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THE USE OF OBSERVATION FORM TO ASSESS STUDENTS' LEARNING PROCESS ON SCIENCE LABORATORY COURSE

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\section*{Abstract}

The purpose of this study is to determine the science education undergraduate students' opinions to assess learning process via student observation form on IFN 336 Science Laboratory Course. The study was implemented in Izmir, Turkey in 2006-2007 education period. Horizon of the research covers the students who study at Dokuz Eylül University. 46 students who are in IFN 336 Science Labortory Course were included in the sample of the research. IFN 336 Science Labortory course was chosen for the study. Open-ended laboratory activities were used during the science laboratory course. The study lasted 10 weeks. Open ended student negotiation form were used to collect data in the study and content and frequency analyses method was used to analyse the data. In the end, qualitative data analysis showed that many students were pleased to use observation form during the science laboratory course.

\textbf{Key Words} Observation form, science laboratory course, learning process

\section*{Introduction}

Today many countries are trying to invert their current education systems into a system in which the students are more active. The reason of that effort is having the conviction that it is impossible to grow up persons who can think, investigate and resolve within the conventional education systems in which the students are passive individuals. The new approaches which are offered to be used in the new system of science education need to be adapted into the science education lesson which is very important for the future of a country.

A school laboratory investigation is defined as an experience in the laboratory classroom, or the field that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models (NRC 2006, 2006). Recent educational developments such as constructivism and multiple intelligence theories as well as society oriented new trends engendered radical change in traditional approaches of instruction and assessment. Altering assessment practices is likely to affect curriculum, teaching methods, and students' understanding of the meaning of their work. For this reason, alternative assessment approaches are needed in assessing both learning process and learning product. Because many students directly memorize facts, words, tasks, and
other information, direct instructional procedures could be used to prepare students for other more conceptual activities. Observation forms could be used to teach students high level thinking skills (Ross and Stevens, 2003).

Since changes in assessment are believed to directly influence changes in the classroom, a newly designed assessment system must accurately measure and promote the complex thinking and learning goals that are known to be critical to students’ academic success and to their eventual sustained achievement and contribution to their communities.

Alternative assessment includes a variety of measures that can be adapted for different situations. Nowadays, one of the alternative assessment techniques used in various disciplines such as mathematics, science and social sciences and so forth is the “observation form” (Birgin, Baki, 2007, 1). Therefore, it is important to investigate how the assessment actually works and search of interpretations and perceptions of assessment practices must play a major role in the learning process (Govaerts, et al., 2005). Thus, direct observation and recording of actions help students to be accountable for their learning process and actions (Hope, 2005). If observations of practice are to fulfill the role assigned to them by regulators, they need to approximate to ‘pure observations’ so that the observer witnesses the student’s practice just as it is at that point in time (Humphrey, 2005). And one of the necessary area of using observation forms are laboratories.

METHOD

The study was organized according to qualitative research approach which is used for a specific attitude based on researchers’ openness and reflexivity (Flick, 2006) and using words as data to describe human experience or behavior. The research was conducted for 10 weeks on undergraduate science education students in Izmir spring semester of the 2006-2007 education period. At the beginning of the study, an awareness raising program was applied to the study group in order to assist their adaptation to student observation form approach. This awareness program also covered activities helping students in the study group to develop behavior suitable for the method applied during the experimental period. Lessons were performed by the researcher. Observation forms were performed by the observer who was a master student in department of science education in Dokuz Eylul University.

Dependent and Independent Variables: In this context, it was aimed to test the effect of independent variables (using observation approach), on dependent variables (student opinions).

Study Group

Horizon of the research covers the students who study at Dokuz Eylul University. 46 students who were in IFN 336 Science Laboratory course were included in the sample of the research. In the research we interviewed the students categorizing them according to their general average points of success. The students are considered as successful, medium and weak. The students who have general average points between 3,5 and
4 were esteemed as successful; the students who have general average points between 2.5 and 3.5 are esteemed as medium and finally the students who have general average points between 2.0 and 2.5 were esteemed as weak. The sample was chosen according to maximum variety principle, one of the purposeful sampling methods. 15 students who were interviewed were chosen through a random draw from 46 students.

Research Questions
The main purpose of this study is to investigate the effectiveness of observation forms on students' learning process on "Science Laboratory Course" of undergraduate students. Other questions associated with the main purpose are as follows:

What are the opinions of the experimental group about:
- using observation forms on science laboratory course?
- barriers of using observation form on science laboratory course?
- benefits of using observation form on science laboratory course?

Data Collection Tools
In the study, 'Student Negotiation Form' was developed by the researchers to collect data.

Student Negotiation Form: In the research, negotiation forms were used for two purposes. First one is the step of preparing measurement instrument. The other was to find out the opinions of the research group students about using student observation form on science laboratory course. In the research, the steps below were followed: While developing the form, local and foreign literature was reviewed and the students' opinions were taken. By means of the data gained from the literature review and students' opinions, the items for trial have been composed. The pilot application of the items which were revised according to experts' opinions has been carried out with undergraduate science education students. Reliability was done on trial items.

Data Analysis: Content analysis and frequence analysis methods were used to determine science education undergraduate students' opinions to use observation form on science laboratory course.

RESULTS
Qualitative data analysis showed that the students who participated the research stated matters about using an observation form as: students were pleased to use observation form during the science laboratory course (n=2), observation form enhanced their interest towards the learning subject (n=6), the form prompted them to make preparation before the lesson (n=5), although at first they thought that it wouldn't work, later they realized that this was a useful method (n=3), By using observation form many students increased their feelings of personal control over their learning and ability to apply their knowledge (n=8).

Students stated matters about advantages of using an observation sheet as: they learned better with this process evaluation (n=14), the forms prompted them to ac-
tive participation (n=6), this method enhanced the positive attitude towards studying lesson (n=2), students learned scientific process skills better with this method (n=3), with this form they could see their shortages more easily (n=2), It decreased rote memorizing (n=3) and It increased their interest towards the lesson (n=1).

Students stated matters about the preventing factors from using the observation sheet in the biology laboratory course as: observation method is sometimes frustrating (n=4), the first applications are generally uneasy (n=2).

REFERENCES

Birgin, O., Baki, A. (2007). The Use of Portfolio to Assess Student's Performance. Turkish Science Education. 4(2), p:75-90


