



Analysis of Literacy Ability of 10th Grade High School Students Using the Minimum Competency Assessment (AKM) Based on Chemical Science at SMAN Karangpandan

Hafid Al Afif¹, Maria Ulfa^{1*}, Sri Yamtinah¹, Mohammad Masykuri¹, Bakti Mulyani¹, Ari Syahidul Shidiq¹

¹ Chemistry Education Study Program, Faculty of Teacher Training and Education, Sebelas Maret University, Surakarta, Indonesia.

Received: March 20, 2025

Revised: June 16, 2025

Accepted: July 25, 2025

Published: July 31, 2025

Corresponding Author:

Maria Ulfa

ulfa.maría2015@gmail.com

DOI: [10.29303/jppipa.v11i7.4314](https://doi.org/10.29303/jppipa.v11i7.4314)

© 2025 The Authors. This open access article is distributed under a (CC-BY License)



Abstract: The study conducted at SMA N Karangpandan aimed to assess the literacy abilities of class X students using the AKM instrument based on chemical science. The research employed a descriptive qualitative method with purposive sampling, involving 137 students from various class X groups. Data was collected through tests and interviews. The findings revealed that 5% of students required special intervention, 17% were in the basic literacy category, 31% demonstrated proficient literacy, and 47% exhibited advanced literacy. Those needing intervention could retrieve explicit information but struggled with proper interpretations. Students with basic literacy could find and interpret explicit information effectively, while proficient students could handle implicit information and integrate portions of it. Advanced students demonstrated the ability to integrate, evaluate, and reflect upon text. The utilization of the AKM instrument aimed to familiarize class X students with AKM questions, helping them comprehend question forms, content, and context. The study's outcomes serve as an indicator of class X students' readiness for AKM assessments, offering insights into their literacy levels and providing a basis for further educational strategies.

Keywords: Assessment; Chemical context; Minimum competency (AKM); Reading literacy

Introduction

Science and technology have developed very rapidly in the 21st century and has had a significant impact on people's lives. The rapid development of science and technology affects the culture and lifestyle of the people, where people can easily get various information using the electronic devices they have. Therefore, it is important to prepare young people who think critically, are innovative and creative, are able to make the right decisions, and are able to solve complex problems. So that schools as a place to print the next generation of young people are required to produce

graduates who have these skills balanced with social skills (Rahmayanti & Affandi, 2021).

On an international scale, one of the assessment instruments used is the Program for International Student Assessment (PISA), where student learning outcomes in Indonesia are still relatively low compared to other test-taking countries. Based on OECD (2018), Indonesia's PISA score ranking in 2018 was in the three aspects assessed, namely reading (ranked 72nd out of 77 countries), mathematics (ranked 72nd out of 78 countries), and science (ranked 70th out of 78 countries). In the last 10-15 years, Indonesia's ranking has not experienced a significant increase and tends to stagnate. These results mean that Indonesia needs to improve the

How to Cite:

Afif, H. A., Ulfa, M., Yamtinah, S., Masykuri, M., Mulyani, B., & Shidiq, A. S. (2025). Analysis of Literacy Ability of 10th Grade High School Students Using the Minimum Competency Assessment (AKM) Based on Chemical Science at SMAN Karangpandan. *Jurnal Penelitian Pendidikan IPA*, 11(7), 873–883. <https://doi.org/10.29303/jppipa.v11i7.4314>

quality of education as a whole in an effort to improve the quality of learning. Therefore, in 2021, the Ministry of Education and Culture officially established the National Assessment (AN) and will no longer treat it as the National Examination (UN).

The government policy carried out by Nadiem Anwar Makarim as Minister of the Ministry of Education and Culture (Kemendikbud) in early October 2019 was Freedom to Learn. The independent learning policy consists of four points, namely: The National Standardized School Examination (USBN) will be abolished and the program will be returned to school policies, Substitution of the National Examination (UN) for a Minimum Competency Assessment (AKM) and a character survey, Learning Implementation Plans (RPP), which originally had 13 components, were replaced with three components, Regulations related to Acceptance of New Students (PPDB) which refer to proportion (Kusumaryono, 2020). In policy number 2, it is necessary to replace the UN with AKM because it can support the improvement of the quality of learning in Indonesia. So far, when completing National Exams, students tend to only focus on memorizing material, this is of course a burden for students, parents and teachers. There are a lot of National Examination materials and during its implementation it only assesses one cognitive aspect and prioritizes mastery of the material. This has not had an overall impact on student character so that it can be said that it is far from the purpose of the National Examination which actually becomes a thing assessment for the national education system (Kemendikbud, 2020).

