Oraya Jamjai 2014: The Development of Grade 9 Students' Ability in Making Scientific Explanation Using Argumentation and Inquiry Approach. Master of Education (Science Education), Major Field: Science Education, Department of Education. Thesis Advisor: Mr. Ekgapoom Jantarakantee, Ph.D. 170 pages.

The purposes of this study were to study the students' ability in making scientific explanation and to study argumentation and the inquiry approach which could promote the ability in making scientific explanation of Grade 9 students. The subject of this study was 37 ninth grade students from a secondary school in Bangkok. The research instruments were the scientific explanation ability test in the topic of "Force and Motion", scientific argumentation Evaluation form, teacher's journal, students' interview and worksheets. The data were analyzed by qualitative and quantitative methods.

The results of the study found that argumentation and Inquiry approach influenced the students' ability in making scientific explanation in very good level. Moreover the result also showed that inquiry approach with argumentation influenced the ability in scientific explanation making as follows 1) Identification of the Task; Teacher should have variety set of questions and materials to encourage student' thought 2) Generation and Analysis of Data; Teacher should stimulated students to work as a group and apply different grouping techniques. 3) Production of a Tentative Argument; Teacher is the key person to encourage students to concern an important of scientific explanation making through the temporary argumentation 4) Argumentation Session; Teacher played an important role as an argumentation leader and should define the proper time 5) Write up Investigation Report; Teacher should finely check students report by using lessons plan' criteria. At last teacher needs to return the feedback and score to students immediately in order to understand their false and the way of improvement.

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