

# The Development of *Xmind*-Assisted Mind Mapping Worksheets for Expository Writing Instruction

Indah Nur Afifah<sup>1</sup>, Anita Anggraeni<sup>2</sup>, Ratih Inayah<sup>3</sup>

IKIP Siliwangi, Indonesia

<sup>1</sup> indahnur02@gmail.com, <sup>2</sup> anitaenglish26@ikipsiliwangi.ac.id, <sup>3</sup> ratih.inayah@ikipsiliwangi.ac.id

## Abstract

Grade XI students often struggle to generate and organize ideas logically in expository writing due to limited pre-writing support. Digital mind mapping tools such as *XMind* may address this gap. This study aims to develop and evaluate the feasibility of an *XMind*-assisted mind mapping worksheet designed to support students' expository writing skills at a senior high school in Cimahi. This study used a Research and Development (R&D) method with the ADDIE model. The participants consisted of 10 students in the limited trial and 20 students in the field trial. Data were gathered using expert validation sheets, questionnaires, and field notes, then analyzed using descriptive quantitative methods. The worksheet was validated by two expert lecturers based on three aspects: learning objectives, material selection, and assignment use, exercises, and tests, achieving an overall validity score of 83.93%, which falls into the "very valid" category. Furthermore, students responded positively to the use of the worksheet, suggesting higher engagement, enhanced concept organization, and a better knowledge of expository text form. Therefore, the *XMind*-assisted worksheet is considered valid, practical, and feasible for supporting the teaching of writing skills.

**Keywords:** *XMind*; Worksheet; Expository Writing; Writing Skills

## INTRODUCTION

Writing enables students to communicate their ideas in an organized and meaningful way. It is one of the most important abilities in learning English. Septiana et al. (2025) argued that writing is a crucial communication tool that encourages critical thinking and knowledge sharing among students. Writing development can be enhanced through the integration of other language skills, such as speaking, listening, and reading. This preparation aids learners in converting receptive knowledge into effective language usage (Sudirman & Wahid, 2023). Despite this preparation, when faced with expository writing tasks that demand the logical presentation of concepts, senior high school students, particularly those in Grade XI, still struggle to arrange their thoughts, create cohesive paragraphs, and use proper terminology and syntax (Lestari et al., 2022).

These challenges frequently appear because the educational method places more emphasis on the finished product than the writing process. Teachers often use teacher-centered approaches, which restrict students' ability to organize and explore their ideas before writing. This argument is consistent with Kasmi & Mahmud (2023), who argue that excessive emphasis on testing may reduce opportunities for idea exploration and organizing thoughts before drafting due to high-stakes testing requirements. As a result, students struggle to begin and organize their work and feel less inspired.

Although previous studies have demonstrated the effectiveness of mind mapping in improving students' writing performance, most of them have focused on the use of mind mapping as a

learning strategy rather than as a component of structured instructional materials. In addition, limited research has focused on the development and validation of *XMind*-assisted worksheets specifically designed for expository writing instruction at the senior high school level, particularly in the Indonesian context. What remains missing is validated, worksheet-based integration of *XMind* that guides students step by step from brainstorming to drafting expository texts, rather than using mind mapping as a standalone technique. Therefore, this study attempts to address this gap by developing and validating an *XMind*-assisted worksheet for Grade XI students.

The integration of digital technologies such as *XMind* into mind mapping activities offers promising opportunities for enhancing writing instruction. Previous research by Wu & Zheng (2023) found that *XMind* helped students organize language elements systematically and visualize relationships among concepts, which directly supports the planning and structuring of expository essays by enabling students to arrange ideas hierarchically, identify main ideas, and establish logical connections between supporting details before drafting. These features are particularly beneficial during the planning stage of expository writing, where students are required to generate, categorize, and connect ideas logically. Through visual representation, *XMind* enables learners to structure their thoughts more effectively and develop coherent outlines before drafting.

