

## PREFACE

Praise and Thank God the writer prayed to God for all of His grace so that this thesis can be completed well in accordance with the planned time. This thesis entitles “The Development of Physics E-Modules Assited By Flip PDF Corporate On Mechanical Wave Material Based On Problem Based Learning In Senior High School” was prepared to obtain Sarjana Pendidikan (S1) in Physics Education, Faculty of Mathematics and Natural Science, Universitas Negeri Medan.

The author realizes that this thesis is still far from perfection, therefore the author really expects input from various parties in the form of constructive criticism and suggestions for the improvement of this thesis. On this occasion the author would like to say thank to :

1. Mr. Prof.Dr.Sahyar, M.S.,M.M. as my thesis supervisor that who has given a lot of advice, motivation and suggestions to author from the beginning until the completion of this thesis.
2. Mr. Deo Demonta Panggabean,S.Pd., M.Pd., Mr. Drs. Togi Tampubolon M.Sc., PhD., and Mrs. Dr. Rahmatsyah M.Si., as my examiners who have provided a lot of constructive input and suggestions in improving the writing of this thesis.
3. Mr. Prof. Dr. Makmur Sirait, M.Si as my academic supervisor who has provided advice and motivation began to receive authors in this Department of Physics.
4. Mr. Drs. Juniar Hutahaean, M.Si., as my media expert and also to Mr. Abdul Rais, S.Pd., M.T., M.Si as my material expert who has provided advice
5. Mrs. Dr. Ely Djulia, M.Pd as coordinator of Bilingual class and Mrs. Dr. Techn Marini Damanik, S.Si., M.Si as secretary of Bilingual class who gave support during my study in Bilingual Class.
6. Mrs. Sri Murni, S.Pd. as Principal of SMA Negeri 10 Medan and especially to Mr.Henri Jannu ,S.Pd and Mrs. Newdesnetty Butarbutar S.Pd., M.Si as the physics teacher who helped and guided the author in conducted research at SMA Negeri 10 Medan.
7. All of the students of XI IPA 1 SMA Negeri 10 Medan as my research sample who gave the chance to do this research.
8. In particular, the author would like to express her deepest gratitude to the people whom author really loves about especialy to my father Mr. Jamian Siahaan and my beloved mother Mrs. Nurlela Hutauruk, and also to my

siblings Cinta Siahaan and her husband Mesak Simorangkir, Agus Sutrisno Siahaan, S.Sos. and his wife Cempaka Siadari S.P, M.Si., Niota Selfia Siahaan S.Pd., and Andos Pirma Siahaan S.Pd who always provide support in terms of material, motivation, advice and especially for prayer and affection so that the author can complete study at Universitas Negeri Medan.

9. The author also would like to thank to my lovely classmates Bilingual Physics Educations 2018 who gave me support for 4 years in the campus especially to “Merlion Team” Raivita, Nursyahadah, Alviani, Luni, Anayosi, Octaviani and Patricia for always be there for me and giving me unconditional love.
10. For my bestfriend from my village Nally Eva Simatupang, A.Md.T and Jesika Vivian Simanungkalit, S.Si who is always give me support and give prayers.
11. *Last but not least, I wanna thank me for believing in me, I wanna thank me for doing all this hard work, I wanna thank me for having no days off, I wanna thank me for never quitting, I wanna thank me for always being a giver and tryna give more than I receive, I wanna thank me for tryna do more right than wrong and I wanna thank me for being me at all times.*

Finally, the author expresses his gratitude for all the support and assistance from various parties in order to complete this thesis. Hopefully this thesis can be useful for readers, Lord Jesus Bless.

Medan, October 31<sup>st</sup> 2022

Author,



Lasma Enita Siahaan

NIM. 4182121010