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Development of An Inquiry-Based Ethnochemistry Textbook To Improve Students' Scientific Literacy And Understanding

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Abstract
This research aims to develop an ethnochemistry-based chemistry textbook with an inquiry approach to increase students' scientific literacy and understanding of chemical concepts. The research method used is Research and Development (R&D) with a 4D model (Define, Design, Develop, Disseminate). The textbook was tested on class X I students at MA Daru Muhyiddin NW Santong. The validation results show very good quality, with an average score of 4.75 from experts, 4.5 from practitioners, and 4.3 from students. This book is considered relevant to the curriculum, effective in increasing student understanding, and connecting chemistry with local culture. Suggestions for development include adding a glossary, visualization, and variations in inquiry activities. This book has great potential as an innovative learning medium based on local culture.

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INTRODUCTION

Learning chemistry at the secondary level is often considered difficult by students because it is abstract and less relevant to everyday life. This causes low interest in learning chemistry and limited student understanding of concepts. To overcome this problem, an ethnochemical approach is a solution that can make learning more contextual by connecting chemistry with students' local culture, such as traditional food fermentation or natural dyeing on fabric. This approach makes it easier for students to understand chemistry concepts through examples that are familiar in their lives.

However, for effective implementation, teaching materials are needed that contain ethnochemical values and connect chemistry with local culture. The ethnochemistry-based textbook developed in this research aims to meet these needs. This book uses an inquiry approach, which activates students through observation, experimentation, and analysis. With this approach, students not only understand chemical theory, but can also see real applications in everyday life, which can improve their scientific literacy.

The ethnochemical approach to learning chemistry is nothing new. Previous research shows that integrating local cultural elements can improve students' understanding of chemistry concepts. For example, Kustiyah (2018) found that the application of ethnochemistry in chemistry learning can make students more interested and easier to understand abstract

chemical material. A similar thing was also found by Sujatmiko & Fitriani (2020), who stated that the ethnochemical approach could increase students' involvement in learning because they felt it was more relevant to their cultural context.

However, for effective implementation, teaching materials are needed that contain ethnochemical values and connect chemistry with local culture. The ethnochemistry-based textbook developed in this research aims to meet these needs. This book uses an inquiry approach, which activates students through observation, experimentation, and analysis. The inquiry approach has been proven to improve students' critical thinking skills and understanding of scientific concepts. Wahyudi (2019) in his research found that the inquiry approach can improve students' conceptual understanding because they are actively involved in the learning process. Prastowo (2020) also noted that the inquiry approach is able to develop students' scientific literacy because it encourages students to search for information and solve problems independently.

The importance of inquiry-based ethnochemical teaching materials lies in its ability to increase students' scientific literacy, namely the ability to understand and use scientific knowledge in everyday life. To ensure its effectiveness, this textbook was tested for suitability through validation tests involving students, teachers and chemists. The results of this feasibility test are important to ensure that teaching materials are not only relevant to the curriculum, but also effective in increasing student understanding.

METHOD

This research uses the Research and Development (R&D) method with a 4D model consisting of four stages: (1) Define: This stage involves analyzing learning needs based on the curriculum and student characteristics; (2) Design: The textbook is designed by integrating ethnochemical concepts and inquiry approaches, involving activities such as observation and simple experiments; (3) Develop: This stage includes validation by experts, practitioners, and trials on a limited group of students; (4) Disseminate: Dissemination of research results has not been carried out at this stage.

The research instrument uses a questionnaire to obtain product feasibility data. This questionnaire is used to collect feedback from students and teachers regarding the effectiveness, readability and relevance of textbooks.

Feasibility Test Categories Based on a Scale of 1–5

4.5– 5.0: Very Decent
The book meets all eligibility criteria and is ready to be used in learning without revision.

3.5 – 4.4: Decent
The book meets most eligibility criteria, but requires minor revision before use.

2.5 – 3.4: Fair
The book meets the eligibility criteria, but requires moderate revision to make it more suitable.

1.5 – 2.4: Inadequate
The book did not meet many eligibility criteria and required major revision before it could be used.