To maximize these benefits, mind mapping activities can be integrated into structured learning materials such as worksheets. A well-designed worksheet can guide students through the stages of the writing process, including brainstorming, organizing ideas, drafting, and revising. Sbaa et al. 2022 stated that mind mapping helps learners organize information hierarchically, highlight key concepts, and reduce cognitive overload by presenting information visually rather than linearly. Therefore, integrating *XMind*-assisted mind mapping into worksheets may provide students with systematic support in developing expository writing skills. Based on this rationale, the present study aims to develop an *XMind*-assisted e-mind mapping Worksheet for expository writing instruction and evaluate its feasibility and students' responses toward its implementation.

## METHOD

This study employed a Research and Development (R&D) design using the ADDIE model, which consists of five stages: (1) analysis, (2) design, (3) development, (4) implementation, and (5) evaluation. The research was conducted at a senior high school in Cimahi involving Grade XI students. Students were selected using purposive sampling based on recommendations from the English teacher, who identified students with persistent difficulties in generating and organizing ideas for expository writing. A total of 10 students participated in the limited trial, while 20 students were involved in the field trial. During the analysis stage, a needs analysis was conducted through classroom observations and interviews with the English teacher to identify students' difficulties in writing expository texts and the need for supporting learning materials. The findings from this stage served as the basis for developing the worksheet.



**Figure 1.** The ADDIE Model Adapted from Kurt (2023)

In the Design stage, a blueprint of the worksheet was developed based on the results of the needs analysis and the learning objectives of expository writing for Grade XI students. The worksheet was designed by integrating *XMind*-assisted mind mapping activities into the stages of the writing process, including brainstorming, organizing ideas, drafting, and revising. The instruments used in this study consisted of: (1) field notes, (2) expert validation sheets, and (3) response questionnaires for students and teachers using a five-point Likert scale (1= strongly disagree to 5 = strongly agree). The design of the worksheet was guided by principles of effective worksheet development adapted from Siregar et al. (2023). It is important to note that *XMind* was used by the teacher-researcher to design the mind mapping layout and activities presented in the worksheet; students did not operate the *XMind* software directly. Instead, they engaged with the pre-designed mind mapping worksheet as a tool for organizing their expository writing.

During the Development stage, the worksheet was developed according to the established blueprint and subsequently validated by two lecturers from the English Education Study Program who have expertise in English language teaching and instructional material development. The expert validation sheets were used to assess the content validity, language appropriateness, design quality, presentation, and practicality of the worksheet. Suggestions and recommendations from the validators were used to revise and improve the product before implementation. In the Implementation stage, the revised worksheet was first tested through a limited trial involving 10 Grade XI students. After revisions were made based on the results of the limited trial, a field trial was conducted with 20 students. Following the implementation, students and the English teacher completed response questionnaires to evaluate the usability and effectiveness of the worksheet. The questionnaire items were adapted from previous research conducted by Salsabilla et al. (2024)

In the Evaluation stage, revisions were carried out based on the feedback obtained from expert validators, students, and the teacher, as well as the results of the implementation trials. The collected data were analyzed using descriptive quantitative analysis by calculating percentage scores to determine the validity and feasibility levels of the developed worksheet. The percentage score for each aspect was calculated using the following formula:

$$\text{Percentage (\%)} = (\text{Obtained Score}/\text{Maximum Score}) \times 100$$

The validation results were then categorized according to predetermined validity criteria adapted from Sugiyono, as presented in Table 1. The analysis procedure followed quantitative research principles described by Creswell (2014).

**Table 1.** Validity Criteria

Percentage (%)	Category
81-100	Very Valid
61-80	Valid
41-60	Fairly Valid
21-40	Less Valid
0-20	Invalid

## RESULTS AND DISCUSSION

### Results

The results of this study indicate that the development of the *XMind*-assisted worksheet followed the systematic stages of the ADDIE model proposed by Dirgayasa et al. (2023). The needs analysis revealed that Grade XI students experienced difficulties in generating, organizing, and developing ideas when writing expository texts. Many students struggled to arrange their ideas logically and produce coherent paragraphs. In addition, the existing learning materials provided limited support for the pre-writing process. These findings, obtained during the **analysis** stage, highlighted the need for learning materials that could facilitate idea generation and organization before students began drafting.

