in the inquiry ability test. The results of the inquiry skills test on the aspect of formulating conclusions can be seen in table 5.

Table 5. Inquiry Ability in the Aspect of Formulating Conclusions

Aspect	Indicator	Percentage Skor (%)	Category	Average (%)	Category
Formulating Conclusions	1. Make a conclusion with a statement sentence	70	Good	60,6	Fair
	2. Answering the problem formulation and based on experimental data	51,3	Fair		

Based on table 5, it is obtained that the overall average value on the aspect of formulating conclusions is 60.6% which is classified as a fairly good category. This can be interpreted that students have not been able to connect the concepts obtained from experiments with previously connected problems. But in the first indicator students can already make conclusions with statement sentences well. Meanwhile, in the second indicator, students obtained a score of 51.3% in the good enough category, which means that students are still unable to answer the problem formulation and based on experimental data. Based on research by Seratih et al (2022), students are still found in the unskilled category, because students do not listen to directions properly and this stage is the final phase of learning so that students' focus is reduced. Therefore, in order for students to master the aspects of formulating conclusions well, it is necessary to develop concluding activities so that students can connect concept with one another to answer the problem presented.

The aspect of formulating good conclusions is indicated by students being able to make conclusions with statement sentences and being able to answer problem formulations and based on experimental data. The first indicator at point 1 shows that students only make conclusions including subjects (salt compounds) or predicates (have) or objects (properties) or descriptions (acid, base, and neutral). Students' answers can be categorized as good if students can write conclusions including subjects (salt compounds), predicates (have), objects (properties), information (acids, bases, and neutrals) completely. Whereas the second indicator at point 1 means that students make conclusions by not answering the formulation of the problem and not based on hypotheses and data analysis. To be able to be said to formulate conclusions well if students can make conclusions that answer the formulation of the problem and are based on hypotheses and data analysis. The distribution of inquiry skills scores on the aspect of formulating conclusions can be seen in Figure 6.

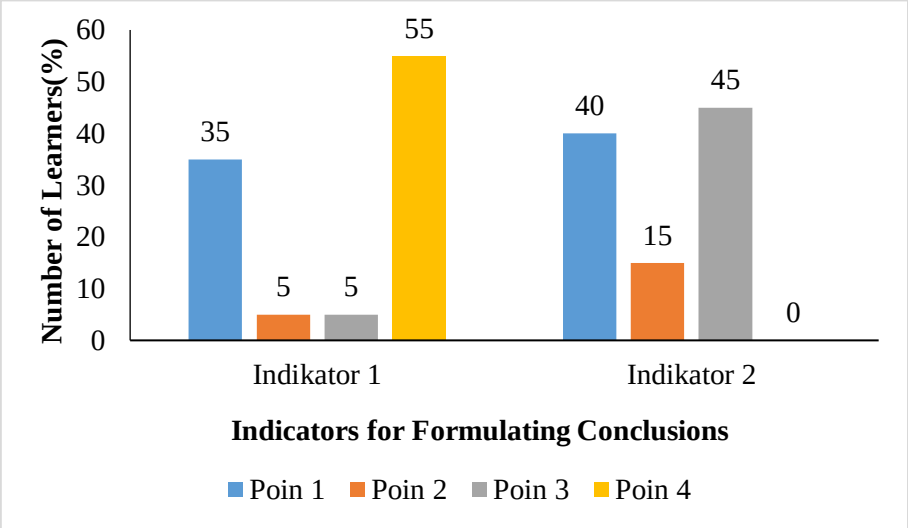

Figure 6. Distribution of Students' Values on the Aspect of Formulating Conclusions

Based on Figure 6, it can be seen that in the first indicator 55% of students get point 4 which means that students have written conclusions including subjects (salt compounds), predicates (have), objects (properties), information (acid, base, and neutral) completely. So that the formulation of conclusions made by the learners above can make conclusions with statement sentences. However, in the first indicator there are still some students who get point 1. This is because the answers given by students have not made conclusions with the right statement sentence. Whereas in the second indicator none of the learners obtained point 4, which means that the learners have made conclusions but the conclusions made have not answered the formulation based on experimental data appropriately. The reason is that students make conclusions based on sentences from a discourse, causing students to make conclusions not

based on experimental data and not answering the formulation of the problem. And also some students are not careful in reading the questions, therefore students are wrong in making conclusions. Bahri, et al (2018) said that making conclusions can train students' skills in problem solving. Therefore, students must have excellent conclusion formulation skills, in order to develop students' critical thinking skills.

