**DIDAKTIKA**
**JURNAL PEMIKIRAN PENDIDIKAN**
http://journal.umg.ac.id/index.php/didaktika
***ISSN 1693-4318 (printed) and ISSN 2621-8941 (online)***
**Vol. 31 No. 1 Tahun 2025 | 154 – 161**
**DOI:** 10.30587/didaktika.v31i1.9546

# Qualitative Study Of Nvivo-Based Concept Understanding In Lesson Study Learning In Climate Change Courses

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**ARTICLE INFO**

**Keywords:**

qualitative;
nvivo;
lesson study;
climate change

***Article history:***

Received 2025-02-02
Revised 2025-02-17
Accepted 2025-02-27

**ABSTRACT**

This research aims to explore students' achievement of understanding physics concepts through qualitative data analysis using NVivo. Education, as regulated in Law no. 20 of 2003 concerning the National Education System, aims to develop the potential of students to become individuals who have faith, noble character, knowledge and independence. In this context, learning physics does not only study theory but also applies practice to understand natural phenomena as a whole. The research method used is qualitative, with data sources in the form of learning media, materials and interactions during teaching and learning activities. Data analysis was carried out using NVivo, producing visualizations such as word clouds and word trees to understand the structure and meaning of the data. This study also discusses the use of NVivo and TBLA (Transcript-Based Lesson Analysis) in qualitative data analysis, which shows the effectiveness of data visualization in understanding the relationship between climate change and the agricultural sector. This research confirms the importance of understanding concepts in education and the contribution of NVivo in improving quality qualitative data analysis.

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## INTRODUCTION

The introductionis Education in Law no. 20 of 2003 article 3 concerning the National Education System aims to develop abilities and shape the character and civilization of a dignified nation in order to educate the life of the nation, aiming to develop the potential of students to become human beings who

believe in and are devoted to God Almighty, have noble character, are healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens. Education means efforts to develop innate abilities, both physical and psychological, in harmony with the values, culture and norms that exist in society. Efforts to instill values and norms that are passed down to the next generation to be optimized and implemented in everyday life, make education a forum for preserving life (Zuhdi et al., 2021).

Learning is an activity between teachers and students in order to achieve learning goals. The success or failure of achieving learning objectives is determined by the teacher, because teachers do not only convey learning, but more than that, a teacher must be able to guide students who grow and develop each other in terms of attitude, physicality and psychology (Wulandari et al., 2023).

Learning is a structured combination involving human elements, materials, facilities, equipment and procedures that influence each other to achieve learning goals. Learning is always related to the teaching and learning process. The teaching and learning process consists of activities that involve certain components. If one component is missing, teaching and learning activities cannot run optimally and effectively.

Physics is knowledge that studies physical events which include processes, products and scientific attitudes that are cyclic, interconnected, and explain how these natural phenomena are measured through observation and research. Physics as a basic science subject in the learning process not only studies theories but can also prove these theories and solve scientific problems through practical activities. This is done in order to create a comprehensive understanding in theory and its application in everyday life. A deep theoretical understanding is of course supported by real evidence to make learning more meaningful (Mardiansyah et al., 2022).

All physical processes can be explained through a number of basic natural laws. However, this understanding requires abstract knowledge of the process in question, as well as (theoretical) reasoning in a structured manner, so that it can be formulated and processed. Quantitative formulation in the form of a mathematical model is very important in this case. Through mathematical formulation, it allows students to have a range of in-depth analysis of the problems being studied, and provides predictive (forecasting) abilities, as a result of quantitative processing, of possibilities that will occur based on their reasoning model (A. Suhandi, 2012).

Understanding is part of the learning process to achieve the goals of learning activities. Understanding plays a very important and strategic role in learning activities, because it involves reconstructing the value of various relationships, not just assimilating existing knowledge. In this case, the understanding referred to is understanding physics concepts. Understanding this concept is the basis and important stage in the entire learning process.

Lesson study has developed in Japan since the 1960s. In Japanese, lesson study is called jugyekenkyu, which comes from the words jugyo and kenkyu. In Indonesian jugyo means learning, and kenkyu means study. Lesson study can simply be described as an assessment of learning (Wiharto, 2018). Lesson study is real learning in class with students being observed by other teachers as observers and reflection activities are carried out after the lesson is finished. Lesson study is carried out to help develop the professionalism of teachers and help them learn from each other based on real practices at class level. Through lesson study, problems found in the learning process in the classroom can be studied and overcome through research carried out collaboratively with other educators as observers. By conducting lesson study, the educators involved can directly learn from the observed classroom atmosphere for more innovative and effective learning to achieve subsequent learning goals (Sutowijoyo, 2016).

