Types of Study Materials and their Comparison from the Several Points of View

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Abstract

In this paper the history and development of the teaching at the VSB - Technical University of Ostrava, Faculty of Mechanical Engineering (FME) is described. It is focuses on the changes of the types of study, number of students and conditions of the education process and the resulting requirements to study literature. The advantage and disadvantage different types of study materials from the point of view teachers and students is the topic of this article.

Introduction

In 1849, the predecessor of the Technical University of Ostrava was established in P_íbram by Franz Josef´s Decree, following the tradition of the first mining school founded in Jáchymov in 1716. After World War II, in 1945, the Mining College was moved from P_íbram to Ostrava, the centre of Czech mining and metallurgy.

The University not only develops traditional branches of industry - mining and metallurgy - but it is also engaged in many modern fields of research and teaching - geology, material engineering, mechanical engineering, electrical engineering, civil engineering, safety engineering, economics, informatics, automation, environmental engineering and transportation. In the years 1990 – 1995, some new faculties came into existence. In 1995, the University was renamed V_B - Technical University of Ostrava.

The Faculty of Mechanical Engineering (FME) was founded in 1950 at Bru_perk as Mechanical University. After one year of existence it was affiliated to the

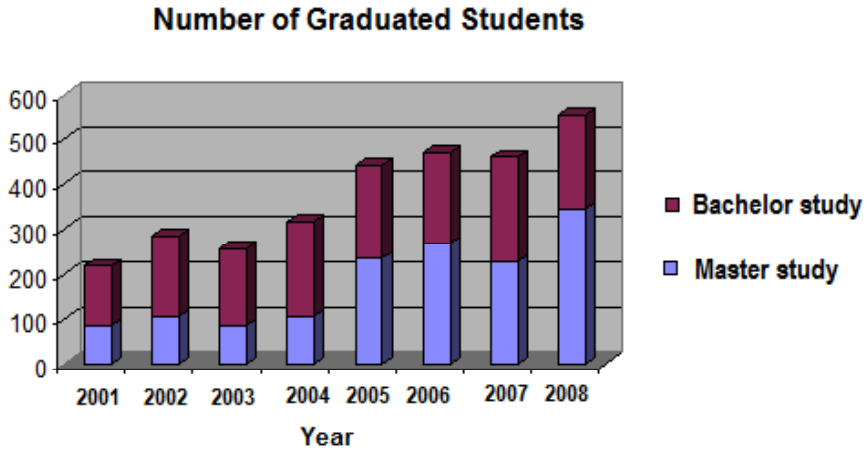
Mining University in Ostrava as the Faculty of Mining Engineering, focused mainly on machinery and equipment for mining and metallurgical industry. Since that time the Faculty has gone through the profound changes brought by the development of industrial production and social needs. Most significant changes resulted from the political and economical situation after the year 1989.

Faculty of Mechanical Engineering Today

At present the Faculty of Mechanical Engineering is a modern university institution which offers a wide range of qualifications through undergraduate, postgraduate, professional and research programmes - from foundation degrees to PhD awards. The three level organisation of higher education at the Faculty fits well to the Bologna Declaration and enables to follow a world-wide strategy - to increase access to higher education using the diversified abilities of students in relevant age groups.

There are 12 accredited three-year Bachelor's degree courses followed with 7 two-year Master's degree courses in Mechanical Engineering. Completion of the bachelor's degree programme is the obligatory condition for admission to master's degree programme. Successful graduates can choose one of 9 Doctoral degree courses. All courses are provided both as the full-time and part time for more than 2000 students together in all types of study and all study years. The number of students is increasing. It is documented bellow [Fig. 1] for graduated students all types of study.

Fig. [1] Number of Graduated Students.



The main part of education is situated in Ostrava. On the base of the requirement of the firms and representatives of the Olomouc region, the external department of the FME has been founded for 2002/2003 academic year in _umperk. Lack of specialists in this region was the reason for this new external department. The other external departments have been founded in 2004/2005 academic year in Trinec and in Uhersky Brod. The reason for the foundation was the same – lack of the specialists.

The staff of FME provides tutorial for Faculty of Mining and Geology in Most and for Faculty of Safety Engineering in Prague too.