On an international scale, one of the assessment instruments used is Programme for International Student Assessment (PISA), where student learning outcomes in Indonesia are still relatively low when compared to other countries. Based on (OECD, 2018), Indonesia's PISA ranking in 2018 in the aspects of reading (ranked 72 out of 77 countries), mathematics (ranked 72 out of 78 countries), and science (ranked 70 out of 78 countries). Indonesia's rating also did not experience a significant increase and tended to stagnate. So that Indonesia needs to improve the quality of education as a whole in an effort to improve the quality of learning. Therefore, in 2021 the Ministry of Education and Culture officially stipulates a National Assessment (AN) and will not be treated as a National Examination (UN) (Kusumaryono, 2020).

The National Assessment consists of three parts, namely: Minimum Competency Assessment (AKM), Character Survey, and Learning Environment Survey (Maryuliana et al., 2016). In contrast to the National Exam which focuses on material mastery, AN will map out two minimum student competencies, namely in terms of literacy and numeracy. AN does not function to replace the role of the National Examination in

evaluating learning outcomes or student achievement but to evaluate and map the education system in the form of inputs, processes and results (Kemendikbud, 2020). AKM as part of AN is an assessment of the fundamental competencies needed by all students in order to be able to develop their own capacities and participate positively in society (Kemendikbud, 2020).

The literacy minimum competency assessment (AKM) is conducted to measure students' ability to understand, use, evaluate, reflect on various types of written texts to develop individual capacities in solving everyday problems. In order to ensure that AKM can measure the competencies needed by students and are in accordance with reading literacy and numeracy, the AKM questions are expected to measure various content or topics, various contexts and several levels of students' cognitive processes (Kemendikbud, 2020). Content in reading literacy shows the type of text used, namely informational text and fictional text. Context shows aspects of life or situations for the content used, namely personal, socio-cultural, and scientific contexts. Meanwhile, the cognitive level shows the thought processes required or needed to be able to solve problems or questions in reading literacy, namely finding information, interpretation and integration as well as evaluation and reflection (Wijaya & Dewayani, 2021).

Chemistry is a science that studies matter, changes in matter, and the energy that accompanies these changes (Keenan, 1991). Students are expected to be able to understand principles, concepts, theories, laws, and the application of chemistry in solving everyday problems in society after studying chemistry (Simanjuntak & Silitonga, 2020). Because concepts in chemistry are complex and abstract, students think that chemical material is confusing and difficult to understand so students tend to be less interested in learning more about it (Hofstein & Mamlok-Naaman, 2011). Chemistry as part of science can be one of the contents in literacy AKM. This section lies in chemical content or sub-matter that applies scientific solutions (science) and critical thinking in solving a problem. All material in chemistry lessons can be applied and applied in AKM (Rokhim et al., 2022). The questions in AKM are not significantly subject-based, but subjects can be a provision for students to solve AKM questions (Yamtinah et al., 2022; Arifin, 2017; Boucher, 2012; Chai et al., 2019; Chou et al., 2018).

Based on the problems described above, a study was conducted to analyze and find out the profile of the reading literacy ability of class X students at SMA N Karangpandan using the chemical science-based Minimum Competency Assessment (AKM) instrument.

Method

The research conducted was a type of qualitative descriptive research that aimed to provide an overview of the reading literacy skills of class X students at SMA N Karangpandan in solving AKM questions based on chemical science. Sampling in this study using the technique purposive sampling which is based on certain characteristics determined based on objectives or problems in research (Payadnya & Jayantika, 2018).

The data analysis technique in this study is qualitative data analysis. Data analysis can be carried out after the data on the results of the literacy test with the AKM instrument and interviews have been collected (Chouhan & Srivastava, 2014; Danim, 2011; Friedenberg, 1995; Friedlander et al., 2019; Ghorbani et al., 2018; Ghazali & Fuad, 2005; Gleason, 2018). Data analysis was carried out with the aim that the data obtained could be easier to read and understand. According to the theory of Miles, Huberman, and Saldana (Milles et al., 2014), data analysis has several stages, namely the data collection stage, the data condensation stage, the data presentation stage, and the conclusion drawing stage as Scheme below.

