

FOREWORD

Praise and gratitude are devoted to Almighty God for His abundant grace, blessings, and mercy, which have enabled the author to complete this thesis successfully. This thesis is prepared as a partial fulfillment of the requirements to obtain a Bachelor's Degree in Education in the Chemistry Education Study Program, Faculty of Mathematics and Natural Sciences (FMIPA), Universitas Negeri Medan (UNIMED).

The process of completing this thesis has been a long, demanding, and challenging journey, involving various stages in accordance with the standard procedures applied at FMIPA UNIMED, starting from determining the research topic, preparing and presenting the research proposal seminar, conducting the research, writing the thesis, and finally defending it. Throughout these stages, the author has gained valuable experiences, both academically and personally, which have contributed to her growth and development.

The author realizes that this thesis would not have been completed without the support, assistance, guidance, and prayers from many parties, both directly and indirectly. Therefore, on this occasion, the author would like to express her deepest gratitude to:

1. Prof. Ani Sutiani, M.Si, as the Dean of the Faculty of Mathematics and Natural Sciences, Universitas Negeri Medan, for her support, leadership, and provision of facilities that enabled the author to carry out her academic journey smoothly until the completion of this thesis.
2. All lecturers of the Chemistry Department, Universitas Negeri Medan, who have dedicated their time and knowledge in providing valuable insights, guidance, and learning experiences throughout the author's academic years, which have greatly contributed to the completion of this thesis and her future career.
3. Dr. Ayi Darmana, M.Si, as the Thesis Supervisor, who has patiently devoted his time, energy, and thoughts in guiding the author, as well as providing valuable suggestions, constructive criticism, and continuous motivation, which have been essential in completing this thesis.
4. Dr. Ratu Evina Dibyantini, M.Si, as Examiner I, who has provided insightful suggestions, corrections, and directions that have significantly improved the quality of this thesis.
5. Susilawati Amdayani, S.Si., M.Pd, as Examiner II, who has given constructive feedback, detailed corrections, and meaningful suggestions that contributed to the refinement of this thesis.

6. Drs. Eddiyanto, Ph.D, as Examiner III, who has provided valuable comments, perspectives, and suggestions that helped enhance this thesis.
7. PT. Agincourt Resources (Martabe Gold Mine), for generously providing the author with a scholarship from the third semester until the completion of her studies, which has significantly supported the author financially and served as a strong motivation to continuously strive for academic excellence.
8. Mutiara Agustina, S.Pd., M.Pd., Ervi Luthfi Sheila Wanni Lubis, M.Pd., as well as Suryani, S.Pd., M.Si, as validators of the research instruments and teaching modules, who have taken their time to provide valuable evaluations, suggestions, and input for improving the quality of the research instruments used in this study.
9. Suryani, S.Pd., M.Si, as the mentor teacher, along with the principal, teachers, and students of SMAN 2 Percut Sei Tuan, who have provided guidance, permission, cooperation, and full support during the research process, allowing the study to be conducted smoothly and successfully.
10. The author's beloved parents, Alm. Zulkarnain Nasution and Rosnauli Daulay. The author's father had always supported the author in pursuing higher education in a field of interest and played an important role in shaping the author's character as it is today. The author's mother has always provided endless prayers, unconditional love, moral and material support, and great sacrifices, which have become the main source of strength for the author in completing this thesis.
11. The author's beloved siblings, Intan Rahmadani Nasution, S. Sos., Irwan Safii and Abdul Kodir Jailani, who have continuously provided support, care, encouragement, and motivation throughout the author's academic journey.
12. The author's cousin, Darmansyah Pulungan, S.Sos., M.P, who has been a role model in pursuing higher education and has inspired the author through meaningful discussions, advice, and motivation related to academic and research development.
13. The author's cousin, Sinar Gabena, S.Pd. Gr., who has been a companion in various moments and has provided support, prayers, and encouragement throughout the author's academic journey during her college years.
14. CESP 22, for providing meaningful experiences, unforgettable memories, and a sense of togetherness that have added color to the author's academic life from the beginning until the end of her studies.

15. Ini 6 (Cintami, Denada, Emi, Mutiara, Nurul), for being a place to share stories, offering emotional support, encouragement, and creating moments of laughter and togetherness that made the academic journey more meaningful.
 16. The author's research companions, especially Cintami and Deka, who have provided assistance, cooperation, support, and togetherness during the research process, making it more manageable and enjoyable.
 17. Finally, the author would like to express her deepest gratitude to herself for staying strong, being patient, and continuing to strive despite all the challenges, pressures, and difficulties faced throughout the process of completing this thesis.
- The author hopes that this thesis will be beneficial and contribute to the development of education, particularly in the field of chemistry education. The author also realizes that this thesis is far from perfect; therefore, constructive criticism and suggestions are highly appreciated for future improvement.

Medan, 03rd March 2026

Declarator,



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