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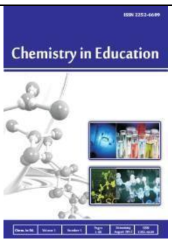

Development of Ethno-STEM Test Instrument to Equip Chemical Literacy on Thermochemistry Material

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ABSTRAK

Pendidikan kimia abad ke-21 menuntut pengembangan literasi kimia yang tidak hanya mencakup penguasaan konsep teoritis secara mendalam, tetapi juga kemampuan mengaitkan ilmu dengan konteks kehidupan nyata, nilai-nilai budaya lokal, serta keterampilan berpikir ilmiah dan kritis. Penelitian ini bertujuan mengembangkan instrumen tes literasi kimia berbasis etnosains dan pendekatan STEM pada materi termokimia yang valid dan reliabel untuk siswa SMA. Model pengembangan yang digunakan adalah 4D (Define, Design, Develop, Disseminate). Data awal diperoleh melalui observasi dan wawancara terhadap guru dan siswa yang menunjukkan pentingnya mengaitkan pembelajaran dengan konteks budaya lokal, khususnya praktik pembuatan gerabah di Klaten, yang mencerminkan konsep perubahan energi, efisiensi panas, dan karakteristik reaksi kimia. Integrasi etnosains dalam pembelajaran kimia bertujuan menjembatani antara pengetahuan ilmiah modern dengan kearifan lokal, sehingga siswa dapat memahami sains secara lebih kontekstual, bermakna, dan tidak terlepas dari identitas budayanya. Hasil validasi ahli menunjukkan Aiken's V sebesar 0,92 (kategori tinggi), sedangkan uji reliabilitas menunjukkan nilai 0,71 (kategori baik). Analisis menggunakan model Rasch menunjukkan sebaran tingkat kesulitan soal yang baik dan mendukung validitas konstruk instrumen. Diharapkan instrumen ini tidak hanya meningkatkan literasi kimia siswa secara konseptual, tetapi juga mendorong keterampilan berpikir kritis, rasa ingin tahu, dan apresiasi terhadap budaya lokal melalui pendekatan etnosains yang terintegrasi dalam pembelajaran kimia.

ABSTRACK

Chemistry education in the 21st century demands the development of chemical literacy that not only includes in-depth mastery of theoretical concepts, but also the ability to relate science to real-life contexts, local cultural values, and scientific and critical thinking skills. This study aims to develop a valid and reliable ethnoscience-based chemical literacy test instrument and STEM approach on thermochemical material for high school students. The development model used is 4D (Define, Design, Develop, Disseminate). Initial data were obtained through observations and interviews with teachers and students that showed the importance of linking learning with the local cultural context, especially the practice of making pottery in Klaten, which reflects the concepts of energy changes, heat efficiency, and characteristics of chemical reactions. The integration of ethnoscience in chemistry learning aims to bridge between modern scientific knowledge and local wisdom, so that students can understand science more contextually, meaningfully, and not be separated from their cultural identity. Expert validation results showed Aiken's V of 0.92 (high category), while the reliability test showed a value of 0.71 (good category). Analysis using the Rasch model shows a good distribution of question difficulty levels and supports the construct validity of the instrument. It is expected that this instrument will not only improve students' chemical literacy conceptually, but also encourage critical thinking skills, curiosity, and appreciation of local culture through an integrated ethnoscience approach in chemistry learning.

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INTRODUCTION

Chemistry education in the 21st century era requires students not only to understand chemical concepts theoretically, but also to be able to relate them to real-life contexts and apply scientific thinking skills (Rahmah et al., 2025) One important ability that needs to be developed is chemical literacy, which is the ability to understand chemical concepts, use chemical knowledge to make decisions, and be able to critically assess scientific information (Marbun & Sanova, 2025). Chemical literacy is an important foundation in forming a generation that is environmentally aware, responsive to science and technology issues, and able to innovate (Artini & Wijaya, 2020).

Based on various studies and learning evaluation results, science literacy, especially chemical literacy of students in Indonesia, is still relatively low (Gde & Wirama, 2022). One of the causes is the lack of assessment instruments that are able to measure chemical literacy holistically and contextually (Hasanah & Aini, 2025). In addition, the learning and assessment approaches used often do not touch the local cultural aspects that are relevant to students' lives (Akramunnisa et al., 2025).