CONCLUSION

The results showed that the average ability to inquire of students was included in the good category. The results of the analysis on each aspect stated that the average student inquiry ability in the aspect of formulating problems obtained a value of 80.6% and was classified as a good category. The aspect of formulating a hypothesis has an average value of 73% with a good category. The aspect of analyzing the data has a value of 55.8% with a fairly good category. While the aspect of formulating conclusions has a value of 60.6% with a fairly good category.

RECOMMENDATIONS

Analysis of inquiry-based learning strategies : this research can evaluate the effectiveness of different inquiry-based learning strategies in improving learners' understanding of salt hydrolysis. You can compare the results of different strategies. Influence of technology use in learning : focus on how the use of technology, such as simulations or interactive applications, can help learners understand the concept of salt hydrolysis through an inquiry approach. You can analyze whether technology improves learning outcomes. Factors affecting inquiry ability: this research can identify factors that influence the level of learner engagement in the inquiry process on salt hydrolysis. You could explore whether interest, educational background, or learning style play a role in this. Make sure to formulate clear research questions that are relevant to the school context. Also, conduct a literature review first to ensure that your chosen topic has not been widely researched before.

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BIBLIOGRAPHY

Albanani, T., Kasmadi, I. S., & Nuswowati, N. (2020). Pengaruh Penerapan Pembelajaran Inkuiri Terbimbing Bermuatan Multi Representasi terhadap Pemahaman Konsep Siswa SMA. *CiE*, *9*(2), 2–8. http://journal.unnes.ac.id/sju/index.php/chemined.

Arohman, M. (2016). Kemampuan Literasi Sains Siswa pada Pembelajaran Ekosistem. In *Proceeding Biology Education Conference* (Vol. 13, No. 1, pp. 90-92).

Astuti, S., Danial, M., & Anwar, M. (2018). Pengembangan LKPD Berbasis PBL (Problem Based Learning) untuk Meningkatkan Keterampilan Berpikir Kritis Peserta Didik pada Materi Kesetimbangan Kimia. In *Chemistry Education Review (CER), Pend. Kimia PPs UNM* (Vol. 1, Issue 2).

Bermawi, Y., & Fauziah, T. (2016). Penerapan Pendekatan Saintifk dalam Pembelajaran di Sekolah Dasar Aceh Besar. *Jurnal Pesona Dasar*, *2*, 63–71.

Bahri, A., Putriana, D., Idris, I. S., & Biologi, J. (2018). Peran PBL dalam Meningkatkan Keterampilan Pemecahan Masalah Biologi (The Role of PBL in Improving Biological Problem-Solving Skill). *Jurnal Sains, Matematika, dan Pembelajarannya*, *7*(2), 114-124. Cetak. http://ojs.unm.ac.id/index.php/sainsmat.

Candra, R., & Hidayati, D. (2020). Penerapan Praktikum dalam Meningkatkan Keterampilan Proses dan Kerja Peserta Didik di Laboratorium IPA. *Edugama: Jurnal Kependidikan Dan Sosial Keagamaan*, *6*(1), 26–37. https://doi.org/10.32923/edugama.v6i1.1289.

Citra, D. A., & Muchlis, D. (2017). Penerapan Model Pembelajaran Inkuiri Terbimbing untuk Melatihkan Kemampuan Literasi Sains Siswa pada Materi Kesetimbangan Kimia Kelas XI SMA Negeri 1 Manyar Gresik (Implementation of Guided Inquiry Learning Model to Train Scientific Literacy Skills Students in The Chemical Equilibrium Topic XI Grade At SMAN 1 Manyar Gresik). In *UNESA Journal of Chemistry Education*, 6(1).

Irham, S. M., Mr, M., & Oktavia, B. (2017). The Development of Guided Inquiry-based Worksheet on Colligative Properties of Solution for Chemistry Learning. In *International Conference On Mathematics and Science Education* (pp. 38-42). Atlantis Press.

Kalogiannakis, M., Papadakis, S., & Zourmpakis, A. I. (2021). Gamification in Science Education. A Systematic Review of the Literature. *Education Sciences*, *11*(1), 1–36. https://doi.org/10.3390/educsci11010022.

Kurniawan, I. P., Amin, B. D., & Arsyad, M. (2020). Analisis Kemampuan Berinkuiri Peserta Didik di SMA Negeri 1 Bantaeng. (Doctoral dissertation, UNIVERSITAS NEGERI MAKASSAR).

