

# Development of Guided Inquiry Based Work Sheet with Class and Laboratory Activity on Chemical Bonding Topic in Senior High School

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**ABSTRACT:** This research produced a teaching material in the form Work Sheet (LKPD) based guided inquiry which involves 3 levels of chemical phenomena namely macroscopic, sub-microscopic and symbolic. The worksheet was created using Plomp model and using guided inquiry learning cycle consisting of orientation, exploration, concept formation, application, and closure. This LKPD has been tested validity, practicality, and effectiveness. The validity test gives the result of the kappa moment of 0.83 with the category of very high. Analysis of practicality in one-to-one, small group, and field test stage showed the value of 0.80, 0.76, and 0.70 with all three values in the high category. Effectiveness test seen from VWXGHQWFRP before and after using LKPD obtained gain score is 0.76 in the high category and average activity of students is 86.3% at every meeting. The results showed that, worksheet using the Plomp model which has been produced are valid, practical, and effective

**Keywords:** Guided inquiry, chemical bonding, validity, practicality, effectiveness

## INTRODUCTION

The study of matter and its accompanying changes is called chemistry [1]. American Chemical Society states that chemistry is a laboratory science, meaning that the concepts contained in the chemistry cannot be studied effectively without doing laboratory activities [2]. Chemistry is generally a difficult subject for most students and is related to the structure of matter [3].

The subjects in chemistry in high school consisted of submicroscopic (abstract), macroscopic (visible with senses), and symbolic (symbolic) material [4]. For example, chemical bonding material is an example of material that is abstract and far from everyday experience, for example: cannot see atoms, structures, and how to react with other atoms [5].

Based on the results of interviews with 5 chemistry teachers and 20 questionnaires to students in three Senior High Schools Padang showed that students had difficulties in understanding chemical bonding material especially in depiction of structure Lewis, bond formation, types of chemical bonds. In the process of learning, teachers using teaching materials that are books and Work sheet (LKPD). The results of preliminary analysis indicate that 55% of students stated that LKPD used is generally still in the category of doing rhetorical exercise questions, introduction of formulas, introducing the terms through practice, but not to find their own concepts. Laboratory activities and the use of learning models within LKPD does not yet exist.

LKPD as a component of the learning system needs to be developed as well as its use in learning. Especially LKPD was based on curriculum 2013. The use of LKPD will not give satisfactory results without the use of instructional model in the learning process. Learning in the curriculum of 2013 prioritizes a scientific approach. One of the learning models that can be used is the model of learning of inquiry [6,7]. Thus, teachers need to seek an appropriate learning in improving the activities or activities of students and directing students in building their knowledge through the process of investigation.

Based on previous research that has been done by Bilgin and Myers showed that students who learn by using guided inquiry strategy more easily understand and understand the concept of lesson and improve the effectiveness of interaction, team building, learning, and interest through group work which is highly structured [8,9]. Based on this research has been done to develop teaching materials in the form of guided inquiry-based work sheet (LKPD) under the heading "Development Of Student Work Sheet