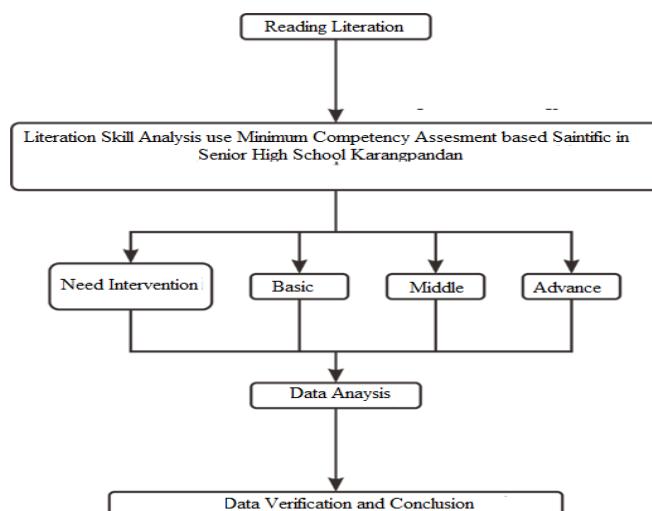


Figure 1. Scheme of research procedure

The data collection stage in this study was carried out twice, namely giving a chemical science-based AKM literacy test and conducting interviews with documentation in the form of notes and photos. There were 137 students who were given a literacy test in the form of chemistry-based AKM questions. Then students are classified into several levels, namely needing special intervention, basic, proficient, and proficient. After that, interviews were conducted to clarify the answers and reasons for students in answering the AKM test questions that had been given.

The data condensation stage in this study was the classification of students based on the results of a literacy test using AKM questions based on chemistry science. The test results will be corrected and analyzed which will then be used to classify students into 4 categories, namely categories requiring special intervention, basic, competent, and proficient.

Table 1. Interval of Student Literacy Ability Scores (Kemendikbudristek, 2022)

Interval Score	Category
1.00 to 1.39	Need special intervention
1.40 to 1.79	Basic
1.80 to 2.09	Competent
2.10 to 3.00	Proficient

The stage of presenting the data in this study was in the form of discussing the literacy skills of class X students at SMA N Karangpandan in each category in solving AKM literacy questions based on chemical science based on the level of reading literacy competence as follows. The conclusion drawing stage in this qualitative research is expected to be in the form of a description of the things that were previously questioned.

Result and Discussion

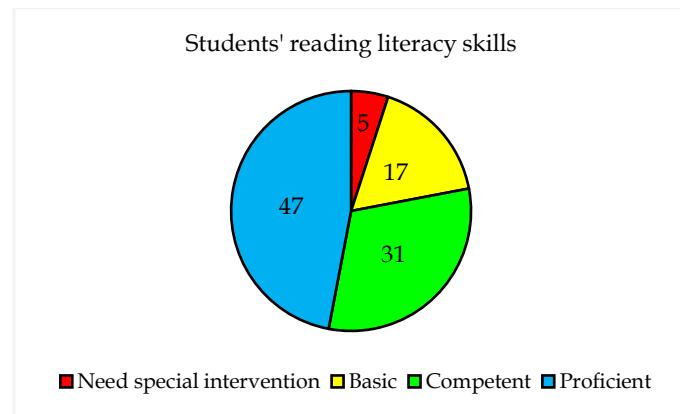


Figure 2. Diagram of reading literacy ability of class X students of SMAN Karangpandan

The results of this study are the analysis of students' reading literacy skills at three cognitive levels, namely finding information, interpretation and integration, as well as evaluation and reflection. The data came from 4 classes, namely classes X4, X7, X9, and X11 with 137 students working on chemistry-based AKM questions. There are 20 questions consisting of 4 multiple choice questions, 8 complex multiple choice questions, 2 matching questions, 1 short answer question, and 5 essay questions. The time to work on the questions is 60 minutes. From the acquisition of scores, students were classified into 4 categories with score intervals as shown

in Table 1. A total of 7 students in the category needed special intervention, 23 students in the basic category, 43 students in the proficient category, and 64 students in the proficient category, and 7 students who did not take the test due to absence. entered during the test. The following is a diagram of the percentage of reading literacy skills of class X students of SMA N Karangpandan.

Based on the results in Figure 2, the percentage in the category that needed special intervention was 5%, in

the basic category 17%, in the proficient category 31%, and in the advanced category 47%. So it can be concluded that the highest percentage of reading literacy results is in the proficient category. After getting the score results from the AKM questions, the researcher took two students each in each literacy category as research subjects. The following is the score data for working on AKM questions that will be used as research subjects.

