

BIOGRAPHY

Nadia Elisabet Manullang was born in Medan, North Sumatra on July 29th1998. Her father's name is Parmidin Manullang and her mother's name is Lortauli Silalahi. The author is the last daughter of 5 siblings. In 2003, the author began his formal education at TK Swasta Wahidin Sudirohusodo and graduated in 2005. In 2005, the writer continued his education at SD Swasta Wahidin Sudirohusodo and graduated in 2010. In 2010, the writer continued his education at SMP NEGERI 20 MEDAN, and graduated in 2013. In 2013 the author continued his education at SMA NEGERI 7 MEDAN, and graduated in 2016. In 2016, the writer was accepted into the Chemistry Education Study Program of Chemistry Department, Faculty of Mathematics and Natural Sciences, Medan State University.



**THE DEVELOPMENT OF e-WORKSHEET ON CHEMICAL BONDING TOPIC
INTEGRATED PROBLEM BASED LEARNING (PBL)**

Nadia Elisabet Manullang (IDN 4163332006)

ABSTRACT

The aims of this research is to compare the effectiveness of two different teaching media, that are e-Worksheet versus Power Point media on Chemical Bonding topic. This e-Worksheet used Research and Development (R&D) method. Media making procedure were analysis step, design step, development step, validation step, evaluation step, and last product. This research was conducted in SMA NEGERI 7 MEDAN by choosing 2 samples experiment class of 12 classes. Both of the classes consist of 36 students. The first experiment class who learned by using e-Worksheet and the second experiment class who learned by using Power Point media with Problem Based Learning model. The instrument used in this research was a test instrument. The test instrument was in the form of multiple choice questions totaling 20 valid and reliable questions. Data analyzed using statistical analysis. The results showed that : (1) Worksheets in school, do not meet all the criteria of BSNP and not based on Android; (2) e-Worksheet integrated Problem Based Learning on Chemical Bonding topic is in accordance with BSNP criteria; (3) Student learning outcomes that use e-Worksheet media are higher than use PowerPoint media.

Keywords : *e-Worksheet, Power Point, R&D method, Problem Based Learning*