



Development of Argumentative Text Teaching Materials Using the Kialo Edu Application in Class XI of MAN 2 Deli Serdang

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ABSTRACT

This study aims to develop argumentative text teaching materials based on the Kialo Edu application for grade XI students of MAN 2 Deli Serdang and analyze its feasibility and potential use in learning. The theoretical study emphasizes the importance of interactive and contextual digital teaching materials in accordance with the principles of the Independent Curriculum in improving students' critical thinking skills and argumentative literacy. The study used a qualitative approach with observation, interviews, literature studies, and documentation techniques. The results showed that Kialo Edu was able to facilitate the development of coherent arguments through visualization of the relationship between claims, supporting reasons, and rebuttals, thereby helping students understand argumentative logic more clearly. The developed teaching materials were declared appropriate based on the standards of material, content appropriateness, presentation, design, and graphics. In addition, the use of Kialo Edu increased student participation, the quality of argument revisions, collaborative skills, and courage in expressing opinions. Overall, Kialo Edu proved effective in supporting the learning of argumentative texts and was relevant to the demands of the Independent Curriculum which focuses on developing high-level reasoning skills.

Keywords: argumentative text, teaching materials, kialo edu application

Pengembangan Bahan Ajar Teks Argumentasi Menggunakan Aplikasi Kialo Edu di Kelas XI MAN 2 Deli Serdang

ABSTRAK

Penelitian ini bertujuan mengembangkan bahan ajar teks argumentasi berbasis aplikasi Kialo Edu untuk siswa kelas XI MAN 2 Deli Serdang serta menganalisis kelayakan dan potensi pemanfaatannya dalam pembelajaran. Kajian teori menekankan pentingnya bahan ajar digital yang interaktif dan kontekstual sesuai prinsip Kurikulum Merdeka dalam meningkatkan kemampuan berpikir kritis dan literasi argumentatif siswa. Penelitian menggunakan pendekatan kualitatif dengan teknik observasi, wawancara, studi literatur, dan dokumentasi. Hasil penelitian menunjukkan bahwa Kialo Edu mampu memfasilitasi penyusunan argumen secara runtut melalui visualisasi hubungan antara klaim, alasan pendukung, dan sanggahan, sehingga membantu siswa memahami logika argumentatif secara lebih jelas. Bahan ajar yang dikembangkan dinyatakan layak berdasarkan standar materi, kelayakan isi, penyajian, desain, dan grafika. Selain itu, penggunaan Kialo Edu meningkatkan partisipasi siswa, kualitas revisi argumen, kemampuan kolaboratif, serta keberanian dalam menyampaikan pendapat. Secara keseluruhan, Kialo Edu terbukti efektif dalam mendukung pembelajaran teks argumentasi dan relevan dengan tuntutan Kurikulum Merdeka yang berfokus pada pengembangan kemampuan bernalar tingkat tinggi.

Kata kunci: bahana ajar, teks argumentasi, aplikasi kialo edu

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INTRODUCTION

Learning Indonesian at the high school/MA level requires students' ability to formulate ideas logically, critically, and systematically, especially in argumentative text materials according to the demands of Learning Outcomes (CP) Phase F. However, the results of initial observations in class XI MAN 2 Deli Serdang show that even though students understand the structure of argumentation texts, they still face obstacles in basic linguistic aspects such as the use of EYD, accuracy of diction, and sentence structure. The findings, although not the main focus of learning in this phase, remain an important context that affects the quality of students' arguments in writing argumentative texts.

In the development of modern learning, the use of digital applications such as Kialo Edu is a relevant alternative because it is able to facilitate the preparation of arguments visually and interactively. Research by Ramadhan et al. (2024) shows that the development of teaching materials for argumentative texts can improve the quality of students' argumentation through better lexical arrangement. The findings of Rahim et al. (2022) also strengthen that digital-based interactive teaching materials are effective in improving writing skills because they provide a more flexible space for exploration for students. In addition, Purwati et al. (2022) emphasized the importance of teaching materials that are designed contextually and character-based to make learning more meaningful, while research by Darmuki et al. (2023) proves that teaching materials based on a contextual approach are able to significantly improve students' literacy skills.

