ORIGINAL PAPER

A CASE STUDY ON STUDENTS PERCEPTIONS AND VIEWS ABOUT INQUIRY BASED LEARNING ENVIRONMENTS

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Abstract. *In the scope of executed changes, new methods and processes, in which the students are active in the learning environment and which enable the scientific concepts to be built as meaningful complements, have been handled. Inquiry Based Learning Environment (IBLE) which gets involved in these processes has appeared as an issue which has been worked on frequently. IBLE could be described as learning environments constituted by active learning activities which enable the students to pursue a simple research by using science process skills. The studies related to IBLE are needed in which learning and teaching activities are going to be designed and analyzed the effects of them in our country, too. According to these developments, educators are using inquiry based learnıng environments ın their class activities in Turkey, especially there has been lots of study about IBLE in science lessons at secondary schools. Depending on all of those processes, the aim of this study is to have an understanding on students' perceptions and views about inquiry based learning environments. In this study, the interview was used as a specific research tool and as a distinctive research technique. 12 students, have formed the working group of the research who are going at a state school in the city of Aydın-Turkey In this study we use formal interview, in which set questions are asked and the answers recorded on a standardized schedule.. Study conducted by the researcher used semi-structured interview with 5 questions. The data obtained from the records of interviews coded and grouped into categories with using content analysis method. Specific concepts and opinions which are similar to each other are combined and interpreted. Qualitative data is then presented in the table by calculating the frequency and percentage. Interviews which collected and transferred into the words by the researcher (audio recordings deciphering) were analyzed at different two times. Encoding reliabilities (correspondence percentage) was calculated for each item.*

Keywords: *Inquiry Based Learning Environments, interview, questionnaire.*

1. INTRODUCTION

In recent years, it has been observed that there have been changes and developments related to learning methods which are increasingly going on. Especially in the inquiries such as PISA and TIMSS by which the achievements of the countries in Science and Mathematics are exhibited in the international arena, it has been reported that Turkey has remained terribly behind for the averages of Science and Maths. In the scope of executed changes, new methods and processes, in which the students are active in the learning environment and which enable the scientific concepts to be built as meaningful complements, have been handled. Inquiry based learning environment (IBLE) which gets involved in these processes has appeared as an issue which has been worked on frequently. IBLE, could be described as learning

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environments constituted by active learning activities which enable the students to pursue a simple research by using science process skills.

The searching which have been maintained by the educationalists for the purpose of turning the learning into a more meaningful situation for a long time begin to gain clarity. It has been pointed that the studies made in this field are mostly at the international level. The studies related to IBLE are needed in which learning and teaching activities are going to be designed and analyzed the effects of them in our country, too. According to these developments, educators are using inquiry based learnıng environments ın their class activities in Turkey. Especially there has been lots of study about IBLE in science lessons at secondary schools. Depending on all of these processes the aim of this study is to have an understanding on students' perceptions and views about inquiry based learning environments.

2. METHODOLOGY

Research Model: In this study interview was used as a specific research tool and as a distinctive research technique.

Working Group: In order to make interviews on the subject of inquiry based learning environment, except for random distribution, 12 students, have formed the working group of the research who are going at a state school in the city of Aydın-Turkey. 4 students are attending the level of 6^{th}; another 4 of them is 7^{th} and the last 4 students are from the 8^{th} classes of science.

Data Collection Tools: The interview may be used as the principal means of gathering information having direct bearing on the research objectives. (Cohen, Manio & Morrison, 2007). The interview is able to answer questions concerning both the purpose of the interview and any misunderstandings experienced by the interviewee. In this study we use formal interview, in which set questions are asked and the answers recorded on a standardized schedule. It is an unusual method in that it involves the gathering of data through direct verbal interactions between individuals. In this sense it differs from the questionnaire where the respondent is required to record in some way her responses to set questions. (Cohen et al. 2007)

Data Analysis Techniques: Study conducted by the researcher used semi-structured interview consisting of nine questions was prepared in the form of a pre-interview form. The validity of this form has been submitted with expert opinions. According to the new proposals and arrangements, form revised and in last case "semi-structured interview form" with 5 questions is obtained. It is noted to have questions suitable and reflective for IBLE. The data obtained from the records of interviews coded and grouped into categories with using content analysis method. Specific concepts and opinions which are similar to each other are combined and interpreted. Qualitative data is then presented in the table by calculating the frequency and percentage.

3. FINDINGS AND DISCUSSION

In this section, the data which getting with semi-structured interviews of 12 students' views were obtained. Interviews which collected and transferred into the words by the researcher (audio recordings deciphering) were analyzed at different two times. Encoding reliabilities (correspondence percentage) was calculated for each item. According to Yıldırım and Şimşek (2006) correspondence percentage, is the ratio of the total number of observers' or assessors' compromised items to the number of observations or evaluations. It is indicated that this ratio should be at least 70%. Below are the answers to the questions and the number and percentage of interviews with relevant findings are presented.

Question 1. What are your favorite applications or responsibilities during the science lessons? Why?

Analyze of the students' responses to this question in Table 1 are given below.

Table 1. The number of students' views on "favorite applications or responsibilities during the science lessons".