Table 2. Scores of the Work on Chemistry-based AKM Questions

Code	Score																				Final Score
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
RQM	3	1	2	0	3	3	0	3	2	5	4	4	1	4	4	1	3	3	2	0	1.22
GBS	3	0	2	2	2	3	1	3	2	4	4	4	1	4	4	0	4	3	3	2	1.36
FAZ	5	1	5	1	4	5	0	3	5	5	5	3	1	4	5	1	5	3	3	1	1.63
HNF	4	3	4	2	4	5	2	3	2	3	5	4	1	4	4	2	5	3	4	2	1.75
FS	5	4	4	2	4	4	3	3	5	5	5	4	1	4	4	2	5	5	4	3	2.08
UAS	5	4	5	2	4	4	2	5	4	5	5	5	3	5	4	2	5	3	3	2	2.05
SA	5	5	5	4	5	5	3	5	5	5	5	5	3	5	5	4	5	4	5	3	2.57
NAN	5	5	5	4	5	5	2	5	5	5	5	5	3	5	5	3	5	5	5	3	2.50

Results of Analysis of Students with Literacy Needs Special Intervention

Questions 1 and 14 are questions with the cognitive level of finding information. Based on the results of the interviews, students already understood what was asked about. However, the RQM student felt that he was

running out of time and some of the answers he gave were guesswork. It can be concluded that both students have been able to access and search for information from the text provided. Where students have been able to find and retrieve explicit information in texts but have not been able to make simple interpretations properly.

Table 3. RQM Interview Results on Questions Numbers 1 and 14

		Interview results
P	:	Let's see number 1, okay? You understand what is asked about number 1, right?
RQM	:	Understood, asked to check whether the statement is true or false
P	:	That's right, do you have any difficulties answering question number 1?
RQM	:	If you're looking for answers in text, that's fine, but it takes more time to check the answers one by one. So so that I don't waste time, if I can't find the answer in the text, I'll just be lazy
P	:	How about question number 14? Are there any difficulties?
RQM	:	There isn't any, sir, because the answer is already in the text

Table 4. GBS Interview Results on Questions Numbers 1 and 14

		Interview results
P	:	After answering question number 1, you understand what is asked about question number 1, right?
GBS	:	Understood, asked to check whether the statement is true or false
P	:	That's right, do you have any difficulties answering question number 1?
GBS	:	There isn't really one, the problem is that all you have to do is look for the answer in the text
P	:	How about question number 14? Are there any difficulties?
GBS	:	No sir, same as question number 1

Questions 5 and 18 are questions with the cognitive level of interpreting and integrating information. Based on the results of the interviews, students felt confused about determining ideas in the text because what was asked in the questions was not explicitly stated in the text. However, students are able to give reasons for answering based on their individual abilities. It can be

concluded that both students are quite capable of interpreting and integrating information from the given stimulus. Where students are capable enough to understand the text literally but still cannot make interpretations of the implicit information contained in the text.

Table 5. RQM Interview Results on Questions Numbers 5 and 18

		Interview results
P	:	Now let's go to question number 5, are there any difficulties?
RQM	:	No sir, it's safe
P	:	But your answer here is still not correct, the correct answer is "E. Work of Figures", your reason for answering B is why?
RQM	:	Oh, still wrong huh ehehehe. Answer B because the text discusses chemistry, sir, so it talks about education
P	:	Character education, you know, not academic education. The education in question is where the school is from childhood to adulthood and what knowledge is in the field
RQM	:	Yes, I'm sorry ehehe
P	:	How about question number 18? Are there any difficulties?
RQM	:	Some of the statements in the text don't exist, sir, so there are those who can't answer them
P	:	Indeed, this answer is implied, yes, so it's not in the text

Table 6. GBS Interview Results on Questions Numbers 5 and 18

		Interview results
P	:	Let's go to question number 5, is there any difficulty answering it or not?
GBS	:	There's no sir
P	:	But your answer here is still not correct, the correct answer is "E. Work of Figures", your reason for answering A is why?
GBS	:	Because the text says that he is a scientist who discovered the periodic table
P	:	How about question number 18? Are there any difficulties?
GBS	:	It's the same, sir, there are statements where the text doesn't exist, so some of them have weird answers too
P	:	Indeed, this answer is implied, yes, so it's not in the text

Questions number 4 and 16 are questions with the cognitive level of evaluating and reflecting (evaluate and reflect). Based on the results of the interviews, students could not understand the concepts in the text as evidenced by the short student answers without giving reflection on the contents of the text. In addition,

students also feel a lack of time to work on questions. It can be concluded that the two students have not been able to evaluate and reflect on the stimulus given. Where students have not been able to evaluate the content, quality, and be reflective of the contents of the text.

