

## **ABSTRACT**

### **PhD Thesis**

**effects of open-ended and close-ended experimental techniques on success, attitude and psycomotor behaviours of students**

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This study that is purposed to investigate the effects of open-ended and close-ended experimental techniques on student's academical success, thire attitudes towards natural and applied science, psycomotor behaviours was carried out with 7 th grade students in Yenisu Primary school in Çumra, Konya.

In the study, the unit named as 'electricity in our life' which is given during 6 weeks to the 7 th grade students, was taught to control group by close-ended experiment technique and to experiment group by open –ended experiment techniques. To determine the success level of students, a test with reliabilty coefficient of  $\alpha=0,919$  and 40 questions was used respectively. Final test points that were performed after application and evaluated upon 40 points, were found as 18.00 in experiment group and 17.55 in control group ( $p= 0.789$ ). However, in the anamnesis test that was applied after 3 months over application, the avarages of control and experiment groups were found as 17.10 and 12.95 respectively. This difference was defined meaningful ( $p=0.018$ ).

Statistically no difference was detected between science and technology attitude test points applied at the beginning and at the end of experiment carried out for the purpose of understanding effects of teaching techniques on the attitude of students towards natural and applied science.

In the study, the diversities of student's psychomotor behaviours in experiments and control groups were observed by using experiment observation forms including 10 criteria prepared in the in the five likert model. As a result of evaluation of observation forms the average points of students related to changes of psychomotor behaviours were detected as 36.65 and 31.25 out of 50 points in experiment and control groups respectively. Difference between the points was not statistically important ( $p= 0.160$ ).

The results showed that compared to close-ended experiment technique, open-ended experiment technique has not different effect in the terms of information being learned, students' attitude to natural and applied science and their psychomotor behaviours; however was concluded that it is more effective technic in the terms of permanency of information learned.

**Key Words:** Science Education, Science Laboratory, Open-Ended Experiment Technique, Close-Ended Experiment Technique