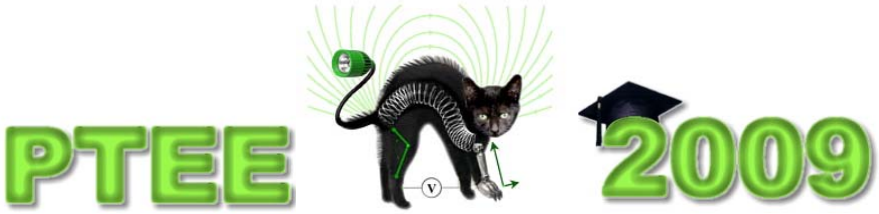

European Society for Engineering Education

International Conference on Physics Teaching in Engineering Education

10 - 12 September 2009 in Wroclaw, Poland

Call for papers

The conference will focus on all aspects of **physics teaching in engineering education**. It will provide a broad exchange forum of ideas and experiences within whole Europe. PTEE conferences are organized by the Working Group on Physics of Société Européenne pour la Formation des Ingénieurs (SEFI) in two-year periods. PTEE 2009 will be held in Wroclaw, a historical and picturesque city.

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Abstracts of the conference contributions should be submitted electronically by 30 March 2009. The authors' guide is available at the conference website.
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Physics Teaching in Engineering Education PTEE 2009
Institute of Physics, Wroclaw University of Technology, Wroclaw, Poland, September 10-12, 2009

PERCEPTION LEVELS IN PHYSICS EDUCATION

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The aim of this study is to specify the learning levels of students in physics at Engineering faculties. The sample of this study consists of prospective engineers who have been studying at fourth year at the Technical Faculty of Education, Mersin University, Turkey. In order to collect data, a likert-type Perception Level Scale for "Subjects in Physics" with a questionnaire, which has 38 questions, have been used for this aim. In addition to these questions seven more open ended questions have also been asked. In quantitative analysis, frequencies and percentages have been introduced as cross tables. Qualitative data have been analyzed by using descriptive analysis technique. In conclusion, recommendations have been given about physics instruction strategies at Technical and Engineering Faculties.

Keywords: Physics Education, Technical education, Likert type Perception Level

INTRODUCTION

In todays world, an incredible progress in science and technology attracts huge demands on Engineering and Technical education. As a base for technological sciences, engineering faculties have to focus on new educational processes to achieve success for future investigations. In the field of both scientific and technological education, physics education should be the first and one of the most important goal with new strategies to be achieved. One of the main problem in teaching process of Physics is the imagination factor that has to be created in students brain and must be conducted by real world examples [1-5]. However, a significant ratio of student consider the physical laws and the “life” as separate. This problem cause Physics seem to be the most difficult lesson that can not be understandable in vision. Due to problems met in physics education, teaching staffs should provide new and effective strategies and this must be the first and one of the most important step.

Specifying the learning levels of students in physics at Engineering and Technical faculties is the aim of this study. The sample consists of prospective engineers who have been studying at third and fourth year at the Technical Faculty of Mersin University. A likert-type Perception Level Scale for "Subjects in Physics" with a questionnaire, which has 38 questions, in order to collect data, have been used for this aim. In addition to these questions seven more open ended questions have also been asked. In Likert type sample scale has five response alternatives as; Strongly approve, Approve, Undecided, Disapprove, and Strongly disapprove [1, 2]. In Likert type questionnaire, reliability assessment might be used to find the correlation between the item score and the total procedure.

In the Perception level process, the questionnaire contains questions and scaling grades on the understandability of subjects and motivations in physics. We have intended to

find out the reasons of problems confronted in physics teaching process at Technical and Engineering Faculties. Students from different departments of Technical faculty, i.e. Computer Engineering, Electronics and Electrical Eng., Mechatronics, have different interest in the field of science. So, in some details, the problems may differ from department to department. Analysis of the answers to the questions in the questionnaire reveal so interesting details in strategies of physics teaching.

Qualitative data have been analyzed by using descriptive analysis technique. In conclusion, recommendations have been given about physics instruction strategies at Engineering Faculties.