Based on this urgency, this research is focused on three main aspects, namely: (1) the development of teaching materials for writing argumentative texts based on Kialo Edu for students in grade XI MAN 2 Deli Serdang using the ADDIE model, (2) the feasibility of teaching materials developed based on expert validation, and (3) the potential for its use in learning Indonesian in class XI. The formulation of the problem raised includes how

the development process of the teaching material is based on the ADDIE model, how its feasibility is reviewed from the material standards, content, presentation, design, and graphics based on expert assessment, and how its potential use in learning to write argumentative texts.

The purpose of this research is to produce teaching materials for writing argumentative texts based on the Kialo Edu application using the ADDIE development model, determine its feasibility level based on expert validation, and analyze its potential use in learning Indonesian. This research is expected to provide theoretical benefits in the form of contributing to the development of digital-based argumentation text learning theories (Purwati et al., 2022) as well as practical benefits for teachers, students, schools, and researchers in implementing innovative learning in line with the principles of the Independent Curriculum.

LITERATURE REVIEW

Development of Teaching Materials

The development of teaching materials is important to support learning that meets the needs of students, especially in the Independent Curriculum which requires teachers to prepare varied and relevant materials. Nurhayati (2023) emphasized that differentiated teaching materials are still rarely carried out, so learning tends to be monotonous. Magdalena et al. (2020) also show that well-designed teaching materials and utilizing the right media can increase learning motivation and help students understand the material more easily. Thus, teaching materials must pay attention to the content, media, and learning experiences of students so that learning is more interesting and effective.

ADDIE Development Model

The ADDIE (Analysis, Design, Development, Implementation, Evaluation) model is one of the most widely used teaching material development models in educational research. This model consists of five systematic stages that are mutually



continuous. The Analysis stage includes the analysis of student needs, learner characteristics, and expected competencies. The Design stage includes designing the material structure, learning objectives, and selecting appropriate media. The Development stage is the stage of production of teaching materials and their validation instruments. The Implementation stage is a trial of teaching materials in real learning, while the Evaluation stage includes a feasibility assessment based on expert and student input to improve teaching materials (Pratami et al., 2023).

The use of the ADDIE model in this study is based on its systematic and flexible advantages, so that it allows researchers to make improvements at each stage based on the results of the evaluation. Magdalena et al. (2023) emphasized that the selection of the right development model greatly determines the quality of the teaching materials produced, especially in ensuring the suitability of the material with the needs and characteristics of students.

Learning to Write Argumentative Texts

The purpose of learning to write argumentative texts is to train students to express opinions in writing with logical reasons and supported by valid evidence. The ability to write argumentative texts includes the ability to formulate claims, present supporting arguments, submit rebuttals, and conclude arguments cohesively. However, many students still have difficulty writing arguments because learning involves less media and tends to be one-way. Firdaus et al. (2024) found that the lack of learning variation makes students only produce opinions without data. Research by Rubiyanti et al. (2024) proves that when learning is adjusted to visual, auditory, and kinesthetic learning styles, the ability to write arguments increases significantly. This means that learning to write argumentative texts requires a more active approach and according to the student's character.

Digital Media in Learning

Digital media plays an important role in creating interactive learning and can increase student participation. Putra and Pratama (2024) stated that digital technology is able to overcome low motivation to learn through the delivery of more interesting material. Ariyanto et al. (2024) also found that digital media such as Google Sites are effective in helping students understand the structure of argumentation because their presentation is organized and interactive. This shows that the use of digital media can increase the effectiveness of learning to write argumentative texts.

Kialo Edu as an Argumentative Learning Media

Kialo Edu is a digital discussion platform that presents arguments through a map of claims, supporters, and rebuttals. Rahmani (2023) shows that the use of Kialo Edu helps students develop ideas in writing argumentative essays through brainstorming, reading friends' opinions, and understanding arguments from various perspectives. The platform also facilitates collaboration so that students can give feedback, refine ideas, and structure arguments in sequence. Therefore, Kialo Edu is effectively used as a learning medium to improve critical and argumentative thinking skills in the context of writing argumentative texts.

METHODS

This research uses a qualitative approach with the Research and Development (R&D) method. The development model used is the ADDIE model which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation. The qualitative approach was chosen because this study focuses on the process of developing teaching materials and feasibility assessments that are analyzed in depth based on field data, according to the explanation of Sari & Safitri (2021). Data collection was carried out through observation to

obtain a direct picture of field conditions (Yuliani & Mulyadi, 2023). To ensure the credibility of the data, the study used triangulation, which is comparing the results of observations with documents and other information, in line with Firmansyah (2021).