Based on the findings from the previous stage, the worksheet was designed to guide students through the expository writing process. In the **design** stage, *XMind*-assisted worksheet activities were integrated into several writing processes, including brainstorming, organizing ideas, drafting, and revising. The worksheet structure was developed to provide systematic guidance and help students produce well-organized expository texts.

The completed design was subsequently transformed into a learning product through the **development** stage. At this stage, the worksheet was validated by two lecturers from the English Education Study Program who have expertise in English language teaching and instructional material development. The validation process resulted in an overall score of 83.93%, which was categorized as “very valid”.

**Table 2.** Expert Validation Results of the Developed Worksheet

Assessment Aspect	Indicators	Score Obtained	Max. Score	Percentage (%)	Category
Learning Objectives	4	24	32	75	Valid
Material Selection	6	42	48	87.5	Very Valid
Assignments, Practice Exercises, and Tests	3	28	32	87.5	Very Valid
<b>Overall</b>	<b>13</b>	<b>94</b>	<b>112</b>	<b>83.93</b>	<b>Very Valid</b>

Table 2 shows that the developed worksheet achieved a high level of validity across all assessed aspects. The highest scores were obtained in the aspects of material selection and assignments, practice exercises, and tests, indicating that the worksheet content and learning activities were considered appropriate and relevant to the learning objectives. Meanwhile, the learning

objectives aspect obtained a lower score compared to the other aspects, suggesting the need for minor improvements in aligning objectives with learning activities. Overall, the validation results indicate that the worksheet was suitable for classroom implementation.

The validators also provided several suggestions to improve the quality of the worksheet, particularly regarding instruction clarity, layout consistency, and activity organization. These suggestions were used as the basis for revising the worksheet before proceeding to the implementation stage.

**Table 3.** Validators' Suggestions and Revisions

Validators' Suggestions	Revisions Made
Improve instruction clarity	Instructions were revised and simplified.
Enhance layout consistency	Layout and formatting were standardized.
Improve activity organization	Activity sequence was revised for better flow.

After the revisions had been completed, the worksheet was considered ready for classroom trials. Following the validation process, the worksheet was tested through a limited trial involving 10 students and a field trial involving 20 students. The **implementation** stage demonstrated encouraging results, with the limited trial obtaining a feasibility score of 78%. After several revisions were made, the field trial yielded a score of 82%, categorized as "very feasible". These results indicate that the worksheet is practical and suitable for classroom use, as shown in Table 4.

**Table 4.** Summary of Worksheet Validation and Implementation Results

Aspect	Score (%)	Category
Expert Validation	83.93%	Very Valid
Limited Trial (Students)	78%	Feasible
Field Trial (Students)	82%	Very Feasible
Student Responses	80%	Valid

The final product was refined through the **evaluation** stage by considering feedback obtained from validators, students, and the teacher. Revisions were carried out to improve several aspects of the worksheet before producing the final version. Student response questionnaires yielded a positive score of 80%, indicating favorable perceptions of the worksheet. Students reported that the use of *XMind*-assisted worksheet helped them organize ideas more clearly, understand the structure of expository texts, and become more engaged in writing activities.

## Discussion

The findings of this study indicate that integrating e-mind mapping into worksheets can support students in developing expository writing skills, particularly in organizing ideas and constructing coherent texts. The effectiveness of *XMind*-assisted mind mapping may be attributed to the visual representation of connections among ideas presented in the worksheet, which enables students to plan and structure information before drafting. The teacher used *XMind* to design the mind mapping layout, while students engaged with the completed worksheet as a guide for organizing their writing. Since expository writing requires logical organization and hierarchical relationships among concepts, the visual framework provided by

*XMind* helps students produce more coherent and logically developed texts. This finding supports Al-Jarf (2021), who argued that mind mapping facilitates the visual organization and connection of EFL learners' ideas, thereby supporting the creation and development of written content. Similarly, Chutami & Suhartini (2021) found that a systematically designed worksheet can effectively support students' learning outcomes, which aligns with the feasibility results of the present worksheet.