TBLA is a technique used to analyze situations in the learning process. Such as identifying students' critical thinking and communication skills in learning, so that various information can be found that is needed in efforts to improve the learning process in the future. Through TBLA teachers can observe and transcribe their own teaching practices, analyze and reflect on them, and discuss them collaboratively with other teachers (Taufik et al., 2022).

TBLA is a technique in lesson study that is used to analyze situations in the learning process. In the TBLA model, teachers observe and transcribe their own teaching practices, then analyze and reflect on them, and discuss them collaboratively with other teachers. Through this process, teachers can continue to improve their abilities in reviewing teaching texts, decision making, and their professional capital.

As the importance of qualitative research increases in various disciplines, it becomes crucial to understand how NVivo can support research methodologies and deepen the understanding gained. This article presents a systematic review evaluating the use and impact of NVivo in Social Sciences and Management Studies. Additionally, this review aims to provide valuable insights for researchers, practitioners, and educators, helping them make optimal use of NVivo's capabilities and maximize its benefits in their work. By understanding the impact of NVivo software, researchers can make more informed decisions regarding its integration in their research methodology, which will ultimately contribute to the development of qualitative research practice in this field.

Climate change has an impact on increasing the frequency and intensity of extreme weather events, changes in rain patterns, as well as increasing temperatures and sea levels. Climate change is believed to have a negative impact on various aspects of life and the development sector, especially the agricultural sector, and it is feared that it will bring new problems for sustainability. agricultural production, especially food crops (Surmaini et al., 2011).

Global climate change as an implication of global warming has resulted in atmospheric instability in the lower layers, especially those close to the earth's surface. Global warming is caused by an increase in greenhouse gases, which are predominantly caused by industry. This increase in greenhouse gases has the effect of reflecting and absorbing long heat waves (infrared) emitted by the earth's surface back to the earth's surface (Susandi et al., 2010).

Keep your Introduction to be very concise, well structured, and inclusive of all the information needed to follow the development of your findings. Do not over-burden the reader by making the introduction too long. Get to the key parts other paper sooner rather than later.

## METHODS

This type of research is qualitative. Qualitative research begins with assumptions and the use of an interpretive/theoretical framework that informs the study of a research problem that addresses the meaning ascribed to a social or humanitarian problem by individuals or groups. To study this problem, qualitative researchers use an emergent qualitative inquiry approach, data collection in a natural environment that is sensitive to the people and places studied, and inductive and deductive data analysis and establishing patterns or themes. The final written report or presentation includes the participant's voice, the researcher's reflexivity, and a complex description and interpretation of the problem. (Creswell, 2018).

Sources of qualitative data in this research include learning media, learning materials, and all actions taken during learning activities. Additional data in the form of documentation such as photos and videos was obtained through the application of lesson study in the physics learning process using transcript based lesson analysis (TBLA). The data sources for this research are students and model teachers.

Lesson study is learning carried out by teachers collaboratively and continuously (Susanti et al., 2021). It usually involves a Lesson Study team consisting of a small group of teachers (2 to 6 people), from the same teacher or from different schools, and led by a learning facilitator someone who is knowledgeable about the learning process. Following problem identification carried out by the teaching Lesson Study team, the Lesson Study process usually includes four main phases of learning, planning, doing and reflecting (Huang, R., et al, 2019).

The lesson study model, which involves 'lecturers' as facilitators and pre-service teachers working together with their mentors and school colleagues, also offers learning opportunities as a challenge. Learning largely resulted from collaboration and ongoing discussions carried out by the two pre-service teachers with members of their lesson study team, especially their mentor (Calleja et al., 2021).

In this research, qualitative data was analyzed using the observation method. Researchers made direct observations of students who were research samples during the learning process. During observations, researchers recorded interactions and actions carried out by students, both during the learning process and during group discussions. In the data processing process, NVivo is used and is based on TBLA (transcript-based lesson analysis).

TBLA is a transcript produced from audio or video recordings during the learning process. This transcript is the result of a recording converted into text. Next, the data will be analyzed using Excel. Data collection techniques for qualitative research consist of three stages: a) observation of research locations and physics learning activities; b) documentation to complete research data and strengthen findings during research.