1.0 – 1.4: **Not Worth It**
The book simply does not meet the eligibility criteria and needs to be completely redeveloped.

How to Assess:

1. Calculate Average Score:

- Add up all the scores given by validators for each aspect, then divide by the number of statements assessed.
- Average Score= Total Score Given/Number of Statements

2. Define Category:
   - Use the category table above to determine eligibility levels based on average scores.

RESULT AND DISCUSSION

The following is a table of validation results from the textbook "Inquiry-Based Ethnochemistry to Improve Scientific Literacy" based on input from expert validators (2 expert lecturers), practitioners (1 subject teacher), and a limited group (20 students from the Daru Muhyiddin NW Debok Islamic Boarding School students):

Table 1: Validation Results by Experts (2 Expert Lecturers in Their Fields)

Assessment Aspect	Statement	Expert Lecturer 1	Expert Lecturer 2	Average Score
Suitability of Material to Curriculum	The material is in accordance with the high school curriculum and competency standards	4	5	4,5
	The material supports increasing students' scientific literacy	4	4	4,0
	Ethnochemical content is relevant to the needs of high school students	4	4	4,0
Depth and Scientific Accuracy of Content	Accurate and up-to-date scientific information	5	4	4,5
	The depth of the material is appropriate to the abilities of high school students	5	4	4,5
	Ethnochemical examples are relevant and interesting for students	5	4	4,5
Quality and Engagement of Inquiry Activities	Inquiry activities are relevant and stimulate critical thinking skills	4	4	4,0
	Activities can be carried out with minimal tool support	5	3	4,0
	The inquiry steps are presented clearly and structured	5	4	4,5
Book Structure and Organization	The material is structured coherently and easy to follow	5	4	4,5
	Consistent writing and standardized language	4	4	4,0
	The use of subchapters is clear and helps students' understanding	5	4	4,5
Average Overall Score				**4,37**

Based on the results of validation carried out by two expert lecturers, the Inquiry-Based Ethnochemistry textbook for Improving Scientific Literacy obtained an overall average score

of 4.37, which shows the quality is suitable for use in chemistry learning at the high school level. This score reflects that this textbook generally meets important eligibility criteria, such as suitability of material to the curriculum, scientific depth and accuracy, quality of inquiry activities, and book structure and organization. In the aspect of suitability of material to the curriculum, this book received an average score of 4.17, which shows that the material presented is relevant to the curriculum and high school competency standards, although there is still room to increase the focus on developing students' scientific literacy. This is in line with research findings by Wahyudi (2019) which shows the importance of the relevance of material to contextual learning needs, which is also reflected in the integration of local culture in this book.

In terms of **depth and scientific accuracy of content**, this book received an average score of 4.50, which indicates that the scientific information presented is accurate and up to date. The assessment includes depth of material appropriate to the abilities of high school students, as well as relevant and interesting examples of ethnochemistry. This finding is in line with Kustiyah's (2018) research which shows that integrating scientific material with local culture can enrich students' understanding. However, there are suggestions from experts to strengthen the linkage of ethnochemical concepts with modern chemical principles so that students not only understand local relevance, but also connect them with global scientific concepts.

In terms of the quality and involvement of inquiry activities, this book received an average score of 4.17, which shows that the activities designed are quite effective in stimulating students' critical thinking skills. Inquiry activities are considered relevant and can be done with minimal tools, but the validators suggest that this book include a variety of activities, such as experiments based on local culture or collaborative projects. This is in accordance with the findings of Prastowo (2020), who suggested that the inquiry approach should not only focus on laboratory experiments but could also involve students in projects that connect science with everyday life. However, the highest score in this aspect was given to the statement about the structure of the inquiry steps which was considered clear and well structured, with a score of 4.5, which reflects that the presentation of the activity is quite adequate.