Another possible explanation for these findings is that mind mapping reduces the cognitive burden students often experience during the planning stage of writing. Instead of generating and organizing ideas simultaneously, students can first follow the visual framework provided in the worksheet and then transform it into written paragraphs. This process enables learners to focus more effectively on content development and text organization. This finding can be explained through cognitive learning theory, which suggests that learning becomes more effective when information is organized into meaningful structures that facilitate information processing, storage, and retrieval. The visual representation embedded in the worksheet (designed by the teacher using *XMind*) enables students to arrange concepts systematically and identify meaningful links among them, thereby reducing cognitive load during the writing process. Consequently, students can devote greater attention to developing content and improving the overall quality of their writing. These findings align with Laila et al. (2023) and Fu & Relyea (2024), who reported that mind mapping significantly improved students' ability to organize ideas and develop paragraphs. Moreover, the interactive and visual features of *XMind* appeared to increase students' engagement and motivation during writing activities, which is also supported by Wiarsih & Muhria (2025), who explained that digital learning tools can provide more meaningful and engaging learning experiences.

The effectiveness of the developed worksheet can also be explained through process writing theory. According to Wang (2025), writing should be viewed as a recursive and cyclical process involving planning, drafting, revising, and editing. The *XMind*-assisted worksheet was specifically designed to guide students through these stages by providing structured activities for brainstorming, organizing ideas, composing texts, and revising their work. This systematic guidance enabled students to approach writing as a process rather than merely focusing on the final product. The findings support Dirgayasa et al. (2023), who stated that well-designed worksheets can help students achieve learning objectives gradually and improve their understanding of the learning material. Furthermore, the worksheet reflects the principles of constructivist learning theory, which emphasizes that learners actively construct knowledge through meaningful learning experiences and interactions. Through mind mapping activities, students were encouraged to generate, connect, and refine their ideas before transforming them into written texts. Therefore, the developed worksheet not only met the criteria for validity and feasibility but also promoted a student-centered, process-oriented approach to expository writing instruction.

## CONCLUSION

This study successfully developed an *XMind*-assisted e-mind-mapping worksheet for expository writing instruction, using the ADDIE model. The worksheet was developed through the ADDIE framework to ensure that it addressed students' learning needs and instructional requirements. The validation results showed that the worksheet achieved a score of 83.93%, which was categorized as "very valid". In addition, the implementation results indicated that the worksheet was feasible for classroom use and received positive responses from students.

The findings suggest that integrating teacher-designed *XMind*-assisted mind mapping into the worksheet can support students in developing and structuring their ideas, understanding the characteristics of expository texts, and engaging more actively in the writing process. Therefore, the developed worksheet offers a practical, structured, and student-centered learning resource for teaching expository writing to senior high school students. However, this study was limited by the relatively small number of participants and was conducted in only one school, which may limit the generalizability of the findings. Future research is recommended to examine the effectiveness of the worksheet through experimental studies involving larger and more diverse populations and to explore its applications in other writing genres and educational contexts.

## ACKNOWLEDGEMENTS

The authors would like to express their sincere gratitude to the senior high school teachers in Cimahi for granting permission and providing support throughout the data collection process. The authors are also deeply grateful to the students who willingly participated in this study. Special appreciation is extended to Anita Anggraeni, M.Pd. and Ratih Inayah, M.Pd., lecturers of the English Education Study Program at IKIP Siliwangi, for their invaluable guidance, constructive feedback, and continuous support, which significantly contributed to the successful completion of this research.