The integration of ethnoscience and STEM (Science, Technology, Engineering, and Mathematics) approach in chemistry learning is a potential solution to improve students' chemical literacy (Fitri et al., 2025). Ethnoscience allows students to understand chemical concepts through local wisdom that is close to their lives, while the STEM approach encourages interdisciplinary integration and application of concepts in solving real problems (Asmayawati et al., 2024). Therefore, the development of test instruments that integrate ethnoscience and the STEM approach needs to be done so that chemical literacy assessment becomes more meaningful and contextualized.

Thermochemical material, which discusses energy changes in chemical reactions, is an important topic in the high school chemistry curriculum (Novitasari, 2021). This material has great potential to be associated with local cultural practices, such as the combustion process in pottery making, burning natural fuels, or other traditional activities (Huda et al., 2024). Therefore, thermochemical material is very suitable to be the focus in developing ethnoscience-STEM integrated chemical literacy instruments.

Initial observations at one of the public high schools in Klaten Regency showed that the assessments used by teachers still focused on low-level cognitive knowledge aspects, such as memorization of formulas and definitions. In addition, in learning thermochemical material, teachers tend not to link the material with local phenomena that are familiar to students. In fact, the Klaten region has very relevant ethnoscience potential, such as the traditional pottery making process that involves thermochemical principles, especially related to energy changes during the combustion process.

Interviews with chemistry teachers at the school also revealed that they do not yet have a special instrument to measure students' chemical literacy thoroughly, especially those that cover aspects of cultural context and real-life applications. The teacher stated that an ethnoscience-STEM-based instrument is needed to encourage students' active involvement and improve their critical thinking skills on the chemical phenomena around them.

Thermochemistry, which discusses energy changes in chemical reactions, is an important topic in the high school chemistry curriculum. This material has great potential to be associated with local cultural practices, such as the combustion process in pottery making, burning natural fuels, or other traditional activities. Therefore, thermochemical material is very suitable to be the focus in the development of ethnoscience-STEM integrated chemical literacy instruments.

METHODS

This research is a research and development (R&D) using the 4D model developed by Thiagarajan which includes the Define, Design, Develop, and Disseminate stages. The purpose of this research is to produce an ethnoscience-STEM-based chemical literacy test instrument on thermochemical material that is valid and feasible to use. The test subjects involved 70 students in high school. In the Define stage, a literature study, curriculum analysis, as well as observations and interviews with chemistry teachers at one of the public high schools in Klaten were conducted to explore the needs of assessment and local potential in the form of pottery making practices. The Design stage includes the preparation of indicators, question grids, and draft chemical literacy test instruments. The Develop stage includes expert validation analyzed using Aiken's V and instrument revision. The test results were analyzed using the Rasch model with the help of Ministeps software to evaluate item validity, difficulty level, and model fit.

RESULT AND DISCUSSION

Research on the development of ethno-STEM test instruments to equip chemical literacy has been carried out at SMA N 1 Wonosari with the following stages:

Define

The define stage aims to establish and define the initial needs in the development of ethno-STEM test instruments, especially in the context of equipping students' chemical literacy in thermochemical materials. The results of observations and interviews with high school chemistry teachers show that students still have difficulty in understanding abstract concepts in thermochemical materials, such as enthalpy changes, Hess' law, and bond energy. In addition, the assessments used are still conventional and do not measure chemical literacy, especially those related to local or cultural contexts. This indicates the need for the development of ethno-STEM test instruments, which can improve the linkage of chemical concepts with daily life and local culture.

Facts in the field state that most students have an interest in local cultural practices, but do not understand their relationship with science concepts, especially chemistry. In addition, students' chemical literacy levels are still classified as moderate to low based on previous evaluation results. This shows the need for a test instrument that not only measures knowledge, but also aspects of scientific skills and attitudes that are in accordance with chemical literacy.

Analysis of independent curriculum documents and textbooks shows that thermochemistry covers important subtopics such as heat change, exotherm and endotherm reactions, Hess' law, and bond energy. This material can be contextualized with local cultural practices such as pottery making (which involves burning clay and energy changes). This is the basis for the integration of ethnoscience elements in the development of Ethno-STEM-based question items.