The structure and organization aspects of the book received the second highest score, namely an average of 4.33. This shows that this textbook is well structured, with material that is arranged coherently and easy to follow, as well as clear and consistent use of subchapters. This aspect was highly appreciated by validators, who noted that the structure of the book made it easier for students and teachers to understand the learning process. Rini & Kusmaryati (2017) also found that textbooks with a clear structure are easier to understand and effective in learning. However, even though it is very good, there are suggestions for adding more visual illustrations, such as diagrams or pictures related to ethnochemical processes, so that the explanation of the concept becomes more interesting and easier to understand.

Positive Comments from Validators

1. **Expert Lecturer 1**: "This book has the advantage of presenting material that is relevant to the local context. The ethnochemical examples included are very interesting and provide unique additional insights to students. The structure and organization of the material is very good, so this book is easy to understand by "In addition, the inquiry approach used is in accordance with modern learning needs which focus on developing critical thinking skills."
2. **Expert Lecturer 2**: "I really appreciate the efforts to integrate ethnochemistry in chemistry learning. This book is not only relevant to the curriculum but is also able to increase students' scientific literacy through an inquiry approach. The coherent preparation of material and consistent use of language provide added value. This book has great potential to be applied in various schools with diverse conditions because the activities designed are quite flexible."

Criticism and Suggestions from Validators

Even though this book is considered worthy and of good quality, the validators also provide several constructive criticisms and suggestions to improve its quality:

1. **Variation in Inquiry Activities**: One of the criticisms expressed is the lack of variety in inquiry activities. Validators suggested that the book include a wider variety of activities, such as simple experiments based on local culture, case studies, or collaborative projects. By adding more diverse types of activities, students will be more involved in learning and can more easily relate chemistry concepts to their daily lives. This can also improve students' critical thinking skills and deeper scientific skills
2. **Strengthening the link between ethnochemical concepts and modern chemistry**: The validators also suggested that this book strengthen the link between ethnochemical concepts and modern chemical principles. Although the book succeeds in connecting chemistry to local culture, there are suggestions to provide a more in-depth explanation of how ethnochemical concepts can be explained using modern chemical principles. This will help students to not only understand local relevance but also relate it to broader, globally accepted chemical concepts.
3. **Addition of Visual Illustrations:** Several validators noted that although the book already has a clear structure and is well organized, the addition of more visual illustrations would really help students understand the material better. Diagrams, pictures, or infographics that depict ethnochemical processes, such as fermentation or the creation of natural dyes, can make complex concepts easier to understand and more interesting for students. This will also enrich students' learning experience and increase the visual appeal of textbooks.

Table 2: Validation Results by Practitioners (1 Subject Teacher)

Assessment Aspects	Statement	i.Score
Readability and Language Usage	Simple language and suitable for high school students	5
	Scientific terms are well explained and easy to understand	4
	Effective sentence structure in explaining concepts	4
Compliance with Classroom Management	Material can be applied in class efficiently	5
	Activities have appropriate time allocations	4
	Easy to adapt to students' conditions and abilities	4
Layout, Visualization, and Book Design	The layout makes it easier for students to read the material	5
	Images and graphs support understanding of the material	4
	The visualization fits the theme and is interesting for students	4
Benefits and Effectiveness of Books	The book helps students understand the relevance of chemistry in everyday life	5
	Books increase students' learning motivation	5
	The book emphasizes the importance of scientific literacy	4
Average Overall Score		**4,5**

Based on the results of validation by a practitioner (subject teacher) carried out on the Inquiry-Based Ethnochemistry textbook to Improve Scientific Literacy, this book received an overall average score of 4.5. This score shows that the textbook is considered very suitable and

effective for use in chemistry learning at the high school level. In detail, validation was carried out on several aspects, each of which had a high score, indicating good quality in various important elements of this textbook.

In terms of **readability and language use**, this book received an average score of 4.33. The language used was rated as very simple and suitable for high school students (score 5), as well as the sentence structure being effective in explaining chemical concepts (score 4). However, it was noted that although scientific terms were explained well, there was still room to improve understanding regarding some of the more technical terms (score 4). This shows that even though the language used is appropriate, more attention can be paid to adjusting scientific terms and explanations to make them easier for students to understand. This finding is in line with Kustiyah's (2018) study which suggested that the use of simple language in textbooks would better help students understand chemistry concepts which are often abstract.