Mutia, A., Hadinugrahaningsih, T., & Budi, S. (2020). Pengaruh Model Pembelajaran Inkuiri Terbimbing dengan Pendekatan Berbasis Kontekstual (CBA) terhadap Literasi Kimia Peserta Didik Kelas XI MIPA SMA Negeri Jakarta pada Materi Hidrolisis Garam. *JRPK: Jurnal Riset Pendidikan Kimia*, *10*(1), 1–8. https://doi.org/10.21009/jrpk.101.01

Naswir, M., Haryanto, H., & Wati, F. (2017naswirr). Analisis Keterlaksanaan Model Pembelajaran Inkuiri Terbimbing untuk Materi Sifat Koligatif Larutan dan Pengaruhnya terhadap Kemampuan Berpikir Kreatif Siswa Kelas XII Ipa SMA Islam Al-Falah Kota Jambi. In *J. Indo. Soc. Integ. Chem*, 9(2).

Purwanto, N. (2010). *Prinsip-prinsip dan Teknik Evaluasi Pengajaran*. PT Remaja Rosdakarya.

Riduwan. (2010). *Dasar-dasar Statistika* . Alfabeta.

Safitri, N., Sunarmi, & Suwono, H. (2015). Penerapan Model Pembelajaran Inkuiri untuk Meningkatkan Motivasi dan Hasil Belajar Siswa Kelas VIIIC SMPN 10 Malang. *Jurnal Pendidikan Biologi*, *7*(1), 31-38. http://journal2.um.ac.id/index.php/jpb/article/view/715/448.

Said, I., Hamzah, B., Kade, A., Ratman, R., & Ningsih, P. (2021). Student's Learning Outcomes Through the Application of Guided Inquiry Learning Model Based on Scientific Approach in Fundamental Chemical Laws. *Journal of Physics: Conference Series*, *1832*(1). https://doi.org/10.1088/1742-6596/1832/1/012058.

Sanjani, M. A. (2019). Pelaksanaan Strategi Pembelajaran Inkuiri. *Jurnal Serunai Administrasi Pendidikan*, *8*(2), 40–45.

Saputra, N. N., & Sukmawati, R. (2019). The Implementation of 2013 Curriculum in Mathematics Learning at SMA Muhammadiyah 3 Tangerang. *International Journal of Trends in Mathematics Education Research*, *2*(1), 43–46. https://doi.org/10.33122/ijtmer.v2i1.123.

Seratih, M. N., Hairida, H., Sahputra, R., Masriani, M., & Ulfah, M. (2022). Pengaruh Model Inkuiri Terbimbing terhadap Keterampilan Kerja Ilmiah Siswa pada Materi Laju Reaksi. *Edukatif : Jurnal Ilmu Pendidikan*, *4*(3), 3739–3751. https://doi.org/10.31004/edukatif.v4i3.2668.

Sholehat, M., Hairida, H., & Rasmawan, R. (2016). Analisis Keterampilan Kerja Ilmiah Siswa di SMA Melalui Penerapan Model Pembelajaran Inkuiri Terbimbing. *Jurnal Pendidikan dan Pembelajaran Khatulistiwa (JPPK)*, *5*(10).

Sukmadinata, N. S. (2004). *Kurikulum dan Pembelajaran Kompetensi*. Yayasan Kusuma Karya.

Surakhmad, W. (1978). *Dasar dan Tehbik Research, Pengantar Metodologi Ilmiah*. Tarsito.

Wijayanti, R., Sugiyarto, K. H., & Ikhsan, J. (2019). Effectiveness of using virtual chemistry laboratory integrated hybrid learning to students' learning achievement. *Journal of Physics: Conference Series*, *1156*(1). https://doi.org/10.1088/1742-6596/1156/1/012031.

Winda, D., Dan, A., & Yonata, B. (2018). Melatihkan High Order Thinking Skills Peserta Didik Melalui Implementasi Model Pembelajaran Inkuiri pada Materi Kesetimbangan Kimia (Train High Order Thinking Skills of Student Through The Implementation of Inquiry Learning Models on Chemical Equilibrium Matter). In *Unesa Journal of Chemical Education*, 7(3).

Yadigaroglu, M., Agyan, Z., & Demircioglu, G. (2021). High School Students' Levels of Relating the Chemistry Knowledge to Daily Life: Acid-Base Example. *Journal of Turkish Science Education*, *18*(3), 512–524. https://doi.org/10.36681/tused.2021.87.