DEVELOPMENT

Physics has vast area of applications in technology. Learning physics with subjects related to the interested field of technology is the first step in engineering education. The fundamental educational contents for students and educational programs for science teachers include several topics in physics, from the simplest one to others. All subjects of the physics teaching process have been asked in order to obtain the traces of physics on students.

The perception level questionnaire has been applied to one hundred students from Electronics, Mechatronics and Computer Technologies departments of Tarsus Faculty of Technical Education which present a series of basic questions that reflects on the present situation of the teaching-learning relationship in physics.

All questions can be marked according to students' agreement on the questions in levels which correspond to their acceptance as; Strongly agree, agree, undecided, disagree, strongly disagree.

The first question asked to students is to evaluate the level of Physics lessons among other lessons. The responses of the students to this likert type question is given as a graph in figure 1.

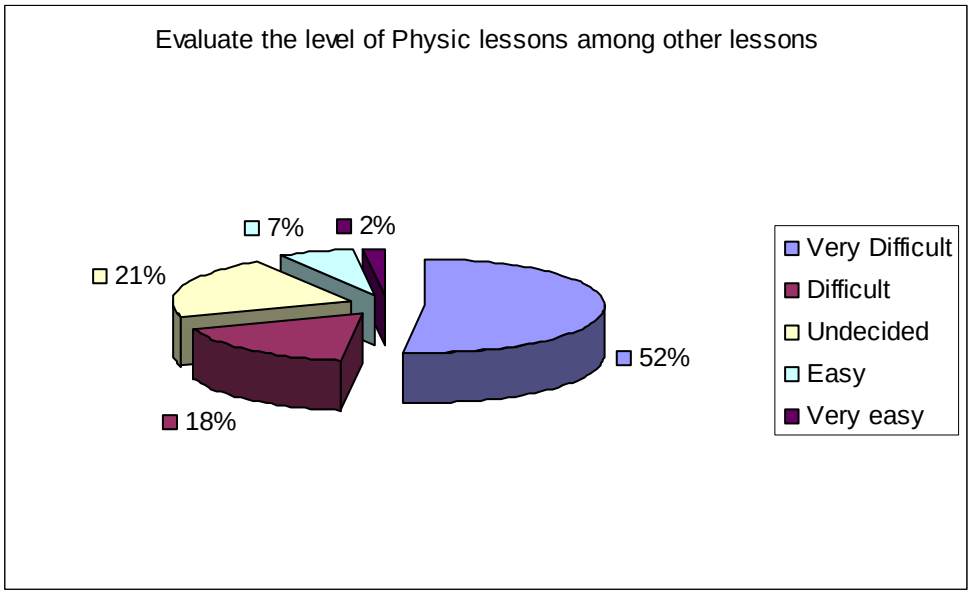

Figure 1: Evaluated level of Physics lessons among other lessons.

In figure 1, responses of students can vary from department to department. According to responses, 52% thinks Physics is very difficult to understand, 18% thinks difficult, 21%

undecided, however 7% of students think Physics is easy to understand and 2% thinks very easy. In the questionnaire, according to responses of students who have given as very difficult and difficult to first question have been asked to rate the subjects from easy to difficult in five scaling grades. The results are given in figure 2.

