

**STUDI KOMPARASI PENERAPAN MODEL PEMBELAJARAN
BERBASIS TANTANGAN BERDIFERENSIASI DAN MODEL
PEMBELAJARAN BERBASIS MASALAH UNTUK MENINGKATKAN
PENGUASAAN KONSEP KIMIA DAN KETERAMPILAN BERPIKIR
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ABSTRAK

Penelitian ini bertujuan mendeskripsikan dan menjelaskan perbedaan penguasaan konsep kimia, keterampilan berpikir kritis, gabungan keduanya secara simultan serta pendapat siswa yang diajarkan menggunakan model pembelajaran berbasis tantangan berdiferensiasi dan model pembelajaran berbasis masalah, baik secara parsial dan simultan. Jenis dan rancangan penelitian berupa *quasi experiment* dan *non-equivalent pretest-posttest control group design*. Populasi penelitian ini adalah siswa kelas XI di SMA Negeri 1 Seririt. Sampel penelitian terdiri atas empat kelas, yaitu XI 1, XI 2, XI 3, dan XI 4 dengan masing-masing kelas berjumlah 36 siswa. Kelompok eksperimen dan kontrol ditentukan menggunakan teknik *cluster random sampling*. Data dikumpulkan melalui metode tes dan non-tes. Tes diperoleh dari hasil penguasaan konsep kimia dan keterampilan berpikir kritis, sedangkan non-tes berupa kuesioner yang menilai pendapat siswa terhadap pembelajaran. Teknik analisis data menggunakan statistika deskriptif dan inferensial. Analisis inferensial mencakup uji prasyarat dan uji hipotesis menggunakan statistika *Multivariate Analysis of Covariance* (Mancova) dengan bantuan SPSS versi 25 dan taraf signifikansi 5%. Hasil penelitian menunjukkan bahwa terdapat perbedaan yang signifikan dalam penguasaan konsep kimia dan keterampilan berpikir kritis siswa yang diajarkan menggunakan model pembelajaran berbasis tantangan berdiferensiasi dan model pembelajaran berbasis masalah, baik secara parsial dan simultan. Selain itu, terdapat perbedaan signifikan dalam pendapat siswa terhadap kedua model pembelajaran tersebut. Kelompok eksperimen menunjukkan hasil yang lebih tinggi dalam penguasaan konsep kimia, keterampilan berpikir kritis, dan pendapat siswa dengan skor rata-rata masing-masing sebesar 83,01; 85,5; dan 80,73. Sebaliknya, kelompok kontrol memperoleh skor rata-rata sebesar 74,38; 73,54; dan 74,20. Penelitian ini berkontribusi dalam membantu guru memilih model pembelajaran yang tepat untuk meningkatkan penguasaan konsep kimia dan keterampilan berpikir kritis siswa.

Kata-kata kunci: model berbasis tantangan, diferensiasi, penguasaan konsep kimia, keterampilan berpikir kritis

**A COMPARATIVE STUDY OF THE IMPLEMENTATION OF THE
DIFFERENTIATED CHALLENGE-BASED LEARNING MODEL AND
PROBLEM-BASED LEARNING MODEL TO IMPROVE THE MASTERY
OF CHEMISTRY CONCEPT AND CRITICAL THINKING SKILLS OF
SENIOR HIGH SCHOOL STUDENTS**

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ABSTRACT

This study aims to describe and explain the differences in mastery of chemistry concept, critical thinking skills, the combination of both simultaneously and the opinions of students taught using a differentiated challenge-based learning model and problem-based learning model, both partially and simultaneously. This study design was quasi-experimental with a non-equivalent pretest-posttest control group design. The population of this study was the XI grade students at SMA Negeri 1 Seririt. The research sample consisted of four classes, namely XI 1, XI 2, XI 3, and XI 4, each class totaling 36 students. The control and experimental groups were determined using a cluster random sampling technique. Data were collected through both test and non-test methods. Tests were obtained from the results of mastery of chemical concepts and critical thinking skills, while non-tests were in the form of questionnaires that assessing students' opinions on learning. Data analysis techniques involved descriptive and inferential statistics. Inferential analysis included prerequisite tests and hypothesis testing using Multivariate Analysis of Covariance, assisted by SPSS version 25, with a 5% significance level. The results indicated that significant differences exist in student's mastery of chemistry concepts and critical thinking skills between those taught using the differentiated challenge-based learning model and problem-based learning model, both partially and simultaneously. In addition, there were significant differences in students' perceptions of the two learning models. The experimental group showed higher results in mastery of chemistry concepts, critical thinking skills, and student opinions with average scores of 83.01; 85.5; and 80.73, respectively. In contrast, the control group obtained average scores of 74.38; 73.54; and 74.20. This research contributes to helping teachers choose the right learning model to improve students' mastery of chemical concepts and critical thinking skills.

Keywords: *challenge-based model, differentiation, mastery of chemistry concepts, critical thinking skills*