Based on the analysis of basic competencies and learning outcomes, students are required not only to understand concepts, but also to be able to apply these concepts in real life. Therefore, the test instruments developed must cover various cognitive levels (C1-C6), and contain ethnoscience-based contextual stimuli in order to measure the dimensions of chemical literacy more fully.

Based on the analysis conducted, the context-based STEM approach can improve students' chemical literacy. The addition of ethnoscience elements as a representation of local culture enriches the context of the questions and bridges the gap between modern science and local wisdom (Septina et al., 2025). Therefore, the results of this define are a strong basis for continuing to the design stage, namely designing a valid and appropriate form of instrument.

Design

The design stage is the initial basis for designing ethno-STEM test instrument products to equip chemical literacy. There are 8 essay questions developed with reference to Basic Competencies, Bloom's taxonomy, and PISA science literacy aspects, namely aspects: content, context, affective, and HOTS. Each item is designed to reflect at least two aspects of science literacy, with attention to local meaningfulness and integration of cultural elements (ethnoscience) in the scientific thinking process.

The test instrument development plan shows a strong emphasis on critical thinking and science literacy based on local context. The questions are designed to not only test memory or understanding, but also hone higher order thinking skills through a problem-based approach and locality. The use of the Ethno-STEM approach supports meaningful learning because students are faced with real problems in their environment, such as clay firing in pottery or the use of heat energy in local traditions (Nurhaliza et al., 2024). This is also in line with the contextual teaching and learning approach and PISA 2015 recommendations, which emphasize measuring competence through real-life problems (Simarmata et al., 2024).

Assessment with a 0-5 point rubric also provides flexibility to evaluate the depth of student understanding, rather than just right or wrong. In addition, the affective aspects incorporated into the assessment encourage students to internalize scientific and cultural values, in line with the objectives of character education in the independent curriculum (Widayati & Wijaya, 2025). Overall, this design shows the readiness of the product to enter the next stage, namely expert validation and limited trials, to ensure the quality of the instrument from the aspects of content validity, readability, and practicality.

Develop

Expert Validity Test Results

The validation test involved 4 validators, consisting of 2 chemistry education lecturers at Semarang State University and 2 chemistry teachers. The validators were asked to assess aspects of the suitability of the questions with indicators, clarity of construction, integration of content and context aspects, and cognitive level with a rating scale of 1-4.

The results of Aiken's V calculation show that the average value for all items is 0.92, which is included in the high validity category. According to Aiken's interpretation criteria, the value of $V \geq 0.8$ indicates that the instrument items are considered very relevant and feasible to use for measurement at the next stage (Rahmati et al., 2024).

The high Aiken V value indicates that the items have met the content standards in accordance with the basic competencies of the curriculum, science literacy indicators, and HOTS cognitive levels (C3-C6). In addition, the high validity also indicates that the Ethno-STEM approach in the preparation of the questions was successfully transformed into a written assessment format, without sacrificing the accuracy of chemical concepts.

Empirical Validity Test Results

Empirical validity is carried out after making revisions from expert suggestions. The results of the empirical validation of questions can be seen in Table 1.

Table 1. Validity Test Results

NO	MNSQ	ZSTD	PT CORR
4	1.25	1.47	0.71
1	1.21	1.19	0.45
2	1.21	1.22	0.41
5	1.05	0.37	0.59
6	0.94	-0.29	0.71
3	0.92	-0.49	0.46
7	0.72	-1.90	0.58
8	0.61	-2.68	0.63

Based on Table 1, it is known that there are 7 valid questions. Validity is used to explain whether the items function normally to make measurements or not. According to Boone et al (2014) the criteria used to check the suitability of items are MNSQ, ZSTD, and PT Measure Corr. The item is said to be valid if the MNSQ outfit is in the range of 0.5 - 1.5, the PT measure corr value is in the range of 0.4 - 0.85, and the ZSTD outfit value is in the range of -2.00 - 2.00. If one item is found where the MNSQ and PT MEASURE CORR values do not meet the criteria but the ZSTD value meets the criteria, the item is still considered fit, meaning that the item is retained. The question is said to have high validity if it can measure exactly the purpose of the measurement (Armedi et al., 2025). Based on Table 1, the values of MNSQ outift, ZSTD, PT measure corr question no 1,2,3,4,5,6,7 are in the specified range so it can be concluded that the 7 questions are valid and can measure students' scientific literacy.

