

## ABSTRAK

Ibrahim Daulay, **Pengaruh Pendekatan Pembelajaran dan Kemampuan Matematika Terhadap Hasil Belajar Fisika Pelajar SMA Harapan 1 Medan.** Program Pascasarjana, Universitas Negeri Medan, Juni 2005.

Penelitian ini bertujuan untuk menguji pengaruh pendekatan pembelajaran dan kemampuan matematika terhadap hasil belajar fisika pelajar SMA Swasta Harapan 1 Medan. Penelitian ini menggunakan metode eksperimen semu dengan desain faktorial  $2 \times 2$ . Populasi penelitian ini berjumlah 324 orang. Sampel berjumlah 52 orang diperoleh melalui *cluster random sampling*. Instrumen penelitian ini menggunakan tes kemampuan matematika (TKM) dan tes hasil belajar fisika (THBF). TKM dikonstruksi berdasarkan kisi-kisi tes dari silabus mata pelajaran matematika kelas X semester I tahun 2004, sedangkan THBF dikonstruksi berdasarkan kisi-kisi tes dari silabus mata pelajaran fisika kelas X semester II tahun 2004. Hasil uji coba TKM menunjukkan ada 38 butir soal yang valid dari 40 butir, nilai reliabilitas  $r = 0,860$  dihitung dengan KR-20. Hasil uji coba THBF menunjukkan 35 butir soal yang valid dari 40 butir, nilai reliabilitas  $r = 0,838$  dihitung dengan KR-20.

Hipotesis penelitian, yaitu (a) ada perbedaan hasil belajar fisika antara pelajar SMA yang diajar dengan pendekatan kontekstual dan dengan pendekatan konvensional, (b) ada perbedaan hasil belajar fisika pelajar SMA yang memiliki kemampuan matematika tinggi dan kemampuan matematika rendah, (c) ada interaksi antara pendekatan pembelajaran dan kemampuan matematika dalam mempengaruhi hasil belajar fisika pelajar SMA. Selanjutnya teknik analisis data menggunakan analisis varians (anava) dua jalan dan dilanjutkan dengan uji perbandingan ganda dengan metode Tukey pada taraf  $\alpha = 5\%$ . Hasil pengujian hipotesis menunjukkan bahwa hasil belajar fisika pelajar SMA yang diajar dengan pendekatan kontekstual lebih unggul dibandingkan dengan hasil belajar fisika pelajar SMA yang diajar dengan pendekatan konvensional dengan ( $F_{hitung} = 40,01 > F_{tabel} = 4,04$ ); hasil belajar fisika pelajar SMA yang memiliki kemampuan matematika tinggi lebih unggul dibandingkan hasil belajar fisika pelajar SMA yang memiliki kemampuan matematika rendah yang ditunjukkan oleh ( $F_{hitung} = 82,67 > F_{tabel} = 4,04$ ); kemudian ada interaksi antara pendekatan pembelajaran dan kemampuan matematika terhadap hasil belajar fisika pelajar SMA yaitu ( $F_{hitung} = 170,19 > F_{tabel} = 4,04$ ).

Implikasi dari hasil penelitian adalah pelajar yang memiliki kemampuan matematika tinggi cocok diajar dengan pendekatan kontekstual sedangkan pelajar yang memiliki kemampuan matematika rendah cocok diajar dengan pendekatan konvensional. Untuk menerapkan pendekatan kontekstual disarankan meningkatkan (a) nilai strategis motivasi belajar; (b) semangat berkeaktifan melalui latihan inkuiri; dan, dan (c) kesiapan belajar matematika melalui potensi matematika.



## ABSTRACT

Daulay, Ibrahim. The Influence of Teaching Approach and Mathematics Ability on Physics Learning Result at SMA Harapan 1 Medan. Thesis. Education Technology, Post Graduate of Medan State University (UNIMED). June 2005.

This Study is aimed to prove the influence of teaching approach and mathematics ability on Physics learning result at SMA Harapan 1 Medan. The method used in this experiment was ANAVA Factorial  $2 \times 2$ . The population for this study were 324 students, while 512 students were chosen as a sample using cluster random sampling. The instruments used were mathematics ability test (TKM) and Physics learning result test (THBF). TKM was constructed based on Mathematics syllables test on grade X on the first semester 2004, while THBF was constructed based on physics syllables test on grade X on the second semester 2005. The test result of TKM showed that 38 from 40 questions were valid, with reliability  $r = 0.860$  by measured KR-20. The test result of THBF showed that 35 from 40 questions were valid, with reliability  $r = 0.838$  by measured KR-20.

Hypothesis research were : (a) There is a significant difference on learning Physics result between contextual teaching approach and conventional teaching approach, (b) There is a significant difference on learning Physics result between the student who have high mathematics ability and low mathematics ability, (c) There is a significant interaction between teaching approach and Mathematics ability toward learning Physics result. With  $F_{ratio} = 14.86 > F_{table} = 4.03$ .

Variance Analysis (ANAVA) and Tuckey test were applied to analyse the data on  $\alpha = 0.05$ . From data analysis, it was conclude that learning Physics result for the students who were taught by contextual teaching was better than conventional teaching approach with ( $F_{ratio} = 40.01 > F_{table} = 4.04$ ); Learning Physics result for the student who have high Mathematics ability was better than who have low ability with ( $F_{ratio} = 82.67 > F_{table} = 4.04$ ); There is a significant interaction between teaching approach and mathematics ability toward learning Physics result with ( $F_{ratio} = 170.19 > F_{table} = 4.04$ ).

The research implication could be concluded that contextual teaching approach was more application to be applied to the students who have High Mathematics ability while conventional teaching approach was more applicable to be applied to the students who have low Mathematics ability. In applying contextual teaching approach is suggested to enhanced : (a) strategi value in learning motivation; (b) creativity spirit through inquiry axercies; and (c) Mathematics learning readiness through Mathematics ability.