In the aspect of **suitability for classroom management**, this book received an average score of 4.33, which reflects that the material in the textbook can be applied efficiently in the classroom. The existing material can be implemented with appropriate time allocation (score 4) and is easily adapted to students' conditions and abilities (score 4). This indicates that this book is very flexible in its implementation in the classroom and can accommodate various levels of student ability. This is also in line with the findings of Prastowo (2020) which states that inquiry activities must be able to be adapted to various class conditions and students' needs, to increase their involvement in learning.

In the **aspects of layout, visualization and book design**, this book received an average score of 4.33. The book's simple and well-structured layout makes it easier for students to read the material (score 5), and the images and graphics used support understanding of the material (score 4). However, there is a little room for improvement in the visualization, which can still be improved to make it more interesting and more in line with the theme (score 4). This reflects the important role of visual design in increasing the attractiveness of textbooks and facilitating student understanding, as suggested in the study by Rini & Kusmaryati (2017).

In terms of **the benefits and effectiveness** of the book, this book received a very good score, with an average score of 4.67. This book is very effective in helping students understand the relevance of chemistry in everyday life (score 5), increasing students' learning motivation (score 5), and emphasizing the importance of scientific literacy (score 4). A high score in this aspect shows that this book is successful in connecting chemical material with students' daily lives, which is the main goal of the ethnochemical approach. This supports the findings of Wahyudi (2019) which states that context-based approaches, such as ethnochemistry, can increase student motivation and involvement in learning chemistry.

Positive Comments from Teachers

Teachers who carried out the validation gave positive comments on this textbook, especially on aspects of readability and material structure. The teacher considers that the material in this book is very relevant to the students' local context and can help them see the relationship between chemistry and everyday life. Teachers also praised the book's design which makes it easy for students to follow the material comfortably and efficiently. This book is considered to be able to increase students' learning motivation, especially because it presents content that is not only theoretical but also directly related to their local culture.

Criticism and Suggestions from Teachers

Even though this book received a very good rating, there were several criticisms and suggestions made by the teacher. First, even though this book has really helped students understand the material, the teacher suggests that the explanation of more technical scientific

terms could be clarified further. This is important to ensure that all students can understand and remember the more complex chemistry terms well. Second, related to visualization, even though it is good, the teacher suggests that this book be equipped with more interesting illustrations or diagrams, which can help students understand more abstract concepts, such as chemical reactions or chemical changes that occur in ethnochemical processes. . This addition will make this textbook more attractive and more accessible to students, in line with developments in modern textbook design.

Table 3. Limited Group Validation Results (20 Students from Santri Islamic Boarding School Daru Muhyiddin NW Debok)

Assessment Aspects	Statement	Average Student Score
Readability and Comprehension of Material	The content of the material is easy to understand without additional explanation	4,1
	Explanation of concepts is not complicated and clear	4,5
	The language used is interesting and not boring	3,9
Visual Attraction and Learning Motivation	Illustrations and pictures help me understand the material	4,2
	This book made me more interested in studying chemistry	4,1
	The visual design of the book is attractive and fun to read	4,0
Inquiry Activities and Application of Ethnochemistry	Inquiry activities help my understanding of the material	4,4
	Ethnochemical material is interesting and useful	4,7
	The material made me understand more about the relationship between chemistry and local culture	4,5
Average Overall Score		4,26

The results of validation by 20 students at the Daru Muhyiddin NW Debok Islamic Boarding School of the Inquiry-Based Ethnochemistry textbook to Improve Scientific Literacy show that this book was well received or in the appropriate category or as a learning medium, with an average overall score of 4.26. This assessment reflects that this textbook is able to help students understand chemical concepts in a clear, interesting and relevant way to everyday life.

In the aspect of **readability and understanding of the material**, students gave high scores on the points of ease of understanding the content of the material without additional explanations (4.1) and explanations of concepts that were not complicated (4.5). This shows that the presentation of the material in this book is designed simply and effectively, making it easier for students to learn independently. However, a lower score was seen for the language used (3.9), with some students feeling that the delivery style was still less interesting and needed to be made more dynamic so as not to be boring.