Table 7. RQM Interview Results on Questions Numbers 4 and 16

		Interview results
P	:	Next, let's go to question number 4, a description question. Are there any difficulties in answering it or not?
RQM	:	I don't know how to string words together, so I'll just answer briefly
P	:	Okay. What is the reason why you answered this?
RQM	:	Yes, because the cycle is rotating, so if one of them isn't there, it means the rotation isn't going like that. Then because I don't really understand the reading, I just use logic to answer with nonsense
P	:	Finally, question number 16, is there any difficulty or not?
RQM	:	I don't understand the question, sir, so I'll just write what's in the text again ehehehe
P	:	Which part don't you understand?
RQM	:	I don't understand what the word "correlation" means. What does it mean, sir?
P	:	Correlation means relationship
RQM	:	Owww I see

Table 8. GBS Interview Results on Questions Numbers 4 and 16

		Interview results
P	:	Now on to question number 4, about the description, did you have any difficulties when working on it?
GBS	:	No, sir, because the answer uses logic
P	:	Actually, you can use sentences in the text to support your answer, do you think you can do that?
GBS	:	Ehehehe, no, sir, because the reading is quite long, rather than running out of time, it's better to be picky and picky answers first, it can get messy
P	:	How about question number 16? Are there any difficulties?
GBS	:	If number 16 is more difficult, sir. That's why I jumped first, uh even run out of time

Results of Analysis of Students with Basic Literacy Ability

Based on the results of interviews on questions number 1 and 14, students already understood what the questions meant and had no difficulty. It can be concluded that both students have been able to access

and seek information from the stimulus provided. Where students are able to find and retrieve explicit information in the text and make simple interpretations well.

Table 9. FAZ Interview Results on Questions Numbers 1 and 14

		Interview results
P	:	Let's see number 1, okay? You understand what is asked about number 1, right?
FAZ	:	Understood, told to look for true or false statements
P	:	That's right, do you have any difficulties answering question number 1?
FAZ	:	There's nothing, sir, because the readings already exist, so all that's left is to look for it
P	:	How about question number 14? Are there any difficulties?
FAZ	:	Not really, sir, the problem is similar

Table 10. HNF Interview Results on Questions Numbers 1 and 14

		Interview results
P	:	After answering question number 1, you understand what is asked about question number 1, right?
HNF	:	Understood, asked to check whether the statement is true or false
P	:	That's right, do you have difficulty answering question number 1?
HNF	:	There isn't one, sir, the answer is already in the text, all you have to do is look for it
P	:	How about question number 14? Are there any difficulties?
HNF	:	There's also no sir

Table 11. FAZ Interview Results on Questions Numbers 5 and 18

		Interview results
P	:	Now let's go to question number 5, are there any difficulties?
FAZ	:	There's nothing, sir
P	:	But your answer here is still not correct, the correct answer is "E. Work of Figures", your reason for answering D is why?
FAZ	:	The answer is E yes? I answered D because this is a biographical text, so it explains the bio
P	:	A biographical text doesn't have to highlight only the character's biographical elements, but it can also highlight other elements, one example of his work
FAZ	:	Oh, that's right
P	:	How about question number 18? Are there any difficulties?
FAZ	:	It's not that great, but some people get confused, because they can't find the answer in the text
P	:	Indeed, this answer is implied, yes, so it's not in the text

Based on the results of interviews on questions number 5 and 18, students felt confused about determining ideas or concepts in the text because what was asked in the questions was not explicitly stated in the text. However, students are able to give reasons for answering based on their individual abilities. It can be

concluded that both students are quite capable of interpreting and integrating information from the given stimulus. Where students are capable enough to understand the text literally but still cannot make interpretations of implicit information in the text.

Table 12. HNF Interview Results on Questions Numbers 5 and 18

		Interview results
P	:	Let's go to question number 5, is there any difficulty answering it or not?
HNF	:	There's no sir
P	:	But your answer here is still not correct, the correct answer is "E. Work of Figures", your reason for answering D is why?
HNF	:	Lol E yes. I think D because the reading is a biographical text, so what should be discussed is the bio
P	:	A biographical text doesn't have to highlight only the character's biographical elements, but it can also highlight other elements, one example of his work
HNF	:	Oh that's right
P	:	How about question number 18? Are there any difficulties?
HNF	:	Some of you can't find the answer, sir, so just don't bother answering ehehehe
P	:	Indeed, this answer is implied, yes, so it's not in the text

Based on the results of interviews on questions number 4 and 16, students felt confused about understanding the concepts in the text as evidenced by the random student answers and not enough reflection on the content of the text. It can be concluded that the

two students have not been able to evaluate and reflect on the stimulus. Where students have not been able to evaluate the content, quality, and be reflective of the contents of the text.