The TBLA model provides analysis for learning input through transcripts of learning dialogues. In the TBLA model, a camera is needed to function in all teacher-student activities (and vice versa) so that it helps construct events during dialogue transcription. The TBLA model is believed to be able to uncover problems that occur during learning so that teachers receive in-depth input based on the dialogue that occurs (Amintarti, at al, 2020).

NVivo has various advantages and may significantly improve the quality of research. Qualitative data analysis is easier than ever and produces more professional results. This software greatly reduces manual tasks and gives researchers more time to discover trends, recognize themes and draw conclusions. In addition, NVivo is considered an ideal technique for researchers working in teams because it facilitates combining individual work to produce a single project. This software has advantages in managing data and ideas, querying data, visually modeling, and reporting. All in all, qualitative researchers are well advised to pursue this software procedure to alleviate the messy, unclear and time-consuming task. Employing qualities (Hilal & S, 2013).

In NVivo, imported audio files take audio waveform format, which can be listened to and divided into audio excerpts. In NVivo, all sources are stored together under one roof. Even though the files are in different places within the same project, the links created make retrieval simple (Zamawe, 2015).

## FINDINGS AND DISCUSSION

This section describes the findings and discussion regarding students' conceptual understanding in the climate change course, which was analyzed through conversational dialogue during three learning cycles. The first cycle discusses the sub-material of climate influence on agriculture, the second cycle focuses on the influence of forest climate and plant pests and diseases, while the third cycle discusses urban and industrial climate. Each cycle in lesson study involves three main stages: (plan), (do), and (see).

### *Findings*

The results that the researchers obtained as a form of visualization of the results of data analysis in the last cycle of learning in the climate change course by using lesson study using NVivo were:

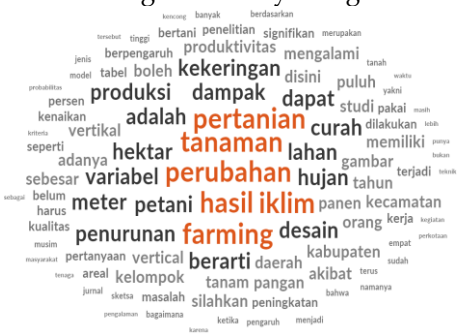


Figure 1. Word cloud

The images above are a visualization of the results of data analysis using NVivo. Where Figure 4.7 is a word cloud which is a visualization of the words that appear in a text, where the size of each word reflects the frequency of its appearance, the larger the size of the word, the more often the word appears. This word cloud provides a visual representation of the main focus in the text, where issues related to agriculture and climate change are of primary concern.

The most prominent words (large in size and red) in this word cloud include the words: agriculture, plants, change, yield, climate, and farming. This shows that these words appear most often in the conversation texts analyzed. Smaller words, such as hectare, farmer, land, production, bulk, and meter, are also present in the text and support the main theme.