From the aspect of **visual appeal and learning motivation**, students expressed appreciation for the illustrations and pictures that helped them understand the material (4.2) and how this book succeeded in increasing learning motivation (4.1). However, the score for the book's

visual design (4.0) indicates that although the visualization is quite good, there is still room for improvement to make it more interactive and attract students' attention.

Aspects of **inquiry activities and the application of ethnochemistry** received the highest appreciation, with an average score of 4.5. The inquiry activities presented are considered very relevant and help students understand the material (4.4). The ethnochemical approach in this book received the highest score (4.7), where students felt that the material presented was interesting, useful, and provided new insights into the relationship between chemistry and local culture (4.5). This shows that the ethnochemistry-based approach is successful in providing contextual and meaningful learning experiences for students.

Positive Messages from Students

1. **Clarity and ease of understanding the material**: Students feel that the chemical material presented in this book is easy to understand, even without additional explanation. Simple and straight to the point explanations of concepts really help them in learning independently.
2. **Relevance of Ethnochemistry**: Students appreciate the ethnochemical approach which makes learning chemistry closer to their lives. Examples based on local culture are considered interesting and provide relevant new insights.
3. **Inquiry Activities**: Inquiry activities are considered very useful because they help students understand the material in depth and increase their curiosity about the applications of chemistry in everyday life.

Criticism and Suggestions from Students

1. **More Dynamic Language**: Students noted that the language used in some sections felt less interesting and monotonous. They suggest using a more lively and varied language style to maintain interest in reading.
2. **Improved Visual Design**: Although the illustrations and pictures were helpful, students suggested that the visual design should be more colorful and interactive to increase the appeal of the book. This is important to provide a more enjoyable learning experience and capture their attention

The validation results from three groups of expert validators, practitioners, and a limited group of students as a whole show that the Inquiry-Based Ethnochemistry textbook for Improving Scientific Literacy has very good quality as a learning medium. Expert validators gave high assessments to aspects of the material's suitability to the curriculum, depth of scientific content, and organizational structure of the book. This book is considered capable of presenting material that is relevant to high school learning standards, supports scientific literacy, and presents an interesting and contextual ethnochemical approach. However, experts suggest adding variations in inquiry activities, such as simple experiments based on local culture, as well as strengthening the link between ethnochemical concepts and modern chemical principles. The addition of diagrams or other visualizations is also proposed to help students understand the material better.

From a practitioner's perspective, this book is appreciated for its simple language, efficiency in application in the classroom, and flexibility of material that allows adaptation to students' conditions. Practitioners also note that the book is effective in increasing student motivation and making learning more relevant to everyday life. However, the teacher suggested additional efforts to increase visualization and applicable examples to make them more concrete and interesting.

Meanwhile, students from the limited group considered that this book was easy to understand without additional explanations, with inquiry activities that really helped their understanding of chemistry material. The ethnochemical approach received high appreciation because of its relevance to local culture, which makes students feel closer to chemical concepts. However, students criticized the language which sometimes felt monotonous and suggested that the writing style be made more dynamic. Apart from that, the visual design is also proposed to be improved to make it more interactive and attractive.

Overall, this book was considered innovative and relevant by all validator groups. With several additional developments, such as improving visualization, adjusting language style, adding a glossary, and varying inquiry activities, this book has the potential to become a superior and transformative chemistry learning reference, capable of increasing students' understanding and learning motivation in various contexts.

CONCLUSION

The Inquiry-Based Ethnochemistry textbook to Improve Scientific Literacy is rated very well by experts, practitioners and students, with excellence in the relevance of the material, depth of content, and effectiveness in increasing student motivation and understanding. The ethnochemical approach and inquiry activities received high appreciation, although there were suggestions for improvements in visualization, language style, addition of a glossary, and variety of activities. With further development, this book has great potential as an innovative and relevant teaching material for chemistry learning in high school.