The research was conducted on October 31, 2025 at MAN 2 Deli Serdang, located at the Deli Serdang Regency Government Complex, Jl. Lintas Sumatra, Tanjung Garbus Satu, Lubuk Pakam. The interview was conducted with an Indonesian language teacher at 10.00 WIB.

The subject of the study is an Indonesian language teacher, namely Mrs. Dra. Nurhati Ritonga, M.A. The object of the research is the process of developing teaching materials for writing argumentative texts based on Kialo Edu with the ADDIE model, as well as the results of interviews regarding the feasibility and potential use of these teaching materials in learning.

This study uses the ADDIE model with the following five stages.

1. Analysis: At this stage, an analysis of the learning needs of grade XI MAN 2 Deli Serdang students is carried out, especially the ability to write argumentative texts. Initial observations identified weaknesses in the use of EYD, diction, and sentence structure, as well as the lack of argument-based digital teaching materials available in schools.
2. Design: This stage includes designing the structure of teaching materials, selecting claim themes that are relevant to students' lives, compiling visual argumentation maps, and designing student worksheets that are integrated with Kialo Edu features.
3. Development: Teaching materials are produced by utilizing the features of Kialo Edu, accompanied by the preparation of validation instruments for material experts and media experts. The initial product is validated by expert validators before being tested.
4. Implementation: Validated teaching materials are tested on a limited basis through internal

discussions and Indonesian language teacher reviews as user representations.

5. Evaluation: The assessment is carried out based on input from expert validators and teachers which includes five standards for the feasibility of teaching materials: material standards, content feasibility, presentation standards, design standards, and graphic standards.

Data collection techniques in this study include observation, literature study, recording, interviews, and documentation.

Data analysis techniques are carried out through stages: data collection, transcription, data reduction, data presentation, conclusion drawn, and verification through triangulation.

RESULTS

Based on the application of the ADDIE model in this study, the results of the development of teaching materials for writing argumentative texts based on the Kialo Edu application for class XI MAN 2 Deli Serdang were obtained. The following is a summary of the results of each stage of development.

1. Results of the Analysis Stage

The results of the needs analysis show that students of grade XI MAN 2 Deli Serdang need teaching materials that can visualize the relationship between arguments systematically. Initial observations identified deficiencies in the use of EYD, word choice, and sentence structure in students' writing. In addition, Indonesian language teachers stated that the available teaching materials were not adequate to train the ability to write argumentative texts in a structured and evidence-based manner. The Phase F Learning Outcomes Analysis emphasizes the need for high-level reasoning-based learning, which is relevant to the features that Kialo Edu has.

2. Design Stage Results

At the design stage, the structure of the teaching materials is designed by adapting the main features of Kialo Edu, namely the visualization of



claims, supporting arguments, and opposing arguments. The theme of the claim was chosen based on issues close to the lives of MAN 2 Deli Serdang students so that students could more easily relate personal experiences to the arguments constructed. In addition, technical instructions for using Kialo Edu are also designed that are integrated into the learning materials, including how to add claims, make edits, provide comments, and generate counter arguments.

3. Development Stage Results

Teaching materials are produced by utilizing the Small Group Mode and Tasks features in Kialo Edu that facilitate small group discussions and feedback between students. Directional worksheets are also developed to help students formulate reasons, evidence, and conclusions before uploading them to the app. The validation instrument was compiled to measure the feasibility of teaching materials based on five standards: material standards, content feasibility, presentation standards, design standards, and graphics standards. The initial product is then submitted to expert validators for assessment and input.

4. Implementation Stage Results

Teaching materials that have been revised based on validator input are tested on a limited basis through internal discussions and Indonesian language teacher reviews. The teacher stated that the teaching materials are easy to understand, the operational steps are clear, and the content is relevant to the purpose of learning to write argumentative texts.

5. Evaluation Stage Results

The evaluation was carried out based on the assessment of expert validators on five eligibility standards. The results of the evaluation showed that the teaching materials were suitable for use with some minor improvements in the visual presentation aspect. Overall, the teaching materials for writing argumentation texts based on Kialo Edu

were declared feasible to be applied in class XI MAN 2 Deli Serdang.

DISCUSSION

Based on the results of the development that has been carried out through the ADDIE model, the discussion in this section includes: (1) the process of developing teaching materials for writing argumentative texts based on the Kialo Edu application, (2) the feasibility of teaching materials that have been developed based on expert validator assessments, and (3) the potential use of these teaching materials in improving the quality of learning to write argumentative texts in class XI MAN 2 Deli Serdang.