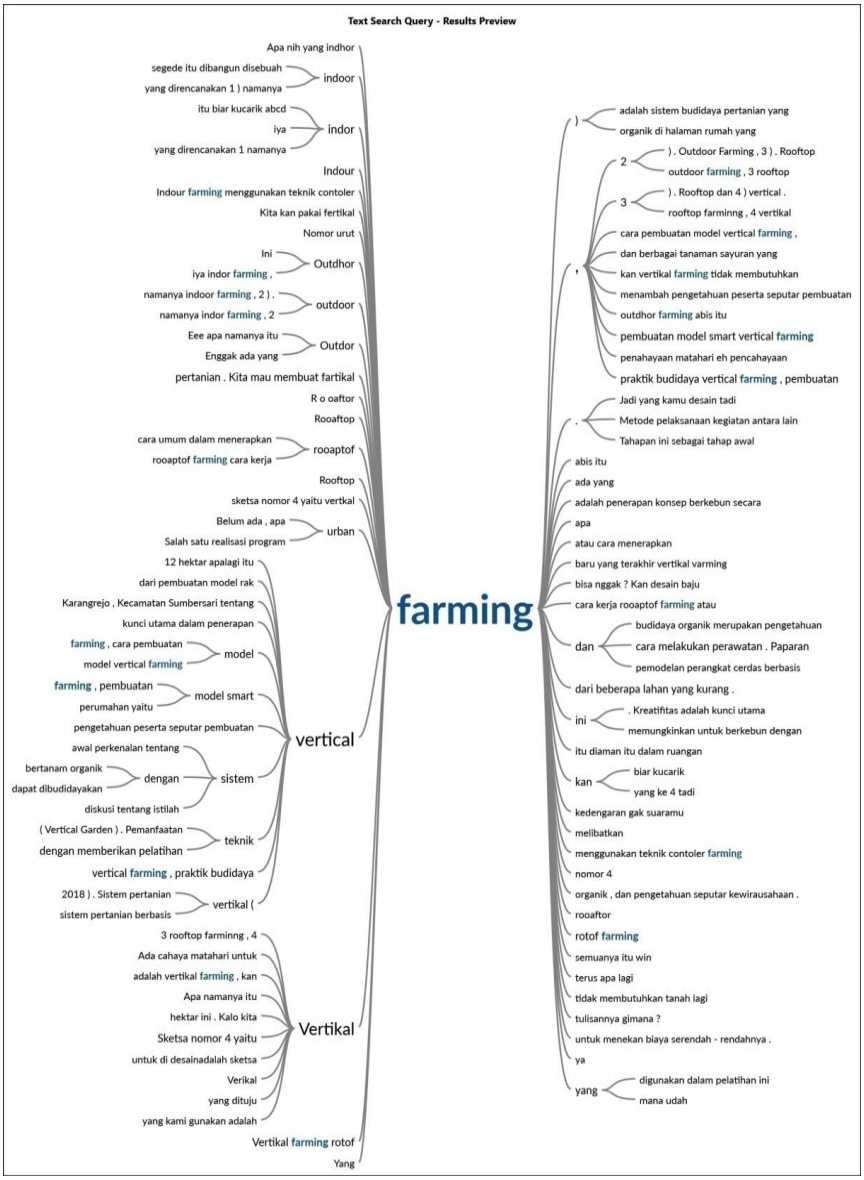


Figure 2 word tree

The image above, namely a word tree, is a text visualization method that functions to show the relationship between words in a text or collection of data. With a word tree, you can see how a particular word or phrase is followed or preceded by other words in the text. Word trees are useful for analyzing patterns of word use and context in text, thereby helping to understand the structure and meaning of the data.

The image above is a branching diagram that contains information and terms related to farming concepts, with a focus on methods such as indoor farming, vertical farming, and rooftop farming. This diagram illustrates a structured way of thinking or searching for concepts, where the main terms are broken down into relevant subcategories. It includes a variety of modern agricultural techniques aimed at land efficiency, optimal use of space, and sustainable solutions amidst limited resources.

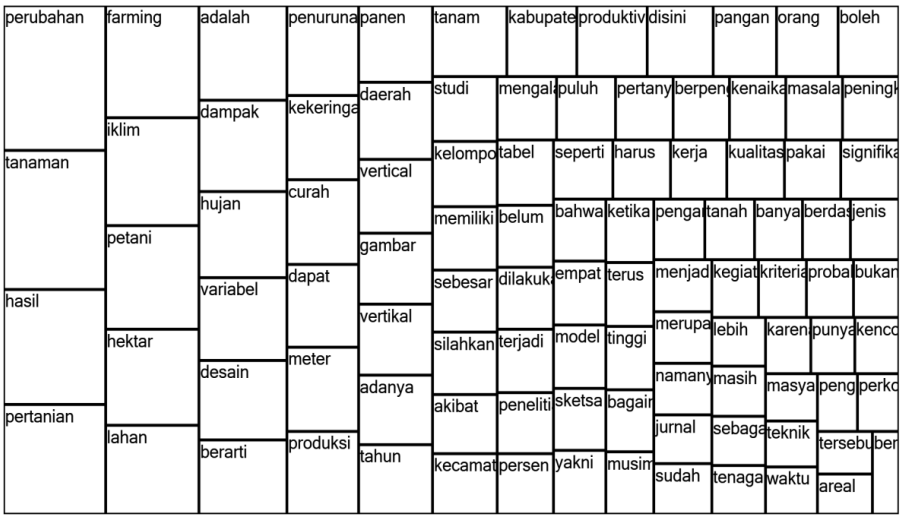


*Figure 3. word tree*

The image above also visualizes the relationship between various words in a text, where the words are placed in boxes that are connected to each other, showing how one word can be followed or preceded by other words in the text. For example, the word change is connected to climate and agriculture, while plants are connected to produce and farmers. Visualizations like this are useful for analyzing word usage patterns and context in texts, facilitating understanding of the structure and meaning of the data.

