PREFACE

Praise and deep gratitude to Allah SWT for the abundance of grace, and guidance of Him given to the writer that made this thesis can be completed properly. Greetings and salawat may always be devoted to the prophet Muhammad SAW.

The thesis entitles "THE DEVELOPMENT OF STUDENT WORKSHEET BASED GUIDED INQUIRY USING 4-D METHOD WITH PHET SIMULATION ON WORK AND ENERGY TOPIC" is proposed to get Sarjana Pendidikan Fisika (S-1), Faculty of Mathematics and Natural Sciences, State University of Medan.

The author would like to say thank you profusely, for all the help that has been given, either directly or indirectly during the preparation of this final thesis to complete. In particular, gratitude that is due to:

- 1. My parents are Mr. Drs. Junaidi and Mrs. Teti Ernawati S.Pd and a lovely brother are Agahari Ahmad S.Pd and lovely sister are Izmi Aisyah & Rissa Zahara for all support which encourages and reinforce me in a very difficult situation, God shows us powerful love in our life.
- 2. Drs. Jurubahasa Sinuraya., M.Pd., as thesis supervisor lecture who gave a lot of advice, motivation, and suggestion during writing research proposal till finishing this thesis.
- 3. Prof. Drs. Motlan, M.Sc., Ph.D., Dr. Mariati P. Simanjuntak, M.Si, and Dr. Rita Juliani, M.Si as examiner lecturers who gave advice and suggestion during writing research proposal till finishing this thesis.
- 4. Dr. Ridwan Abdullah Sani, M.Si as an academic advisor who gave powerful spirit during my study.
- 5. Dr. Derlina, M.Si, and sabani, S.Pd., M.Si as an expert lecture to validated my instrument materials and Muhammad Kadri, S.Si., M.Pd as an expert lecture to validated my instrument media who gave me suggestion and advice during validation my product and instrument
- 6. Dr. Iis Siti Jahro, M.Si as coordinator of Bilingual class and Nora Susanti, S.Si., M.Sc, Apt as secretary of Bilingual class who gave support during my study in a bilingual class.
- 7. SMA Negeri 1 Labuhan Deli, as my location and sample for research, especially for Sintauli Lubis S.Pd. as my teacher validator for my product, and also to all students X MIA 1 and X MIA 2 class as my research sample who gave me the chance to do the research in the school.
- 8. My greatest friend is Erdina Rahmayani Syahfitri Bangun who gave me support and advice.

- 9. My sweetest friends are Nurlaini Nasution and Zulayli Sembiring as my observer to helping my research
- 10. My Super Classmates Bilingual Physics Education 2015 are Firda, Rizqy, Suryani, Novyta, Lestari, Yunita, Ellis, Ricard, Daulatta, Mikha, There, Sarah, Nadia, Demensri, Hardianti and Anne who gave me support for 4 years in the campus.
- 11. PPL group in Smansa Tebing Tinggi there are, Jesenia, Grace, Debby, Santun, Indri, Elisabeth, Suriyani, Novita, Selly, Mikha, Teguh, Habib, Stefanus, Zulayli, Nurlaini, Rahel and Miska who support me to do it and gave the best experience as a teacher in the school. We are always togetherness.

The author has tried as much as possible in the completion of the thesis, but it is realized there is much weaker in terms of content and grammar. For that, writer welcomes any suggestions and constructive criticism from readers to make it better. May the contents of this thesis would be useful to enrich the treasury of education.

Medan, Juli 2019 Author

Nurreda 4153322017