Development of Teaching Materials for Writing Argumentation Texts Based on the Kialo Edu Application Class XI MAN 2 Deli Serdang

The development of teaching materials for writing argumentative texts based on Kialo Edu is carried out in stages through the ADDIE model by paying attention to the needs of students in grade XI MAN 2 Deli Serdang and the competencies expected in the Learning Outcomes of Phase F. This approach is supported by research by Ramadhan et al. (2024) which emphasizes the importance of considering linguistic aspects, such as lexical density, in the development of teaching materials for argumentative texts to improve the quality of student writing.

The learning materials are designed by adapting the main features of Kialo Edu that are relevant to learning to write arguments, in particular the visualization of the relationship between ideas through claims, supporting arguments, and opposing arguments. The use of digital media like this is in line with the research of Pratami et al. (2023) which shows the effectiveness of digital-based interactive e-modules in improving students' understanding of the structure and rules of argumentative texts.

Technical instructions for using the Kialo Edu application are also compiled in an integrated

manner in the learning materials. This approach is supported by research by Fatimah et al. (2024) which shows that digital learning materials with clear operational guidelines can increase learning effectiveness. Kialo Edu's collaborative features, such as Small Group Mode and Tasks, facilitate students to discuss in small groups and provide feedback on others' arguments, which is in line with the findings of Riana et al. (2025) that digital learning materials play an important role in developing persuasive and argumentative writing skills through collaborative activities.

After the argumentation map is completed, the export feature in Kialo Edu allows the results of the discussion to be converted into a written argumentation text framework. Thus, the teaching materials for writing argumentation texts based on Kialo Edu for class XI MAN 2 Deli Serdang not only help students understand the structure of argumentation visually, but also provide an interactive, reflective, and relevant learning experience to the needs of 21st century learning.

Feasibility of Teaching Materials for Writing Argumentation Texts Based on the Kialo Edu Application Class XI MAN 2 Deli Serdang

The feasibility of teaching materials is determined based on the assessment of expert validators on five criteria: Material Standards, Content Eligibility, Presentation Standards, Design Standards, and Graphics Standards. This assessment refers to the Regulation of the Head of the Education Standards, Curriculum, and Assessment Agency Number 039/H/P/2022. Various international studies show that the use of digital learning applications contributes to the development of students' critical thinking, argumentation, and learning motivation. A combined analysis of international studies indicates that mobile learning apps significantly increase students' enthusiasm and learning achievement, especially in activities involving analysis and logic.

Standard Material

The Kialo Edu application has produced standardized teaching materials for writing argumentative texts, because the content is in line with the Indonesian language learning goals in the Independent Curriculum. Teaching materials present important components in writing argumentative texts, including the submission of opinions, arguments, supporting evidence, rebuttals, and repetition of statements, in accordance with educational book assessment standards that prioritize the alignment of the material with the main competencies (Education Standards, Curriculum, and Assessment Agency, 2022).

Content Eligibility

The teaching materials for writing argumentative texts at Kialo Edu are considered adequate because they are conceptually accurate, according to needs, and relevant to the characteristics of students. This application provides flexibility for teachers to modify case studies, themes, and arguments to align with the learning experience of students at MAN 2 Deli Serdang, so that the material feels more meaningful (Magdalena et al., 2023).

Serving Standards

Kialo Edu compiles teaching materials in an orderly, engaging manner, and encourages analytical thinking skills. The tree-shaped structure format of argument makes it easy for students to understand the relationship between statements, supporting reasons, and rebuttals through visualization. This interactive approach promotes active and discussion-centered learning (Sulistiyowati & Asriati, 2024).

Design Standards

The display of teaching materials at Kialo Edu is neatly designed, organized, and easy to understand. The arrangement of arguments is made straightforward so that students can explore them



without difficulty, in line with the principles of learning design that prioritize ease of reading and consistency of layout (Magdalena et al., 2020).

Graphic Standards

Kialo Edu has adequate graphic quality as a digital teaching material, characterized by a straightforward, adaptive, and cross-device compatibility. The visual format of an argument map helps deepen the understanding of concepts through organized graphical representations.

Thus, supported by expert validator assessments and analysis based on five teaching material feasibility standards, Kialo Edu is suitable for being applied as a teaching material for writing argumentative texts in Indonesian language learning at MAN 2 Deli Serdang.