Table 13. FAZ Interview Results on Questions Numbers 4 and 16

		Interview results
P	:	Next, we go to question number 4, is there any difficulty in answering or not?
FAZ	:	I'm confused, sir, there's no answer in the text
P	:	Right here you are asked to think according to your ability
FAZ	:	Yes, that's my opinion sir
P	:	Finally, question number 16, is there any difficulty or not?
FAZ	:	I replied that I was too lazy, mas ehehe
P	:	Why do you answer at random?
FAZ	:	I don't understand the text

Table 14. HNF Interview Results on Questions Numbers 4 and 16

		Interview results
P	:	Now on to question number 4, did you have any difficulties when working on it?
HNF	:	No sir, I answered it as I understood it
P	:	How about question number 16? Are there any difficulties?
HNF	:	It's the same as number 4, sir, just answer according to my understanding

Results of Analysis of Students with Competent Literacy Ability

Based on the results of interviews on questions number 1 and 14, students already understood what the

questions meant and had no difficulty. It can be concluded that both students have been able to access and seek information from the stimulus and make simple interpretations well.

Table 15. FS Interview Results on Questions Numbers 1 and 14

		Interview results
P	:	Let's see number 1, okay? You understand what is asked about number 1, right?
FS	:	Understood, mas, asked to look for a statement that is true or false
P	:	That's right, do you have any difficulties answering question number 1?
FS	:	No sir, the answer is just looking in the reading
P	:	How about question number 14? Are there any difficulties?
FS	:	No sir

Table 16. UAS Interview Results on Questions Numbers 1 and 14

		Interview results
P	:	In question number 1, do you understand what is asked of question number 1?
UAS	:	Understood, asked to choose a statement that is true or false
P	:	Okay, do you have any difficulties not answering question number 1?
UAS	:	No sir, it's safe
P	:	How about question number 14? Are there any difficulties?
UAS	:	There's also no sir

Based on the results of interviews on questions number 5 and 18, the two students were able to provide reasons for answering based on their individual abilities. It can be concluded that the two students were able to

interpret and integrate information from the stimulus provided. Where students are able to understand the text literally and make interpretations of implicit information in the text.

Table 17. FS Interview Results on Questions Numbers 5 and 18

		Interview results
P	:	Now let's go to question number 5, are there any difficulties?
FS	:	There's no sir
P	:	But your answer here is still not correct, the correct answer is "E. Work of Figures", your reason for answering D is why?
FS	:	Because the text is a biographical text, I think it's about the character's biodata
P	:	A biographical text doesn't have to highlight only the character's biographical elements, but it can also highlight other elements, one example of his work
FS	:	ok sir
P	:	How about question number 18? Are there any difficulties?
FS	:	No sir, it's still the same as questions number 1 and 14

Table 18. UAS Interview Results on Questions Numbers 5 and 18

		Interview results
P	:	Let's go to question number 5, is there any difficulty answering it or not?
UAS	:	There's no sir
P	:	But your answer here is still not correct, the correct answer is "E. Work of Figures", your reason for answering D is why?
UAS	:	My understanding is that the biographical text highlighted by the character's biodata mas
P	:	A biographical text doesn't have to highlight only the character's biographical elements, but it can also highlight other elements, one example of his work
UAS	:	OK, sir
P	:	How about question number 18? Are there any difficulties?
UAS	:	There's no sir

Based on the results of interviews on questions number 4 and 16, students already understood what the questions meant and had no difficulty. However, when viewed from the answers given by students it is still too short and does not cover all the specified criteria. It can

be concluded that both students are quite capable of evaluating and reflecting on the stimulus given. Where students are capable enough to evaluate the content, quality, and be reflective of the contents of the text.

Table 19. FS Interview Results on Questions Numbers 4 and 16

		Interview results
P	:	Next, we go to question number 4, is there any difficulty in answering or not?
FS	:	No sir, just answer as I understand it
P	:	Finally, question number 16, is there any difficulty or not?
FS	:	There's also no sir

Table 20. UAS Interview Results on Questions Numbers 4 and 16

		Interview results
P	:	Now on to question number 4, did you have any difficulties when working on it?
UAS	:	There's nothing, sir
P	:	How about question number 16? Are there any difficulties?
UAS	:	There's also no sir

Results of Analysis of Students with Proficient Literacy Ability

Based on the results of interviews on questions number 1 and 14, students already understood what the questions meant and had no difficulty. It can be

concluded that both students have been able to access and seek information from the stimulus provided. Where students are able to find and retrieve explicit information in the text and make simple interpretations well.

Table 21. SA Interview Results on Questions Numbers 1 and 14

		Interview results
P	:	Let's see number 1, okay? You understand what is asked about number 1, right?
SA	:	I understand, I'm just told to look for a statement that is true or false
P	:	That's right, do you have any difficulties answering question number 1?
SA	:	There is no sir
P	:	How about question number 14? Are there any difficulties?
SA	:	No sir

Table 22. NAN Interview Results on Questions Numbers 1 and 14

		Interview results
P	:	In question number 1, do you understand what is asked of question number 1?
NAN	:	Understood, asked to look for a statement that is true or false
P	:	That's right, do you have any difficulty not answering question number 1?
NAN	:	There's no sir
P	:	How about question number 14? Are there any difficulties?
NAN	:	There's also no sir

Based on the results of interviews on questions number 5 and 18, students already understood what the questions meant and had no difficulty. It can be concluded that both students are able to interpret and

integrate information from the given stimulus. Where students are able to understand the text literally and make interpretations of implicit information in the text.

