

CREATING WEB-BASED INFORMATION AND EDUCATIONAL RESOURCES FOR ENGINEERING GRAPHICS

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Abstract. Extra-enlarged amount of information and rapid, continuous progress in computer technologies change approach to education. The web-based information and educational resources are useful for learners in choosing how, when, where, and how often to learn. Engineering graphics enhances spatial understanding, which is so important in the process of engineering education. In order to provide high-level learning environment, available for all possible learners, engineering graphics specialists from all European Union Member States can create ISO Standards, which are adequate to web-based information and educational resources.

Key Words: Engineering graphics, education problems, web-based resources.

1. Introduction

Information age raises new requirements on the way we approach education. The technological revolution, the upcoming of the Internet and new information age together with the communication technologies, was born in the United States and basically built the US economy. The ‘Lisbon strategy’ set by the European Union aimed at becoming, within the decade, the most competitive and dynamic knowledge-based economy in the world [1]. One of the EU priorities is to step up investment in people and training, which are Europe’s chief assets. The European Union recognizes the importance of education and life-long learning, the need of learning several languages and having various technological skills. In the past few years substantial investments have been made in all countries in order to equip schools with Information and Communication Technology and to provide nearly 100% of them with an Internet connection and creating web-based information and educational resources [2].

2. Engineering graphics role in engineering training

Engineering graphics is a universal, technical language used by technically trained people worldwide as a tool for communication and design. Graphics illiteracy can not be tolerated in the Information age. The technologies of computer graphics have become more and more important, because there are more and more people willing to use them to create more imaginative information. Such information is especially important for whole education system, because as the studies show, the human brain processes visual information 400,000 times faster than text information [3]. Our educational goal is to train our students in a subject including the fundamentals of graphical communication over one-semester course. Understanding of the basic principles of drawing creation is required to provide either a pencil-on-a-paper drawing or to prepare it with the aid of the proper CAD software [4]. It is a very hard task, because like any other piece of knowledge, visual form becomes easier and more precise the longer you practice it. Just the saying ‘practice makes perfect’ is true also in this case.

3. Creating student-oriented learning environment

Learning how to learn is one of the main contemporary education problems. People do not see, they do not hear, or experience the world in the same way. They have very different preferences about learning. How, when, where and how often to learn? According to learning style theories, there are many ways of learning and knowing [5]. A student needs to bring information into his brain in many various ways. The more ways the better. The teachers are required to become more flexible and they must adapt their teaching styles to individual learning styles of the students. The teachers must not focus on their own styles of teaching.

We have difficulties with teaching in the classroom in some different ways together, but we must provide learners' environment stimulated by their preferred learning styles. In the author's opinion it is important to create a common, general European web-based information site, which will be combined with educational Engineering Graphics resources, where practical means will provide the learners with knowledge on various learning environments. Today, the excellence of teaching is neither produced nor measured at the national level, not even in the biggest European countries, but only at the level of the European or world community of teachers and researchers [6]. Much of our formal education still focuses on having people learn to do things that Information and Communications Technology systems can do much better than people [7].

The European Commission proposed to the European Council to set up a European Institute of Technology (EIT) intended to be a new flagship for excellence in higher education, research and innovation. The Commission concludes that the EU needs to concentrate its human, financial and physical resources in research and higher education better [8]. Maybe in the boundaries of the EIT, we can plan to create the Engineering Graphics web-based information and educational resources.

Following the system of managing people ideas [9], as the first step to reach this goal will be to organize the working team and to pay our attention to teamwork. It is desirable that the team members will be engineering graphics organizations or universities from all EU Member States. United team must organize the working up of resources version in English and each Member States' representative will prepare version in its native language.

The next step is to define schedule of meetings, team structure and functions of each member, sponsorship, method of data collecting etc.

Only sharing our information and working together, concentrating funding we can reach good results.

4. Conclusions

1. Creating ISO Standards adequate, oriented to different learning styles web-based information and educational Engineering graphics resources available for all possible learners is a practical solution in providing contemporary level of learning environment.
2. The European Institute of Technology can be a basis for organizing and creation of these resources and the organizers can be engineering graphics organizations or universities from all EU Member States.
3. Sharing our resources, working together, and concentrating funding can earn good results.

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TWORZENIE ŹRÓDEŁ WIEDZY I METOD NAUCZANIA GRAFIKI INŻYNIERSKIEJ W SIECI INTERNET

Wielość informacji, szybki rozwój technologii komputerowej zmienia podejście do nauczania. Sieciowe źródła wiedzy i zasoby koncepcji i metod nauczania są bardzo pożyteczne dla studentów i wykładowców w poszukiwaniu treści i form nauczania. Studiowanie grafiki inżynierskiej kształtuje wyobraźnię przestrzenną, co jest szczególnie ważne w kształceniu inżynierów. Aby zapewnić wysoki poziom kształcenia i by wiedza była dostępna dla wszystkich studiujących specjaliści w zakresie grafiki inżynierskiej UE powinni tworzyć w odpowiednich standardach ISO treści, koncepcje i metody nauczania i zamieszczać je w Internecie.