The Potential Utilization of Teaching Materials for Writing Argumentative Texts Based on the Kialo Edu Application in Class XI MAN 2 Deli Serdang Learning

Based on the results of an interview with an Indonesian teacher in class XI MAN 2 Deli Serdang, the use of teaching materials for writing argumentation texts based on Kialo Edu is considered very useful to improve students' ability to compose and assess arguments in writing. The teacher explained that the main difficulty for students lies in assembling claims, reasons, and evidence in a series of writings, as well as assessing the strength of their friends' arguments. The visualization of arguments in Kialo Edu is considered to be very helpful because students can see the logical relationships of the antonyms clearly. Based on the findings of interviews and literature reviews, some of the main potentials for the use of Kialo Edu in learning to write argumentative texts in class XI MAN 2 Deli Serdang are as follows. First, improve the ability to write arguments. The use of Kialo Edu helps students string claims, reasons, and evidence together in writing. With a visual view, students can see how each claim is supported by reason and evidence, making it easier for them to write logical and structured arguments.

Second, encourage critical and reflective thinking in the writing process. Argument visualization allows students to distinguish between personal opinions and evidence-based arguments in their writing. It trains critical analysis and logical reasoning skills, so reflective thinking becomes part of the daily writing process (Crudele & Raffaghelli, 2023).

Third, speed up the revision process and improve the quality of writing. Kialo Edu allows students to receive feedback directly so they can make repeated revisions to their writing. The mechanism of repeated revision also helps students understand the errors in their arguments and correct them systematically (Skitalinskaya et al., 2021). Fourth, increase active participation. Students who are usually passive in oral discussions become more courageous in expressing their opinions through organized writing in Kialo Edu. This encourages collaboration between students in a targeted and constructive manner.

Fifth, supporting the development of metacognitive and collaborative skills. The process of composing, grading, and revising writing allows students to recognize the strengths and weaknesses of their own arguments. Digital discussions through Kialo Edu train collaborative skills, foster academic responsibility and critical reflection skills.

The findings of this interview are reinforced by the research of Crudele and Raffaghelli (2023) who showed that argument mapping significantly improves critical thinking and logical reasoning skills. The ISAR system developed by Zhang et al. shows that the integration of visual mapping and iterative feedback can speed up the process of developing arguments in writing. The quality of revisions is further supported by the findings of Skitalinskaya et al. (2021) who emphasize that the quality of claims improves significantly when students make revisions based on directed feedback.

Overall, the combination of the findings of teacher interviews and support from these studies shows that Kialo Edu has high potential as a

learning medium for writing argumentative texts. The platform not only helps students improve their critical thinking skills and structure arguments sequentially in writing, but also facilitates the process of repeated revision and encourages active participation in digital discussions. Thus, the use of Kialo Edu in class XI MAN 2 Deli Serdang is very much in accordance with the principles of the Independent Curriculum which emphasizes the development of argumentative literacy and collaborative learning.

CONCLUSION

This study produced three main findings related to the development of teaching materials for writing argumentative texts based on the Kialo Edu application for class XI MAN 2 Deli Serdang using the ADDIE model.

First, the teaching material development process is carried out through five stages of the ADDIE model: (1) Analysis, which identifies students' needs for structured and digital-based argumentation writing teaching materials; (2) Design, which produces a material structure design based on Kialo Edu's argumentation map with themes that are relevant to students; (3) Development, which produces teaching materials complete with student worksheets and expert validation instruments; (4) Implementation, which conducts limited trials with Indonesian language teachers; and (5) Evaluation, which assesses feasibility based on expert validator input.

Second, the results of expert validation showed that the teaching materials for writing argumentative texts based on Kialo Edu met the feasibility criteria based on five standards: material standards, content feasibility, presentation standards, design standards, and graphics standards. Teaching materials are declared suitable for use in learning Indonesian in class XI MAN 2 Deli Serdang.

Third, this teaching material has a strong potential to be applied in learning to write argumentative texts because it is able to improve students' argumentative skills, encourage the

revision process repeatedly, and support more interactive and collaborative learning.

In addition, the use of Kialo Edu also contributes to an implicit improvement in students' basic language skills, such as the accuracy of diction, neatness of sentence structure, and the regularity of the preparation of ideas. Overall, Kialo Edu-based teaching materials developed through the ADDIE model are considered feasible and potential to be used in learning to write argumentative texts in the Independent Curriculum.

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