Reliability Test Results

Reliability shows the extent to which the measurement results with the tool can be trusted. Reliable measurement results mean that there must be a high level of consistency and stability in the test instruments developed. In this study, the question reliability test was carried out with the help of the Ministep program, which is part of the analysis tool in the Rasch model. The test results showed that the reliability value of the test instrument for 8 items reached 0.71, which is included in the good reliability category.

This value indicates that the instrument has an adequate level of internal consistency in measuring student abilities. In other words, student responses to each item tend to be stable and do not change randomly, so the instrument can be used to measure the same ability at different times with relatively consistent results. This is important in the context of educational assessment because it ensures that the variation in scores that appears is more due to differences in student abilities, not due to inconsistencies in measuring instruments.

Based on these results, it can be concluded that all 8 items used in the test instrument have decent and reliable reliability. This instrument is able to provide stable measurement results, so that it can be used in learning evaluation and further research. This reliability also shows that the items have been well developed in terms of construction, language, and a balanced level of difficulty.

Difficulty Level

The level of difficulty of the question is used to determine the quality or degree of difficulty of the items given, including in the easy, medium, difficult, or very difficult categories. To find out the level of difficulty of the items (item measure), it can be seen from the logit value of each item which can be seen in the measure column. A high logit value indicates the highest level of difficulty of the question. The standard deviation value in this data is 0.29. A question is said to be very difficult if the logit measure $> +0.29$. The question is said to be difficult if $0.0 \leq$ measure logit $\leq +0.29$. The question is said to be moderate if $-0.29 \leq$ measure logit ≤ 0.0. The question is said to be easy if measure logit < -0.29. The distribution of items based on the level of difficulty is presented in Table 2 below.

Items 3 and 5 are the most difficult questions for students to do. This is evidenced by the total score obtained the least compared to other questions, namely 286. The same logit value for each item shows that the level of difficulty is not much different, for example, no. 3 and 5. In question no. 3, students are asked to analyze the calculation of bond energy data which contains HOTS aspects of chemical literacy, namely in the combustion process of $C_6H_{10}O_5$ as raw material for burning pottery. There are several things that make students not get maximum points when working on this problem, including students not knowing the structure picture of $C_6H_{10}O_5$, students are less careful when calculating the bonds in the products and reactants, students are less careful when entering known bond energy data, and even the possibility of students using the wrong formula.

Table 2. Distribution of Problem Items Based on Level of Difficulty

Clasification	No	Amount
Eassy	6	1
Medium	1,2,8	3
Difficult	4,7	2
Very Difficult	3,5	2

While question no. 5 also has many students who answer less than optimal. The question is related to the principle of Hess's law which is presented in a case study of pottery making discourse. Students are asked to calculate the total average enthalpy change of each combustion. Some of the things that cause students to get less than the maximum score when working on No. 5 include, students only add up the enthalpy without dividing by 3 and students multiply the three known enthalpies.

Problems number 4 and number 7 were considered difficult because they required a deep conceptual understanding of thermochemistry, especially in relation to the bond energy involved in the pottery making process. This difficulty is natural because thermochemistry is a complex and abstract material, requiring students' ability to relate energy changes in chemical reactions to real phenomena, such as the combustion and cooling processes in pottery making. In addition, the concept of bonding energy requires an invisible molecular understanding, which often makes it difficult for students to relate it to the context of everyday life.

As a solution, a contextual learning approach through ethnoscience integration, such as the process of making typical regional pottery, can be used as a strategy to bridge these abstract concepts. By presenting real examples from local culture, students can more easily understand the relationship between thermochemical theory and its application. In addition, the use of visual media, digital simulations, or simple experiments that illustrate enthalpy changes and bond energy can help improve students' conceptual understanding gradually.

When viewed from the data on the most difficult questions, students still have difficulty when doing calculations and understanding literacy discourse. So students need to be equipped with content that contains numeracy literacy in order to have good chemical literacy skills (Nirmalasari et al., 2024). Students also need to be taught local cultures other than pottery to enrich their knowledge of local wisdom in their respective regions. Because the existing local wisdom turns out to contain many chemical concepts without us realizing it.

On the other hand, the easiest question for students to answer is question no. 6. Question no. 6 contains affective aspects of chemical literacy where students are asked to provide opinions and logical arguments related to fuel that is more effectively used in the pottery burning process. The advantage of questions in essay form is that students are given the freedom to write answers according to what they think, especially when the question asks for opinions (Darmawati et al., 2025). A person's opinion can be said to be logical if the opinion is followed by a corroborating argument.