This visualization aims to show how often certain words appear in the analyzed text data. The size and location of the box reflects the frequency with which the word appears or its level of importance in the analysis being carried out. The larger, more prominent words, such as change, climate, crop, yield, and agriculture, are usually the ones that appear frequently in the text and are likely to be the main focus of the analysis. Meanwhile, words that are smaller and scattered in the image may appear less frequently but are still relevant in the context of the analysis.

***Discussion***

In the context of understanding the concept, students are invited to identify the impact of climate change not only from an environmental perspective, but also socio-economically, as reflected in the terms farmers and production. They can study how climate change affects farmers' lives, the area of land that can be used in hectares, and the mitigation and adaptation strategies needed, for example through a vertical design approach or sustainable agriculture.

Furthermore, students can relate this understanding to the basic concepts of climate change, such as greenhouse gases, carbon emissions, and global warming, as well as the solutions offered, such as adaptive agriculture, water use efficiency, and technological innovation. Image of a form of data visualization created by researchers which illustrates that students have connected theory with real applications, thus encouraging them to think critically in finding solutions to face the challenge of climate change

Through the pictures it can be seen that students understand the concept of agricultural adaptation to today's challenges, such as urbanization, limited land, and the need for energy efficiency.

Through terms such as indoor farming and vertical farming, students are invited to understand how technology, such as the use of vertical space and environmental management in closed spaces, can increase agricultural yields without requiring large areas of land. This diagram also highlights the importance of innovation, such as rooftop farming, which uses building roofs as farming areas in urban areas.

This approach allows students to deepen their understanding of the concept of sustainability in the global food system. This image emphasizes that creativity and the application of technology are the main keys in facing challenges such as climate change, limited land and increasing food needs. In this way, students are encouraged to think critically and look for practical solutions related to the application of agricultural technology in the real world.

This figure also discusses innovations such as vertical farming and design, which can be alternative approaches to overcome land limitations caused by urbanization and the impact of climate change. Overall, this image illustrates various essential concepts that allow students to explore the relationship between climate change and the agricultural sector, while encouraging critical thinking in looking for new, more adaptive and sustainable methods to face these challenges.

We processed this research data using NVivo. NVivo is software designed to assist in qualitative data analysis. This tool is used by researchers to organize, manage, and analyze complex qualitative data. NVivo offers many advantages and can significantly improve the quality of research. Qualitative data analysis becomes simpler and produces more professional results. This software drastically reduces manual tasks, allowing researchers to focus more on identifying trends, recognizing

Analysis of the data visualized in these figures is that NVivo software is very effective in identifying the main themes and relationships between words in texts related to agriculture and climate change. Through visualizations such as word cloud, word tree, and tree map, key words such as agriculture, crops, change, yield, and climate emerge as the main focus, indicating that these issues are most frequently discussed in the texts analyzed.

Larger words show high frequency and great relevance in the context of climate change and its impact on the agricultural sector. Additionally, this visualization shows how climate change affects various aspects of agriculture, including cropping patterns, crop yields, and weather variability. By using NVivo, qualitative data analysis becomes more structured and in-depth, allowing researchers to dig deeper into the impacts of climate change on agriculture and understand the context and patterns that emerge from the data.

## CONCLUSION

Based on the analysis, the application of transcript-based lesson analysis (TBLA) lesson study has proven to be effective in increasing students' understanding of concepts in climate change courses. TBLA-based lesson study which integrates planning, implementation and reflection stages allows the learning process to take place in a collaborative and structured manner. The planning stage focuses on developing learning strategies that are relevant to global climate change issues, while the implementation stage provides an overview of direct interactions between lecturers and students which are analyzed in depth through transcripts. At the reflection stage, analysis of the results of discussions and learning transcripts helps lecturers identify the strengths and weaknesses of the learning process, which then becomes the basis for improvements in the next cycle.

The effect of this learning can be seen from the results of data visualization using NVivo software, such as word cloud, word tree, and tree map, which reveal key words such as agriculture, crops, yields, and climate as the main themes. This visualization shows that students are able to link theoretical concepts of climate change with practical applications, such as impacts on the agricultural sector, planting patterns, crop yields, and mitigation strategies. Words such as vertical farming and design indicate students' understanding of innovative solutions in dealing with limited land and the impact of urbanization. Apart from that, students are also invited to study the impact of climate change from a socio-economic perspective, such as farmers' lives and food production.