Based on the research results, the Inquiry-Based Ethnochemistry textbook for Improving Scientific Literacy is considered very good and relevant as a learning medium, but still requires further development. It is recommended to improve visualization through more interesting diagrams and illustrations, enrich the variety of inquiry activities with experiments based on local culture, and improve the language style to make it more dynamic and interesting for students. Future researchers can explore the impact of this textbook on students' critical thinking skills, creativity and attitudes towards chemistry, as well as integrating technology to expand implementation in ethnochemistry-based learning. With this development, textbooks have great potential to become innovative references in chemistry education based on local culture.

RECOMMENDATION

Recommendation describe things that will be done related to the next idea of the research. Barriers or problems that can influence the results of the research are also presented in this section.

BIBLIOGRAPHY

Arends, R. I. (2008). *Learning to Teach*. Boston: McGraw-Hill.

Baker, W., & Thompson, M. (2016). Inquiry-Based Science Teaching: A Guide for the Development of Inquiry in Chemistry. *Journal of Chemical Education*, 93(7), 123-130.

Borg, W. R., & Gall, M. D. (2003). *Educational Research: An Introduction* (7th ed.). Boston: Allyn and Bacon.

Chien, T., & Hsieh, J. (2017). The Role of Cultural Context in Chemistry Education: Developing an Etnokimia-Based Curriculum. *International Journal of Education Research*, 48(2), 254-269.

Fensham, P. J. (2008). *Promoting scientific literacy: Science education in the twentieth century*. Routledge.

Gonzalez, J., & Martinez, P. (2019). Traditional Knowledge and Chemistry: Bridging the Gap with Etnokimia in Science Teaching. *International Journal of Science and Mathematics Education*, 17(1), 32-44.

Harris, M., & Crutcher, M. (2019). Integrating Indigenous Knowledge with Chemistry: A Conceptual Framework for Etnokimia in Science Education. *Science Education Review*, 18(1), 23-33.

Hofstein, A., & Rosenfeld, S. (1996). Bridging the gap between theory and practice: The case of inquiry teaching. *Educational Psychologist, 31*(1), 55–61.

Johnson, E. B. (2002). Contextual Teaching and Learning: What It Is and Why It's Here to Stay. *Thousand Oaks: Corwin Press*.

Kemendikbud. (2014). *Kerangka Dasar dan Struktur Kurikulum 2013*. Jakarta: Kementerian Pendidikan dan Kebudayaan.

Kustiyah, S. (2018). *Penerapan Pendekatan Etnokimia dalam Pembelajaran Kimia untuk Meningkatkan Minat dan Pemahaman Siswa di Sekolah Menengah*. Jurnal Pendidikan Kimia, 19(2), 123-134.

Kusumawati, D. (2017). Penerapan Model Inkuiri dalam Pembelajaran Kimia untuk Meningkatkan Keterampilan Berpikir Kritis. *Jurnal Pendidikan Kimia Indonesia*, 10(2), 55-62.

Maharani, S., & Supardi. (2018). Implementasi Pendekatan Etnokimia dalam Pembelajaran Kimia di Sekolah Menengah. *Jurnal Inovasi Pendidikan Kimia*, 10(1), 125-138.

Ministry of Education and Culture of Indonesia. (2013). *Kurikulum 2013*. Jakarta: Kementerian Pendidikan dan Kebudayaan.

Nurhadi, D., & Hartono, S. (2007). *Pendekatan Kontekstual (Contextual Teaching and Learning) dan Penerapannya dalam KBK*. Malang: Universitas Negeri Malang Press.

Prastowo, A. (2020). Penerapan Pendekatan Inkuiri dalam Meningkatkan Literasi Ilmiah Siswa pada Pembelajaran Kimia. *Jurnal Pendidikan Sains*, 24(3), 210-221.

Purwanto, N. (2011). Prinsip-Prinsip dan Teknik Evaluasi Pengajaran. *Bandung: Remaja Rosdakarya*.

Rathod, R. (2018). Etnokimia and Its Role in Enhancing the Quality of Chemistry Education. *International Journal of Science Education*, 40(5), 789-803.