The view	The total number of students (f)	The number of students expressed the view (f)
conduct experiments	12	10
make research		8
deal with projects, and activities		5
prepare reports, presentations and posters		4
try to reach the conclusion after creating hypothesis		3
solve problems		3
make observations		2
investigate natural phenomena		1
study on activity papers		1

The correspondence percentage of the data is calculated as 88.8%. According to table most students like to do experiments and research (f=18). On the other hand, to deal with projects and activities and prepare reports, presentations and posters are the parts of other funny and remarkable activities. Students also enjoy investigating natural phenomena and studying on activity papers. But these are indicated by at least ones (f=1). It draws attention from the data that students enjoy having activities about design, application and decision process of a scientific research.

Question 2. What are the forces or applications you do not want to face with during the inquiry based science learning process?

Analyze of the students' responses to this question in Table 2 are given below.

Table 2. The number of students' views on "the forces or applications they do not want to face with during the inquiry based science learning process".

The view	The total number of students (f)	The number of students expressed the view (f)
memorize	12	6
get behind of the time		6
create graphs and tables		4
access to resources		3
some science topics		2
solving questions about a topic that I did not understand before		2
nothing		2

The correspondence percentage of the data is calculated as 77,8% in 7 categories. Some students mentioned about memorization and some of them talked about time problem. They are both have the same frequency (f=6) in table. As can be seen in the table, 4 students are having problems with creating graphs and tables. And 3 of them mentioned about accession to the resources. Some parts of the students are having difficulties on learning specific topic of unit light (f=2). And similarly some students do not want to face with test questions about the topics that they didn't understand well (f=2). 2 students that participated the interview, expressed that they don't have any forces or applications that they do not want to face with during the inquiry based science learning process.

Question 3. In your opinion what kind of preparations should a student do when facing with new learning subjects during the inquiry based science learning process?

Analyze of the students' responses to this question in Table 3 are given below.

Table 3. The number of students' views on "preparations for new learning subjects during the inquiry based science learning process".

The view	The total number of students (f)	The number of students expressed the view (f)
make interviews with experts and teachers, to have preliminary information about subject.	12	6
make a review of science textbook		6
make searches with google		4
benefit from the library newspapers and journals		4
have discussions about subjects with friends and ask questions		3
ask to upper-class students		1

The correspondence percentage of the data is calculated as 85,7 % in 6 categories. According to students' opinions, 6 of them mentioned about making interviews with experts and teachers, to have preliminary information about subject; the other 6 of them talked about making review of science textbook. 4 of the students recommend making searches with Google. Other 4 of them expressed to benefit from the library newspapers and journals. Therewithal have discussions about subjects with friends, ask questions (f=3) and ask to upper-class students (f=1) are the other opinions. Analysis of the responses to this question shows that students who are having learning process with inquiry understand the importance of being ready for new learning by doing research on the subject.

Question 4. In your opinion what kind of a process should be followed for solving a problem during the IBL activities?

In this section students' responses were evaluated in three categories. Categories were created as "Beginning, During & End" of the process. Analyze of the students' responses to this question in Table 4 are given below.

Table 4. The number of students' views on "a process should be followed for solving a problem during the IBL activities".

	Beginning of the process	
The total number of students (f)	**The view (f)**	**The number of students expressed the view (f)**
12	The problem should be well understood	3
	process should be planned	3
	Should make discussion with friends	1
	During the process	
The total number of students (f)	**The view (f)**	**The number of students expressed the view (f)**
12	should take help of teachers and friends when having difficulties	5
	should make researches	5
	should conduct hypothesis	4
	should design the experiment	1
	End of the process	
The total number of students (f)	**The view (f)**	**The number of students expressed the view (f)**
12	should complete the tests	7
	should explain and discuss the results	5

The correspondence percentage of the data is calculated as 88.9 % in 3 categories and 9 sub categories. At the beginning of the process, 3 of the students comment on a well understood problem and similarly 3 of them talk about a planned process and 1 them stress the discussion first. There are 4 different views on during process. 5 of the students supposed to take help of teachers and friends when having difficulties. 5 of them have idea on doing researches. 4 of them suggest to conduct hypothesis and 1 student want to design the experiment. And at the last category, end of the process 7 students submit to complete the tests (experiments) and 5 students propose to explain and discuss the results. According to the views on 3 different parts of this question we can say that students have awareness on a process should be followed for solving a problem during the IBL activities.

Question 5. In your opinion what kind of a process of scientists should be followed for proving an idea to perform a real scientific study? Why do you think so?

Analyze of the students' responses to this question in Table 5 are given below.

Table 5. The number of students' views on "a process of scientists should be followed for proving an idea to perform a real scientific study".

The view	The total number of students (f)	The number of students expressed the view (f)
do experiment	12	9
make comparison between his own ideas (results) and other scientists thoughts		4
explain the results		3
show the examples from similar studies which supports his own results		2

The correspondence percentage of the last data is calculated as 80 %. 9 students agree on doing experiments, 4 of them believe on making comparison between his own ideas (results) and other scientists thoughts, 3 of them agree on explaining the results and the last 2 of them mention about showing the examples from similar studies which supports the results. According to a large number of students (f=9), it would be better to have an experimental way for conducting a scientific research.

CONCLUSION

The presented research revealed the fact that students enjoy following activities related to design, application and decision process of a scientific research. More, inquiry learning represents a feasible strategy - students who participated in such activities understand in great measure the importance of being ready for an activity based on "learning by doing".

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