There are 3 questions that are included in the medium criteria by students. Moderate questions are questions that are not too easy and not too difficult. Problem no 1 contains content aspects where students are asked to identify systems and environments based on the discourse presented. Some students already understood the difference between system and environment. However, other students only understood the meaning but were not able to describe it in a real example. The system is where the reaction occurs while the environment is everything outside the system.

Problem 2 contains HOTS aspects, where students are asked to classify a process as an endothermic or exothermic reaction. The process is the reduction of water content when drying pottery. Most of the students' answers are correct but the reasons expressed are incomplete so it needs a more perfect explanation in order to get the maximum score on this number. It is very important to involve a contextual approach in learning exotherm and endotherm reactions so that students not only understand the concepts theoretically, but are also able to distinguish between the two through relevant real experiences. By linking the material with everyday phenomena, students will more easily recognize the differences in the characteristics of the two types of reactions.

Problem number 8 contains affective aspects where students are asked to implement ways to improve energy efficiency in the pottery firing process and strategies to reduce emissions. Students who did not get the maximum score on this number were students who answered only 1 part of the question. Even though the question has 2 things that are asked, namely related to efficiency and strategies to reduce emissions. However, most of the suggestions from students are reasonable. In addition to equipping chemical literacy through discourse questions, students can develop their critical thinking and creative thinking skills (Amelia et al., 2025). These skills are one of the skills that must be possessed in the 21st century to survive from various competitions (Setyaningsih et al., 2025).

In the analysis using ministep, respondents and items can be described comprehensively in a map called wright map. The right part of the wright map above is the distribution of item difficulty levels while the left part is the distribution of student abilities or abilities. Then there are numbers -1,0,1,2,3,4,5 which are called logits. Logit in the rush method can be said to be a general scale that is used as a benchmark for measuring respondents with items. The higher the logit the better the student's ability. The question with the AF label means that the question contains aspects of attitudinal/affective chemical literacy, the KN label question means that the question contains aspects of chemical literacy content, the KT label question means that the question contains aspects of chemical literacy context, and the HS labeled question means that the question contains HOTS aspects of chemical literacy.

Problem number 3 which contains HOTS aspects with code HS1, problem number 5 which contains content aspects with code KN2, and problem number 7 contains context aspects with code KS 2 is a problem that is considered difficult by students and while number 6 is the easiest problem that contains affective aspects with code AF1.

Participants numbered 14, 26, and 30 are in the upper group who have the highest ability compared to other respondents. While the lowest group students are students with the order of 46, 53, and 55 because many aspects are not mastered. They only mastered the affective aspects, context, and content in 1 question even though there are 4 aspects and each aspect has 2 questions containing different aspects. So that the three students need to be given remediation for 3 questions that have not been completed.

The high and low ability that students have logitically can be seen in the person measure. The standard deviation value in this test is +1.18. Furthermore, the starting point for determining the ability of this student is from the average logit person value, the average logit person value in this test is 2.04. The logit of 14th-order students is +4.53 which is in the high category and the lowest order student logit is 55th-order students with a logit value of -0.17 which is in the low category. This shows that there are variations in students' ability to solve problems, from low to high categories.

The distribution of logit values illustrates that most students are above the average logit point, but there are still students whose abilities are below average. This condition is an indicator that the material or types of questions given are still challenging for some students. This difference can be used as a basis for mapping student abilities and developing more adaptive learning strategies.

As a follow-up, teachers can group students based on ability levels and provide enrichment or assistance according to the needs of each group. In addition, an evaluation of the format and difficulty level of the questions can also be carried out to ensure that the questions cover a wide range of cognitive levels, from low to high. Thus, all students can have equal opportunities to show their abilities to the fullest. Differentiated learning that is tailored to students' initial abilities is expected to improve overall learning outcomes (Pane et al., 2025).

Question Distinguishing Power

Based on research, the test of the differentiation of items can be done through SPSS. The differentiation of questions can be categorized into excellent, good, sufficient, poor, and poor criteria. These results are presented in Table 3.

