

Status of Biology Teachers in High Schools in Terms of Recognizing and Using Laboratory Tools and Equipments

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Abstract: In this study, the status of biology teachers in high schools in terms of recognizing and using laboratory tools and equipments is analysed. In connection with this subject, questionnaire forms prepared for the purpose of determining the status of teachers was filled by 60 biology teachers working in town centre of Ankara. The result of this study shows that biology teachers in high schools know tools and equipments and materials of biology laboratory better than chemicals used in biological experiments.

Key words: Biology Teaching · Laboratory · Tools and Equipments

INTRODUCTION

Education is the process of changing the behaviours of the individuals. [1]. Teaching is accepted as an activity within the scope of education. Biology education may be described as “Application of the plans which have been made before in order to get individuals obtained any necessary information and skills, any particular behaviours, ability of scientific thinking, researching, using tools and equipments and to get them made personality developments, recognised living beings and lifeless creatures and to change their behaviours in a demanded manner in any sections of the society, any institution, any stages of the education” [2].

In today’s world, technology, a very effective element in human life, naturally affects the education process. One of the sub-factors concretizing the scope of application of education technology is education medium, in other words, lesson materials and equipments used during the education process. Lesson materials and equipments are supporting elements for teaching and learning which concretize learning environment, provide effective time consumption and facilitate recalling [3]. Education tools are supporting elements for teaching and learning which are prepared specifically for the purposes of enabling teachers to educate effectively [4]. From the simplest blackboards to the most sophisticated computer, all tools and equipments serve as a supplementary element for teacher. However, it is observed that some teachers even avoid using the basic materials. One of the main reasons of this diffidence is

that the teacher does not know how to use the material or equipment. A teacher who knows how to use the material, is aware of its benefits and limits is to look for new ways of utilization of the material. Then, it is necessary to introduce these materials and equipments to the teachers at first [5].

One of the main factors affecting teachers’ utilization of lesson materials and equipments in an effective way is their attitude towards those materials and equipments. Since it is not possible to imagine an education without a teacher, it is essential for a teacher who is in position of instructor in an education environment to have positive attitudes towards any technology which will be useful for teaching process [3].

MATERIAL AND METHODS

Some questionnaire forms were prepared in order to determine the status of biology teachers in high schools in terms of recognizing and using laboratory tools and equipments. During the preparation of these questionnaire forms, the materials, chemicals and equipments which are to be used in the experiments [6-8] according to the syllabus of biology lessons of 1st, 2nd and 3rd grades of high schools are taken into account. Those questionnaires were filled by 60 biology teachers working in town centre of Ankara shown in tables and evaluated as % values.

Within the scope of this study 81.6 % of all of the participants, 49 teachers, utilized the equipments used in biology teaching in the experiments. Five of the total

Table 1: The Status of Biology Teachers in terms of Recognizing and Utilising Equipments Used for Biology Teaching

The status of teachers in terms of recognizing and utilising equipments used for biology teaching	The number of teachers (n)	Ratio (%)
I have used these equipments in the experiments	49	81.6
I have seen these equipments in the experiments before, but I have not used them in experiments	5	8.3
I have seen or used these equipments before, but not in the school	3	5
I know these equipments, but I have not seen them used in experiments	3	5

Table 2: The Status of Teachers in terms of Recognizing and Utilising Materials Used in Biology Laboratories

The status of teachers in terms of recognizing and utilising materials used in biology laboratories	The number of teacher (n)	Ratio (%)
I have used these materials in the experiments	45	75
I have not recognized these materials	4	6.6
I have recognized these materials, but I have not seen them being used in experiments before	4	6.6
I have seen or utilized these materials before, but not in the school	7	11.6

Table 3: The Status of Teachers in terms of Recognizing and Utilising Chemicals Used in Biology Laboratories

The status of teachers in terms of recognizing and utilising chemicals used in biology laboratories	The number of teacher (n)	Ratio (%)
I have used these chemicals in the experiments	40	66.6
I have recognized these chemicals, but I have not seen them in experiments before	11	18.3
I have never heard about these chemicals before	6	10
I have utilized these chemicals in daily life or seen them used in experiments	3	5

number of the participated teachers (8.3 %) had seen the equipments in experiments before, but they did not utilize them in their own experiments and 3 of the participants (5 %) stated that they had seen or used these equipments before, but not in the school. The rest of the participants, 3 teachers (5%), indicated that they knew those concerned equipments, but did not use them in their experiments.

In the survey 45 teachers, 75 % of participated ones stated that they also utilised the materials used in biology laboratories in their experiments. There are 4 teachers both who did not recognise these materials and who recognised; but had not seen them in experiments. So, the percentage of the teachers in both these categories is the same (6.6 %). The rest, seven, of the teachers, 11.6 %, stated that they had seen or utilised the materials used in biology laboratories before, but not in the school.

While 40 teachers, 66.6 % of all the participants stated that they utilised the chemicals used in biology laboratories in their own experiments, 11 teachers with the percentage of 18.3 expressed that they recognised these chemicals; but had not seen them in experiments. Six teachers (10%) stated that they had never heard about these chemicals before. The percentage of the teachers stating that they had utilized the chemicals used in biology laboratories in their daily life or seen them used in experiments is determined as 5 %, the ratio of 3 teachers to all of them.

CONCLUSION AND DISCUSSION

Most of the teachers stated that they could not make enough experiments due to the overcrowded classes or because of the lack of an appropriate place for laboratory researches and they forgot some of the materials and equipments used in biology lessons since they did not utilize many of them in their experiments.

95 % of the teachers participating in the survey stated that they utilized the equipments used in their experiments or they had seen the equipments in experiments. The percentage of the teachers who utilized the materials used in biological experiments or had seen them in experiments before is 85. However, the percentage of the teachers who utilized the chemicals related to biological experiments or had seen them in experiments before is 73.

This study shows that teachers know common equipments (light microscope, sterilizer, television etc.) and materials (slide, lamella, test tube etc.) related to biology lessons better than chemicals (methylene blue, copper sulphate, iodine solution etc.) which are more difficult to find and hide.

According to the data obtained from the questionnaires it is understood that the status of recognition of equipments, materials and chemicals used in related experiments to biology lessons is enough. However, the results of this study show that teachers do

not make enough efforts to utilize materials and equipments in the classroom [9].

According to the results of another survey, it is determined that teachers have 74.4 % of the essential behaviours for utilisation of material and equipments and for laboratory applications which are anticipated from teachers. This rate shows that teachers put on important performance in terms of utilisation of material and equipments and laboratory applications, but there are still problems about the necessary performance level of teachers [10]. According to the results of the similar researches, applications of biology lessons in experiments have not reached to the demanded level [11]. Deficits in the lesson materials and equipments results in an education style without enough observation and experiments related to biology.

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