**ACKNOWLEDGMENTS:**

The author would like to thank all parties who have provided support and assistance in preparing this article. I would like to express my deepest thanks to: the physics education study program, Jambi University for the facilities and support provided during this research. The author also would like to thank Dr. Nova Susanti, S.Pd., M.Si for being willing to spend time as a model lecturer in collecting data for researchers as well as continuous support in every stage of this research. Without support and assistance from various parties, this article would not have been completed properly . Hopefully the results of this research can provide benefits for the development of science and the wider community.

**REFERENCES**

Amintarti, S., Atiek, W., Sholahuddin, A., & Wati, M. (2020). Penerapan Transcript Based Lesson Analysis ( Tbla ) Sebagai Upaya Peningkatan Pembelajaran Kimia Application Of Transcript Based Lesson Analysis ( Tbla ) As Efforts To Improve Chemical Learning. *Jurnal Inovasi Pendidikan Sains*, *11*(2), 149–163.

Artayasa, I. P., Susilo, H., Lestari, U., & Indriwati, S. E. (2018). The effect of three levels of inquiry on the improvement of science concept understanding of elementary school teacher candidates. *International Journal of Instruction*, *11*(2), 235–248. https://doi.org/10.12973/iji.2018.11216a

A. Suhandi, F. C. W. (2012). Pendekatan Multirepresentasi Dalam Pembelajaran Usaha-Energi Dampak Terhadap Pemahaman Konsep Mahasiswa. *Jurnal Pendidikan Fisika Indonesia 8*, *8*, 1–7.

Creswell, J. W. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.

Hilal, A. H., & S, S. A. (2013). Using NVivo for data analysis in qualitative research. *International Interdisciplinary Journal of Education*, *2*(2), 181–186.

Huang, R., Takahashi, A. & Ponte, J. P. (2019). *Theory and Practice of Lesson Study in Mathematics. Springer International Publishing.*

Kraiwanit, T., & Limna, Pongsakorn Siripipatthanakul, S. (2023). NVivo for Social Sciences and Management Studies: A Systematic Review. *Advance Knowledge for Executives*,*2*(3), 1–11.

Mardiansyah, Y., Rahman, T., Hernando, L., Meldra, D., & Mikro, A. P. (2022). *10*(1), 62–73.

Susanti, N., Murzanita, M., & Lestari, N. (2021). Analisis Proses Pembelajaran Ipa Pada Materi Cahaya Melalui Lesson Study Berbasis Tbla (Transcript Based Lesson Analysis) Di Kelas Viii.2 Smp Islam Al-Falah Kota Jambi. *Jurnal Pembelajaran Fisika*, *10*(2), 54. Https://Doi.Org/10.19184/Jpf.V10i2.23779

Surmaini, E., Las, I. Las, & Runtunuwu, E. (2011). Upaya Sektor Pertanian Dalam Menghadapi Perubahan Iklim. *Jurnal Litbang Pertanian*, *30*(1), 1–7.

Sutowijoyo. (2016). Studi Penerapan Lesson Study dalam Peningkatan Efektivitas Praktek Pembelajaran di MTs Negeri Prigen. *Jurnal Diklat Keagamaan*, *10*(4), 295–304.

Taufik, T., Basri, H., Tafrilyanto, C. F., & Lanya, H. (2022). Identifikasi Kemampuan Berpikir Kritis dan Komunikasi pada Siswa SMP Melalui Metode TBLA. *JIPM (Jurnal Ilmiah Pendidikan Matematika)*, *11*(1), 219.

Wiharto, M. (2018). Kegiatan Lesson Study dalam Pembelajaran. *Jurnal Forum Ilmiah*, *15*(1), 1–9.

Wulandari, A. P., Salsabila, A. A., Cahyani, K., Nurazizah, T. S., & Ulfiah, Z. (2023). Pentingnya Media Pembelajaran dalam Proses Belajar Mengajar. *Journal on Education*, *5*(2), 3928–3936.

Zamawe, F. C. (2015). t. *The Implication of Using NVivo Softwere in Qualitative DataAnaliysis: Evidence-Based Reflection*. https://doi.org/10.2307/446810

Zuhdi, A., Firman, F., & Ahmad, R. (2021). The importance of education for humans. *SCHOULID: Indonesian Journal of School Counseling*, *6*(1), 22.https://doi.org/10.23916/08742011