Table 3. Question Distinguishing Power

Classification	No	Amount
Very Good	1,2,3	3
Good	4,5,6,7,8	5

Based on the results of the analysis conducted on the 8 essay questions, it can be seen that there are 3 questions included in the excellent criteria, namely number 1, 2, 3 and there are 5 questions included in the good criteria, namely number 4, 5, 6, 7, 8. According to Sudjono Anas, 2013 the question is included in the excellent category if the analysis results are in the range of 0.70 - 1.00 while the question is included in the good category in the range of 0.40 - 0.69.

These findings indicate that in general the essay items developed have been able to measure student understanding well, and can be used as a representative evaluation instrument for thermochemical material. With no questions classified in the "sufficient" or "insufficient" category, this indicates that the questions have been designed with adequate quality according to the assessment standards. However, continuous question development is still important as a form of improvement, especially to increase the proportion of questions in the "excellent" category. This effort can be done by reviewing the structure of the questions, enriching the context, or deepening the cognitive aspects measured, so that in the future the evaluation instruments become more optimal in describing students' competencies as a whole.

The total score obtained when the question has been implemented can be processed into a score. The minimum score that students must achieve in chemistry is 70. If accumulated, the percentage of completeness obtained is 95.71%. There are 3 students who get a score <70 and other students have managed to get a score >70. Students who have not reached the target need follow-up in the form of individualized analysis of learning outcomes. Remedial approaches can be provided, either in the form of tutoring, reinforcement of material through structured assignments, or the use of alternative learning media that is more in line with students' learning styles (Lubis et al., 2025). In addition, reflection on the difficulties faced by students, both in terms of cognitive and non-cognitive, is also important to ensure that future learning strategies are more adaptive and support the achievement of competencies equally.

Meanwhile, although most students have achieved scores above the KTP, there are still some students whose scores are in the range of the minimum limit, which is around 70. This indicates that their understanding of the material is not yet fully strong, and success in reaching the KKM cannot be used as an absolute indicator that students have mastered the competencies in depth. Therefore, it is important for teachers to not only focus on students who have not completed the course, but also pay attention to students who have just met the minimum limit. Follow-up learning strategies such as material enrichment, small group discussions, or ethnoscience-based contextual projects can be applied to strengthen understanding and encourage improved learning quality (Side & Munawwarah, 2025). That way, all students can develop sustainably and not only reach the minimum score, but also really understand and apply chemistry concepts, especially in thermochemistry.

The students who obtained high scores in the range of 80 to 90 showed excellent mastery of the thermochemical material. These results reflect that they not only understand the basic concepts, but are also able to apply and analyze the information more deeply. This achievement needs to be appreciated and used as a reference to provide further challenges, for example through enrichment activities, mini projects, or exploration of related topics such as thermochemical applications in industry or local culture such as the pottery firing process. Providing space for students with high achievements to develop their potential further is also in line with the principle of learning differentiation in the Merdeka Curriculum, which adapts learning to the needs and abilities of each student. Thus, students who have significantly exceeded the KKM still receive support to continue to grow optimally.

Desseminate

The disseminate stage is the final step in the instrument development process which aims to disseminate the development results to a wider audience, such as teachers, researchers, and education policy makers. At this stage, ethno-STEM-based chemical literacy test instruments that have gone through the validation and trial process are socialized through seminars, scientific publications, and teacher training. This dissemination is expected to encourage the use of instruments in various learning contexts, especially in integrating local wisdom and STEM approaches in chemistry education. Thus, the results of this development are not only beneficial for improving the quality of chemical literacy assessments, but also contribute to the preservation of local cultural values in science learning in schools.

CONCLUSION

Based on the findings of the research on the development of an ethno-STEM-based chemical literacy test instrument, it can be concluded that the instrument on thermochemical material was successfully developed using the 4D model, incorporating local cultural elements and addressing the specific learning needs of students at a senior high school in Klaten. Expert validation results indicate a high level of content validity (Aiken's V = 0.92), while the reliability test using Ministep shows good internal consistency (0.71), suggesting that the instrument is suitable for measuring students' chemical literacy. The integration of ethnoscientific elements within the STEM framework enables a more holistic and contextualized assessment of chemical literacy, bridging scientific concepts with everyday experiences and local wisdom. Furthermore, the inclusion of items with varying levels of difficulty ensures that the instrument can effectively differentiate students' abilities, making it a valuable tool for meaningful and culturally responsive science assessment.

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