Investigating Possible Reasons behind the High School Students' Attitudes about Physics Course

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Abstract. This study aims to investigate possible reasons behind the attitude towards physics course among high school students in Duzce, Turkey. In present study a qualitative research method was used. In order to collect data, semi structured interviews are conducted with students. We used thematic analysis on the interview data to find themes. As a result, although the students evaluate the physics course interesting, issues such as , mathematical difficulties, teacher performance, self related believes, past experiences and parental believes cause some attitudes on the course.

1 Introduction

There is a vast amount of research on why students have problems on understanding physics subjects. According to research, among the reasons for students to have difficulty in physics subjects are that concepts are perceived as abstract by students, physics is seen as difficult, students have attitudes against physics, they can't associate the physical concepts with daily life and they lack of motivation [1].

Importantly, students are highly prejudiced toward physics in Turkey [2]. Some studies mentioned that students complain about teachers' warning about hardness of subjects make them think that this is too hard for them to understand. Also long formulas are considered as source of anxiety. However, studies usually focus on teacher performance, text books or teaching method. In education, scientists also should look at how students' self related believes, values, family lives influence their understanding their physics. Previous research has argued that female students consider themselves as less confident in mathematics and science related topics while male students had less self-efficacy regarding linguistic abilities [3]. Also parents tend to think that their son could be more successful and rather than their daughters [4]. These findings are considered a possible self-fulfilling prophecy effect on physics education [5]. This effect can be explained as if one believes that s/he will not understand, s/he does not listen well, or the anxiety level of the person can become so high that makes so hard for them to understand. As a result, they attribute their struggle of understanding to the subject itself rather than their anxiety or focusing on the subject. This study aims to fill this gap with a comprehensive research asking students their conceptualization and source of believes about physics.

2 Methodology

The aim of this study is to identify the reasons why high school students have difficulties related to physics topics. In this study thematic analysis which is a type of a qualitative research

method was used. This method was chosen, because it allows researcher to understand how people talk about a problem.

2.1 Sample

15 students who go to a public high school in Duzce are participated in this study. In Turkey students have to select main interest areas at the end of the 9th grade class, but they all have to take introductory level physics course. That is why they are chosen as the sample of this study

2.2 Data Collection Method

6 questions are prepared based on the literature on this field. Some examples of the questions are "how do you evaluate your performance on physics compared to other courses and what could be the reasons behind your success or failure?" "What do you think about the hardness of the physics topics?" Students are informed about the aim of the study, and volunteer participants are invited an empty class in the school to record interviews. Semi-structured interviews are conducted with the volunteer students in order to collect data. All interviews are recorded with a voice recorder and deleted after transcription.

After transcription of the interviews thematic analysis conducted to find themes which students talked about during interviews. After initial coding of the data, the sub themes are decided and themes are found and clustered together.

3 Conclusion

According to these research findings, teaching methods and materials are important factors on student success as well as teachers who make the lessons lovable.

As a result of the study, students' prejudice toward physics course was founded. And the reasons behind these attitudes are family, peer-relations, teachers, text-books. These results can be explained by self-fulfilling prophecy and collectivistic culture of Turkey can support these results.

This study can be helpful for policy makers and in teachers' education. In the future, teachers can inform parents about how girls can be successful in science as much as boys. Also, some kind of psychological drawbacks can be taught in universities to enhance education system in Turkey.

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