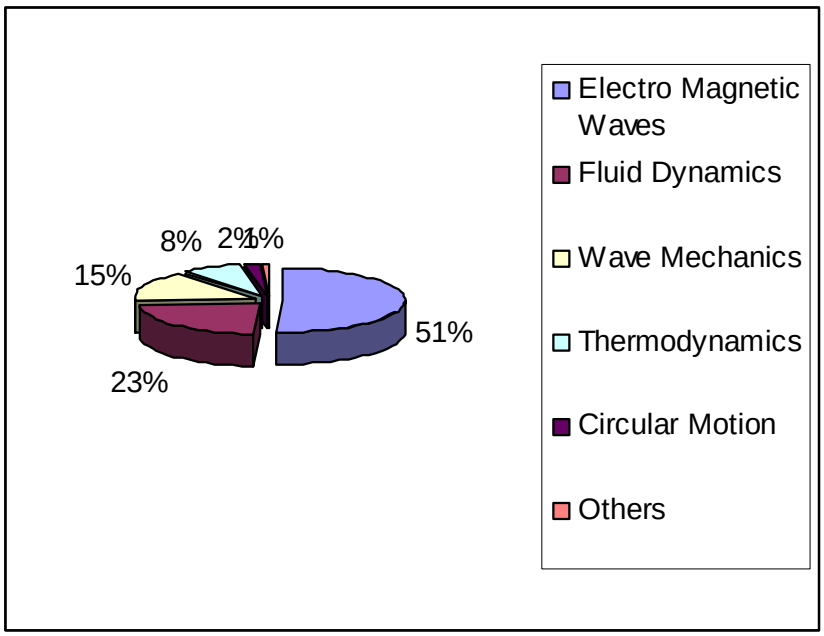

Figure 2. Most Difficult Physics subjects according to questionnaire.

In figure 2, Electro-Magnetic Theory subject of Physics is chosen to be the most difficult lesson. In the forms, there has been open ended questions to reveal the reasons of problems that cause failures in understanding process of physics.

The results of the open ended questions are given in figure 3.

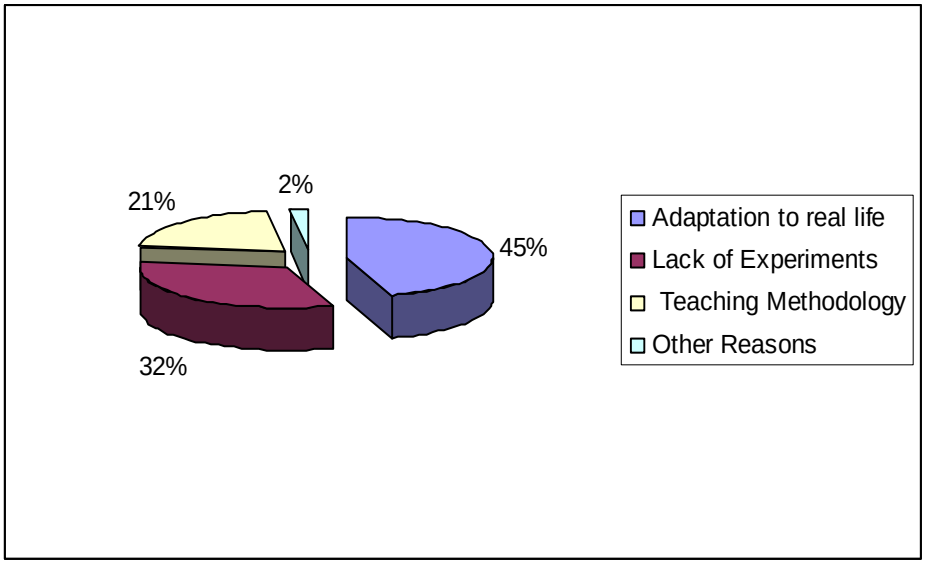

Figure 3. The reasons for failure in Physics Lessons.

As a result of applied open ended questions, the reasons of failures in physics lesson come out that students can not combine the physics rules with the real world and almost think they are separate. In the second rank, as a reason of the failure, lessons should be supported by experiments, if applicable. In the third rank, the failure is a result of wrong teaching methodologies and in the fourth rank, the reason seems to be teaching staff properties, gestures in teaching process.

CONCLUSION

The students are aware of the importance of Physics, however, as a result of questionnaire, they complain about the methodology of teaching process. The teaching methodology based on intense formula is refused by students. Student's would like to establish the knowledge of physics in connection with real life examples in their minds. Besides, Physics lessons must contain experimental sections in order to examine theories. Due to reasons of failure, physics lessons should be less formulated, less complicated in order to provide motivation on students. With the support of real life examples lessons may become more interesting.

References

[1] Likert, R., A Technique for the Measurement of Attitudes. New York: Archives of Psychology. (1932).
[2] Clason, D.L., Dormody, T.J., Journal of Agricaltural Edu., Vol 35, No. 4, 31-35
[3] Masood, S.S., The Decrease in Physics Enrollment', physics/0509206, http://arxiv.org
[4] Masood, S.S., Better Physıcs Teachıng Can Increase Physıcs Enrollment', physics/0702089v1, http://arxiv.org
[5] Adams, Fagot, & Robinson, Psychometrika, B(2): 99-127, 1965.