

# **Development of General Chemistry Laboratory with Contextual Problems Using Online Mode to Improve Collaborative Problem Solving Skill and Scientific Attitude of Chemistry Teachers Student**

**by Sukisman Purtadi, Dina, Metridewi Primastuti, Nur Fitriyana**

## **ABSTRACT**

One of the impacts of the Covid-19 pandemic in chemistry learning activities is the inhibition of practical activities in the laboratory. This has implications for the decline in skills in conducting experiments such as problem-solving skills and scientific attitudes for prospective chemistry teacher students. This study aims to develop a basic chemistry practicum model that can be used to improve collaborative problem solving skills and the scientific attitude of prospective chemistry teachers. In line with this goal, this research is designed to be carried out for 2 years using an exploratory mixed method design with an instrument development model. The stages of the research carried out are divided into four stages, namely: qualitative stage, instrument development, quantitative stage, and interpretation.

The first year of research begins with a qualitative stage consisting of a condition analysis step and literature review as well as a Focus Group Discussion (FGD) with lecturers in charge of Basic Chemistry courses and students taking Basic Chemistry courses. At this stage, the basics of module development, practicum models, collaborative problem solving skills (CPS) and scientific attitude (SA) assessments, theoretical guidelines for practicum models, module grids, and CPS and SA assessment instruments grids are produced. Researchers have conducted a literature review on the development of CPS and SA instruments so that a grid of CPS and SA instruments has been arranged that can be used as initial capital in conducting research. The next stage is the development stage which consists of three activities, namely the development of a basic chemistry practicum model containing contextual problems with online mode, the development of the CPS assessment instrument, and the development of the SA assessment instrument. The data generated from the qualitative stage in the form of the opinions of lecturers and students of the Basic Chemistry course will be analyzed qualitatively. The data generated from the development stage which includes the assessment of models and practicum modules were analyzed with descriptive statistics.

The results of the development show the characteristics of the online mode of basic chemistry practicum module which contains collaborative problem solving skills (CPS) and scientific attitude (SA) which are in accordance with the needs of prospective chemistry teacher students. The learning media for the basic chemistry practicum that will be developed will have the following characteristics: 1) In the form of a printed module or sofffile that has a minimum level of good readability so that it is easily understood by students, 2) The module has links to videos explaining material and demonstrations that make it easier for students to take part. practicum with online mode, 3) Practicum is carried out in groups with an emphasis on how students do their work in groups, not only dividing the task of implementing practicum but discussing problem solving and communication, and 4) Practicing with scientific attitudes by giving students the opportunity to improve their sense of belonging. want to know them through contextual problems, providing guidance on how to use theory to explain the data obtained. The results of the practicum module assessment developed based on the expert assessment in terms of CPS and SA content and the need for online mode are very good so that they can be used further for further research steps

*Kata Kunci: General Chemistry, Laboratory Work, Collaborative Problem Solving Skill, Scientific Attitude, Contertual Learning*