Riduwan. (2010). *Metode dan Teknik Menyusun Tesis*. Bandung: Alfabeta.

Rini, Y., & Kusmaryati, T. (2017). Pengaruh Struktur Buku Ajar Terhadap Pemahaman Konsep Siswa dalam Pembelajaran Kimia di Sekolah Menengah Atas. *Jurnal Pendidikan dan Pembelajaran*, 23(1), 77-88.

Sagala, S. (2011). Konsep dan Aplikasi Pembelajaran Inkuiri dalam Pendidikan Sains. *Alfabeta*.

Sagala, S. (2012). *Konsep dan Makna Pembelajaran*. Bandung: Alfabeta.

Santosa, P. I. (2019). Pengembangan Buku Ajar Kimia Berbasis Etnokimia untuk Meningkatkan Pemahaman Konsep Siswa. *Jurnal Pendidikan Sains dan Teknologi*, 7(1), 88-99.

Santosa, P. I., & Prasetyo, Y. (2018). Pengembangan media pembelajaran kimia berbasis etnokimia. *Jurnal Inovasi Pendidikan Kimia, 12*(1), 15–23.

Setiawan, D. A. (2020). Etnokimia: Integrasi Ilmu Kimia dan Budaya Lokal. *Jurnal Pendidikan Kimia*, 22(3), 345-355.

Setiawan, D. A., & Marwoto, P. (2019). Penerapan etnokimia dalam pembelajaran kimia untuk meningkatkan literasi sains siswa. *Jurnal Pendidikan Kimia, 7*(2), 101–109.

Slamet, I., & Chandra, I. (2020). Etnokimia dalam Pendidikan: Pemanfaatan Kearifan Lokal sebagai Media Pembelajaran Kimia. *Journal of Chemical Education Research*, 7(1), 45-60.

Sugiyono. (2016). *Metode penelitian pendidikan: Pendekatan kuantitatif, kualitatif, dan R&D*. Alfabeta.

Sujatmiko, A., & Fitriani, A. (2020). Integrasi Budaya Lokal dalam Pembelajaran Kimia: Sebuah Pendekatan Etnokimia untuk Meningkatkan Keterlibatan Siswa. *Jurnal Pendidikan dan Kebudayaan*, 15(1), 45-58.

Supardi. (2013). *Penelitian Tindakan Kelas*. Jakarta: Rajawali Pers.

Supriyadi, T. (2016). Implementasi Pendekatan Etnosains dalam Pembelajaran Kimia untuk Meningkatkan Minat Belajar Siswa. *Jurnal Inovasi Pendidikan Kimia*, 10(2), 180-190.

Trianto. (2009). Mendesain Model Pembelajaran Inovatif-Progresif: Konsep, Landasan, dan Implementasinya pada Kurikulum Tingkat Satuan Pendidikan (KTSP). *Jakarta: Kencana Prenada Media Group*.

Wahyudi, D. (2019). Pendekatan Inkuiri untuk Meningkatkan Keterampilan Berpikir Kritis Siswa dalam Pembelajaran Kimia. *Jurnal Penelitian Pendidikan*, 22(4), 98-106.

Wijaya, S. (2016). Pengembangan buku ajar kimia berbasis inkuiri untuk meningkatkan kemampuan literasi sains siswa. *Jurnal Pendidikan Sains, 8*(2), 75–84.

Wulandari, R., & Susilo, H. (2018). Pengaruh Pendekatan Etnosains terhadap Pemahaman Konsep dan Literasi Sains Siswa. *Jurnal Pendidikan Sains*, 6(3), 157-166.

Yuliati, N. (2014). Inkuiri dan Literasi Sains. *Jurnal Pendidikan Fisika Indonesia*, 10(1), 33-39.

Zainuddin, M., & Arifin, Z. (2011). *Metode Penelitian Pendidikan*. Bandung: Remaja Rosdakarya.

Zulkifli, Z., & Hamzah, I. (2017). Etnokimia dalam Pembelajaran Kimia di Sekolah Menengah. *Jurnal Pendidikan dan Pengajaran*, 10(3), 234-242.