ABSTRAK

Ledy Paulina Simorangkir, NIM 4203131063 (2024). Pengaruh Model Pembelajaran Dan Kemampuan Matematika Terhadap Hasil Belajar Siswa Pada Pokok Bahasan Kesetimbangan Kimia

Penelitian ini bertujuan untuk mengetahui pengaruh model pembelajaran, kemampuan matematika serta interaksi antara model pembelajaran dan kemampuan matematika terhadap hasil belajar siswa pada pokok bahasan kesetimbangan kimia. Populasi penelitian adalah seluruh siswa kelas XI SMA Negeri 1 Percut Sei Tuan sebanyak 10 kelas. Sampel diambil dua tahap yaitu: pertama-tama sampel kelas diambil sebanyak 2 kelas secara random. Tahap kedua, setiap kelas dibagi menjadi 2 kelompok yaitu kelompok kemampuan matematika tinggi yang terdiri dari 10 orang siswa dan kelompok kemampuan matematika rendah juga 10 orang sehingga total sampel siswa yang digunakan sebanyak 40 orang. Penelitian ini menggunakan rancangan faktorial acak lengkap 2 x 2. Ada dua faktor yang dicobakan yaitu faktor A : Model Pembelajaran yang terdiri dari 2 taraf yaitu A_1 = *Problem Based Learning* dan A_2 = *Discovery Learning* , faktor B : Kemampuan matematika siswa yang terdiri dari 2 taraf yaitu B_1= kemampuan matematika tinggi dan B_2 = kemampuan matematika rendah. Kombinasi perlakuan di setiap kelas diberikan selama waktu tertentu sesuai dengan ATP dan modul ajar yang digunakan. Pada akhir proses pembelajaran dilakukan post-test untuk mengukur capaian hasil belajar siswa disetiap kombinasi perlakuan.

Berdasarkan uji hipotesis pada taraf signifikansi α = 0,05 diperoleh bahwa F_{hit} (A)= 26,61 dan F_{hit} (B)= 10,53 sedangkan F_{tabel} = 4,11 . Dengan demikian F_{hit} (A) > F_{tabel} yang berarti ada pengaruh model pembelajaran terhadap hasil belajar siswa pada pokok bahasan kesetimbangan kimia. Demikian juga F_{hit} (B) > F_{tabel} artinya ada pengaruh kemampuan matematika terhadap hasil belajar siswa. Selanjutnya telah diperoleh F_{hit} (AB) > F_{tabel} atau 7,15 > 4,11, artinya ada interaksi antara model pembelajaran dan kemampuan matematika terhadap hasil belajar siswa pada pokok bahasan kesetimbangan kimia. Dari uji hipotesis diperoleh hasil penelitian bahwa siswa yang dibelajarkan dengan model pembelajaran *Problem Based Learning* memberikan rataan hasil belajar yang lebih rendah bagi kelompok siswa yang mempunyai kemampuan matematika tinggi (75,5 $\pm$ 5,99) dan memberikan rataan hasil belajar yang tinggi bagi siswa yang mempunyai kemampuan matematika rendah (62 $\pm$ 4,83). Siswa yang dibelajarkan dengan model pembelajaran *Discovery Learning* memberikan rataan hasil belajar yang lebih tinggi bagi siswa yang mempunyai kemampuan matematika tinggi (80 $\pm$ 6,24) dan memberikan rataan hasil belajar yang rendah bagi siswa yang mempunyai kemampuan matematika rendah (61 $\pm$ 6,15). Pada uji pengaruh sederhana siswa yang mempunyai kemampuan matematika tinggi sebaiknya dibelajarkan dengan menggunakan model pembelajaran *Discovery Learning* sedangkan siswa yang mempunyai kemampuan matematika rendah sebaiknya dibelajarkan dengan model pembelajaran *Problem Based Learning*.

Kata kunci : Problem Based Learning, Discovery Learning, Kemampuan Matematika, Hasil Belajar, Kesetimbangan Kimia

ABSTRACT

Ledy Paulina Simorangkir, NIM 4203131063 (2024). The Influence of Learning Models and Mathematical Abilities on Student Learning Outcomes on the Subject of Chemical Equilibrium

This research aims to determine the influence of learning models, mathematical abilities, and the interaction between learning models and mathematical abilities on student learning outcomes on the subject of chemical equilibrium. The research population was all 10 class XI students of SMA Negeri 1 Percut Sei Tuan. Samples were taken in two stages, namely: first, 2 class samples were taken randomly. In the second stage, each class was divided into 2 groups, namely the high mathematics ability group consisting of 10 students and the low mathematics ability group also 10 people so that the total sample of students used was 40 people. This research used a 2 x 2 complete random factorial design. There were two factors tested, namely factor A: Learning Model which consisted of 2 levels, namely A_1 = *Problem Based Learning* and A2 = *Discovery Learning*, and factor B: Students' mathematical abilities which consisted of 2 levels namely B1 = high mathematical ability and B2 = low mathematical ability. The combination of treatments in each class is given for a certain time according to the ATP and teaching module used. At the end of the learning process, a post-test is carried out to measure student learning outcomes in each treatment combination.

Based on hypothesis testing at a significance level of $\alpha = 0.05$, it was found that Fhit (A) = 26.61 and Fhit (B) = 10.53 while Ftable = 4.11. Thus, Fhit (A) > Ftable, which means that there is an influence of the learning model on student learning outcomes on the subject of chemical equilibrium. Likewise, Fhit (B) > Ftable means that there is an influence of mathematics ability on student learning outcomes. Furthermore, Fhit (AB) > Ftable or 7.15 > 4.11 is obtained, meaning that there is an interaction between the learning model and mathematical ability on student learning outcomes on the subject of chemical equilibrium. From the hypothesis test, research results showed that students who were taught using the Problem Based Learning learning model gave a lower average learning outcome for the group of students who had high mathematical abilities (75.5 ± 5.99) and gave a high average learning outcome for students who had low mathematical ability (62 ± 4.83). Students who are taught using the Discovery Learning learning model provide higher average learning outcomes for students who have high mathematical abilities (80 ± 6.24) and provide lower average learning outcomes for students who have low mathematical abilities (61 ± 6.15). . In the simple influence test, students who have high mathematical abilities should be taught using the Discovery Learning learning model, while students who have low mathematical abilities should be taught using the Problem Based Learning learning model.

Keywords: Problem-BasedLearning, Discovery Learning, Mathematics Ability, Learning Outcomes, Chemical Equilibrium