The students of FME study at the two types of study – full-time study and distance study. The students of the distance study have lectures without practical training, without possibility to show them application of the theoretical knowledge for the solution practical problems. Because of reasons mentioned above, it seems to be necessary to prepare study materials available for all students from all remote departments, all types of study - it means study material with internet support.

Study Materials with Internet Support – Computer Based Training

The study materials with internet support for subjects STATICS and WASTE MANAGEMENT were prepared and these materials were used during last academic year. Computer based training (CPB) is very useful study support. For subject STATICS the multimedia web sides have been used. The advantage of this multimedia web sides:

- Easy publishable
- Free access for all students without any restriction
- Possibility of using offline

Study Materials CPB for Subject STATICS

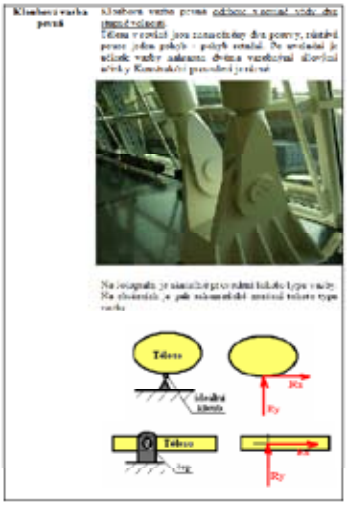
The study material for STATICS consists of four parts: study text with simple pictures and photos [Fig.2] , animations for easier understanding of the problems, practical examples for solution with results and some of them with way of solution [Fig.3] and the final test. The study material is on address: http://www.337.vsb.cz/materialy/Statika_nova_verze/index.htm and it is free for anybody.

This study material provides free access and it has been used by students FME full-time and distance study. Subject STATICS is for all students 1st year of bachelor study FME. After semester, students received the questionnaire with several questions. The aim was to receive information about study materials from the students point of the view.

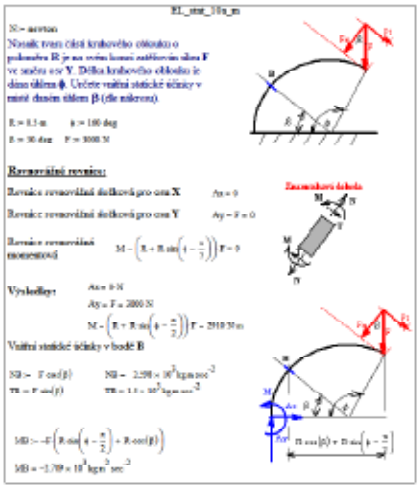
Questionnaire should give the authors answers to several questions:

- What study materials do they prefer?
- Computer based training is acceptable/unacceptable for study technical subjects?
- Advantage and disadvantage of CBT for study of technical subjects

[Fig.2]Example of Text Part



[Fig.3] Example with Way of Solution



77 students answered the questionnaire. The results are summarized in the table no.1

		N	%
Students prefer for study:	Own notes from presentations	33	42.8
	Study literature, text books	32	41.5
	Other – CPB and etc.	12	5.7
Computer Based Training:	Is acceptable for study	32	41.5
	Is not acceptable for study	5	
	It is necessary to combine it with other type of study literature	40	51.9
Not all students answered these questions (Sorted by frequency respons)			
Advantage of CBT	- Availability (majority) - Free access - Lucidity - Number of practical examples for solution		
Disadvantage of CBT	- No personal contact with lecturer - Lack of examples - Difficult to understand		

N – number of students

The result of the students answers is corresponding with experience of the lecturers. Especially, in occasion of the technical subjects, the personal contact with students is necessary. It gives the lecturers possibility to explain one problem from the different point of the view.

Conclusion

The development of the study, increasing of the number of students brings the new request for study materials and process of teaching. Computer based training is one of the new type of the education process. CBT cannot be the main type of study, especially for the technical orientated study. The students have to understand the problems. Personal contact between lecturers and students is irreplaceable.

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[1] Bilosova, A., Faktory ovliv_ující úsp__nost studia na Fakult_ strojní V_B-TUO, Diploma thesis, 25-48, (2009)

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