Table 23. SA Interview Results on Questions Numbers 5 and 18

		Interview results
P	:	Now let's go to question number 5, are there any difficulties?
SA	:	There's no sir
P	:	How about question number 18? Are there any difficulties?
SA	:	There's also no sir

Table 24. NAN Interview Results on Questions Numbers 5 and 18

		Interview results
P	:	Let's go to question number 5, is there any difficulty answering it or not?
NAN	:	There's no sir
P	:	How about question number 18? Are there any difficulties?
NAN	:	There's no sir

Based on the results of interviews on questions number 4 and 16, students already understood what the questions meant and had no difficulty. This can be proven from the answers of students who have given reflection on the contents of the text. It can be concluded

that both students are able to evaluate and reflect on the stimulus given. Where students are able to evaluate the content, quality, and be reflective of the contents of the text.

Table 25. SA Interview Results on Questions Numbers 4 and 16

		Interview results
P	:	Next, we go to question number 4, is there any difficulty in answering or not?
SA	:	There is no sir
P	:	Finally, question number 16, is there any difficulty or not?
SA	:	There's also no sir

Table 26. NAN Interview Results on Questions Numbers 4 and 16

		Interview results
P	:	Now on to question number 4, did you have any difficulties when working on it?
NAN	:	There's nothing, sir
P	:	How about question number 16? Are there any difficulties?
NAN	:	There's also no sir

Conclusion

The results showed that 5% of students needed special intervention, 17% of students in the basic category, 31% of students in the proficient category, 47% of students in the advanced category. Students with literacy who need special intervention have been able to find and retrieve explicit information but have not been able to make proper interpretations. Students with basic literacy are able to find and retrieve explicit information and make simple interpretations well. Students with proficient literacy are already able to make interpretations of implicit information in texts and integrate some of the information. Students with advanced literacy are already able to integrate some information, evaluate, and be reflective of text. The use of the AKM instrument is intended to acquaint class X students with AKM questions both in terms of the form of the questions, the content, and the context. The results of this study can also be used as an illustration of the self-readiness of class X students in facing AKM.

Acknowledgments

Authors thank Sebelas Maret University for providing financial support under the Research Group scheme (HGR Number contract 228/UN27.22/PT.01.03/2023).

Author Contributions

Conceptualization, validation, data curation, writing-original draft preparation, writing-review and editing, M.U. and H.A.A.; methodology, M.U., H.A.A., S.Y., M.M., B.M., and A.A.S.; formal analysis, investigation, supervision, M.U., S.Y., M.M., B.M., & A.A.S.; visualization, M.U.; funding acquisition, S.Y. All authors have read and agreed to the published version of the manuscript.

Funding

Research Group scheme (HGR Number contract 228/UN27.22/PT.01.03/2023).

Conflicts of Interest

The authors declare no conflict of interest.

References

Arifin, Z. (2017). Mengembangkan Instrumen Pengukur Critical Thinking Skills Siswa pada Pembelajaran Matematika Abad 21. *Jurnal Theorems*, 1(2), 92-100. <https://doi.org/10.31949/th.v1i2.383>

Boucher, M. D. (2012). *Social Competence Education for Pre-Service Teachers*. California: California State University.

Chai, C. S., Koh, J. H. L., & Teo, Y. H. (2019). Enhancing and Modeling Teachers' Design Beliefs and Efficacy of Technological Pedagogical Content Knowledge for 21st Century Quality Learning. *Journal of Educational Computing Research*, 57(2), 360-384. <https://doi.org/10.1177/0735633117752453>

Chou, C. M., Shen, C. H., Hsiao, H. C., & Shen, T. C. (2018). Industry 4.0 Manpower and Its Teaching Connotation in Technical and Vocational Education: Adjust 107 Curriculum Reform. *International Journal of Psychology and Educational Studies*, 5(1), 9-14. <https://doi.org/10.17220/ijpes.2018.01.002>

Chouhan, V. S., & Srivastava, S. (2014). Understanding Competencies and Competency Modeling — A Literature Survey. *IOSR Journal of Business and Management*, 16(1), 14-22. <https://doi.org/10.9790/487x-16111422>

Danim, S. (2011). *Introduction to Education*. Bandung: Alfabeta.