## REFERENCES

- Al-Jarf, R. (2021). *Teaching Reading to EFL Freshman Students with Mind Mapping Software* (Vol. 5). [www.jrspelt.com](http://www.jrspelt.com)
- Chutami, F., & Suhartini, S. (2021). The Effectiveness of Using Student Worksheets in Science Learning on Student Learning Outcomes. *Jurnal Penelitian Pendidikan IPA*, 7(4), 587–592. <https://doi.org/10.29303/jppipa.v7i4.768>
- Creswell, J. W. (2014). *Research Design (Qualitative, Quantitative, and Mixed Methods Approaches)*. [https://www.ucg.ac.me/skladiste/blog\\_609332/objava\\_105202/fajlovi/Creswell.pdf](https://www.ucg.ac.me/skladiste/blog_609332/objava_105202/fajlovi/Creswell.pdf)
- Dirgayasa, I. W., Lubis, S., & Sari, A. (2023). Developing Worksheet through Socratic to Improve Students' English Writing Skill. *World Journal of English Language*, 13(1), 405–409. <https://doi.org/10.5430/wjel.v13n1p405>
- Fu, X., & Relyea, J. E. (2024). Exploring the Role of Mind Mapping Tools in Scaffolding Narrative Writing in English for Middle-School EFL Students. *Education Sciences*, 14(10). <https://doi.org/10.3390/educsci14101119>
- Kasmi, H., & Mahmud, T. (2023). *Application of The Mind Mapping Model in Improving The Ability of Writing Exposition Texts in Class X Mipa 4 Students of Sma Negeri 3 Banda Aceh*.
- Kurt, S. (2023). *The ADDIE Model of Instructional Design*. <https://ctl.tedu.edu.tr/sites/default/files/docs/the-addie-model-of-instructional-design.pdf>
- Laila, I., Sulisty, T., & Apriliani, I. L. (2023). Enhancing Students' Writing Skills using Mind Mapping Strategy. *Jurnal Pembelajaran, Bimbingan, Dan Pengelolaan Pendidikan*, 3(7), 630–636. <https://doi.org/10.17977/um065v3i72023p630-636>
- Lestari, A., Putri, D., Tambusai, A., & Hasibuan, A. L. (2022). The Students' Difficulties in Acquiring English Writing. In *International Journal of Educational Research Excellence (IJERE)* (Vol. 01). <https://ejournal.ipinternasional.com/index.php/ijere>

- Pimpie Salsabilla, A., Sunendar, D., Amalia, F., Davela Ramadini, F., & Nur Fahmi, R. (2024). *Mind Mapping Method Using Xmind Application to Improve French Speaking Skills*. 8(2). <https://ojs.unm.ac.id/eralingua>
- Sbaa, M., Faouzi, L., Eljahechi, M., & Lghdaich, F. (2022). The Mind Map at the Service of Learning. *International Journal of Multidisciplinary Research and Analysis*, 05. <https://doi.org/10.47191/ijmra/v5-i12-37>
- Septiana, N. N., Prastowo, A., & Stevani Carolina Latuheru. (2025). The Use of Mind Mapping Methods to Develop Elementary School Students' Writing Skills in the Cambridge Curriculum. *Jurnal Ilmiah Sekolah Dasar*, 9(1). <https://doi.org/10.23887/jisd.v9i1.89498>
- Siregar, N., Firmansyah, F., & Harahap, Y. S. (2023). Developing Students' Worksheet for English Language Teaching to Cope with the 4C's Skill Through Project Based Learning. *Jurnal Paedagogy*, 10(1), 44. <https://doi.org/10.33394/jp.v10i1.6286>
- Sudirman, S., & Wahid, J. H. J. (2023). The Effect of Mind Mapping Technique on Students' Writing Skills. *JOLLT Journal of Languages and Language Teaching*, 11(1), 39–49. <https://doi.org/10.33394/jollt.v%vi%i.6692>
- Wang, S. (2025). *The Application of the Process-Writing Approach to English Writing Teaching*. 5(6), 6. <https://consensus.app/papers/the-application-of-the-processwriting-approach-to-english-wang/01d44a50dea355feb732bda8d66877d3/>
- Wiarsih, A., & Muhria, L. (2025). Use of Xmind Assisted Mind Mapping Technique In Improving Students' Review Writing Skills. *Journal Corner of Education, Linguistics, and Literature*, 4(4), 459–473. <https://doi.org/10.54012/jcell.v4i4.474>
- Wu, W., & Zheng, W. (2023). Using Mind Mapping for English Vocabulary Teaching. *English Language Teaching*, 16(5), 44. <https://doi.org/10.5539/elt.v16n5p44>