Friedenberg, L. (1995). *Psychological Testing: Design, Analysis, and Use*. Allyn & Bacon.

Friedlander, E. W., Arshan, N., Zhou, S., & Goldenberg, C. (2019). Lifewide or School-Only Learning: Approaches to Addressing the Developing World's Learning Crisis. *American Educational Research Journal*, 56(2), 333-367. <https://doi.org/10.3102/0002831218792841>

Ghorbani, S., Jafari, S. E. M., & Sharifian, F. (2018). Learning to Be: Teachers' Competences and Practical Solutions: A Step Towards Sustainable Development. *Journal of Teacher Education for Sustainability*, 20(1), 20-45. <https://doi.org/10.2478/jtes-2018-0002>

Ghozali, I. & Fuad, F. (2005). *Structural Equation Modeling: Theory, Concepts, and Applications with the Lisrel 8.54 Program*. Semarang: Universitas Diponegoro Publishing Agency.

Gleason, N. W. (2018). *Higher Education in the Era of the Fourth Industrial Revolution*. Springer.

Hofstein, A., & Mamlok-Naaman, R. (2011). High-School Students' Attitudes Toward and Interest in Learning Chemistry. *Educacion Quimica*, 22(2). [https://doi.org/10.1016/s0187-893x\(18\)30121-6](https://doi.org/10.1016/s0187-893x(18)30121-6)

Keenan, C. W. (1991). *Ilmu Kimia untuk Universitas*. Jakarta: Erlangga.

Kemendikbud. (2020). *AKM dan Implikasinya pada Pembelajaran*. Jakarta: Pusmenjar Balitbang Kemendikbud.

Kemendikbudristek. (2022). *Buku Panduan Capaian Hasil Asesmen Nasional untuk Satuan Pendidikan*. Jakarta: Kemendikbudristek.

Kusumaryono, R. S. (2020). *Merdeka Belajar*. Jakarta: Kementerian Pendidikan dan Kebudayaan.

Maryuliana, M., Subroto, I. M. I., & Haviana, S. F. C. (2016). Sistem Informasi Angket Pengukuran Skala Kebutuhan Materi Pembelajaran Tambahan sebagai Pendukung Pengambilan Keputusan di Sekolah Menengah Atas Menggunakan Skala

Likert. *Jurnal Transistor Elektro dan Informatika*, 1(1), 1-12. <http://dx.doi.org/10.30659/ei.1.1.1-12>

Milles, M. B., Huberman, M. A., & Saldana, J. (2014). *Qualitative Data Analysis A Methods Sourcebook Edition 3*. Sage Publications, Inc.

OECD. (2018). *PISA for Development Assessment and Analytical Framework: Reading, Mathematics and Science*. OECD Publishing.

Payadnya, I. P. A. A., & Jayantika, I. G. A. N. T. (2018). *Panduan Penelitian Eksperimen Beserta Analisis Statistik dengan SPSS*. Yogyakarta: Deepublish.

Rahmayanti, N., & Affandi, M. (2021). Analisis Tingkat Kognitif Soal Pendidikan Agama Islam Tingkat SMA Berbasis Assesmen Kompetensi Minimum. *Al-Fikri: Jurnal Studi dan Penelitian Pendidikan Islam*, 4(1). <https://doi.org/10.30659/jspi.v4i1.17419>

Rokhim, D. A., Tyas, F. K., Rahayu, S., & Habiddin, H. (2022). Perspektif Siswa dan Guru dalam Pelaksanaan AKM (Asesmen Kompetensi Minimum) pada Mata Pelajaran Kimia. *JAMP: Jurnal Administrasi dan Manajemen Pendidikan*, 5(1). <https://doi.org/10.17977/um027v5i12022p46>

Simanjuntak, Y. M., & Silitonga, P. M. (2020). Kontribusi Kemampuan Matematika pada Hasil Belajar Kimia Siswa Kelas XI SMA Terhadap Pokok Bahasan Hidrolisis Garam. *Jurnal Inovasi Pembelajaran Kimia*, 2(1). <https://doi.org/10.24114/jipk.v2i1.17838>

Wijaya, A., & Dewayani, S. (2021). *Framework Asesmen Kompetensi Minimum (AKM)*. Jakarta: Kementerian Pendidikan dan Kebudayaan.

Yamtinah, S., Utami, B., Mulyani, B., Masykuri, M., & Ulfa, M. (2022). Pendampingan Penyusunan Instrumen Asesmen Kompetensi Minimum (AKM) sebagai Upaya Penguatan Kemampuan Guru. *Seminar Nasional Kimia dan Pendidikan Kimia XIII*, 13(1). Retrieved from <https://jurnal.uns.ac.id/snkp/article/download/58101/34167>