HOW TO INTEGRATE ICT INTO THE EDUCATION?

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Introduction

- Since we work at the Faculty of economics, we look at education from the perspectives of economists and managers. Many times it's interesting and useful!
- Knowledge and the implementation of innovations is considered as the key factor of success that can ensure economic growth for individuals, companies even for whole countries.
- It is not different in the school environment either.

The Knowledge Management

- represents a way of administering an organization focused on improvement and usage of intellectual capital, with the aim of getting an advantage in competition and customers' trust by effectiveness, innovation and faster decision making.
- In managers' practice is the ability to effectively use knowledge called „knowledge management".

# Application of knowledge management into education

- During our attempt to modernize the education we contemplated three pillars:
  - human's abilities,
  - processes and
  - technologies

  in their mutual relations and connections.
- We use a so-called holistic model of knowledge management. Application of this model consists of several steps:
  - learning before,
  - learning during and
  - learning after a task or action.

Learning before teaching process

- We draw a special attention to this preparatory phase.
- Our basic problems questions are:
  - What is the knowledge base students gained during their secondary school education in the field of computer science? How can they use these skills?
  - What is the base of the needed knowledge and skills in the field of using information and communication technology (ICT) for our students?
  - How and in which field is it possible to modernize the education through the implementation of various aspects of ICT so that students would be competitive on the labour market?

Percentage of students who deal with the topics and concepts at secondary school

N°	Topics/concepts	N°	Topics/concepts
1	Basic concepts (data, information)	8	Programming (Pascal, C++, Java)
2	Hardware (components, architecture)	9	Algorithms
3	Operation system (MS Windows, Linux)	10	Internet (protocols, IP address, DNS)
4	Text editor (MS Word, T602, TeX, …)	11	Internet services? (email, www, ICQ, ...)
5	Spreadsheet program (MS Excel, …)	12	Search machines on Internet?
6	Database systems (MS Access, ...)	13	Computer networks (LAN, WAN)
7	Creation of web pages	14	Information systems
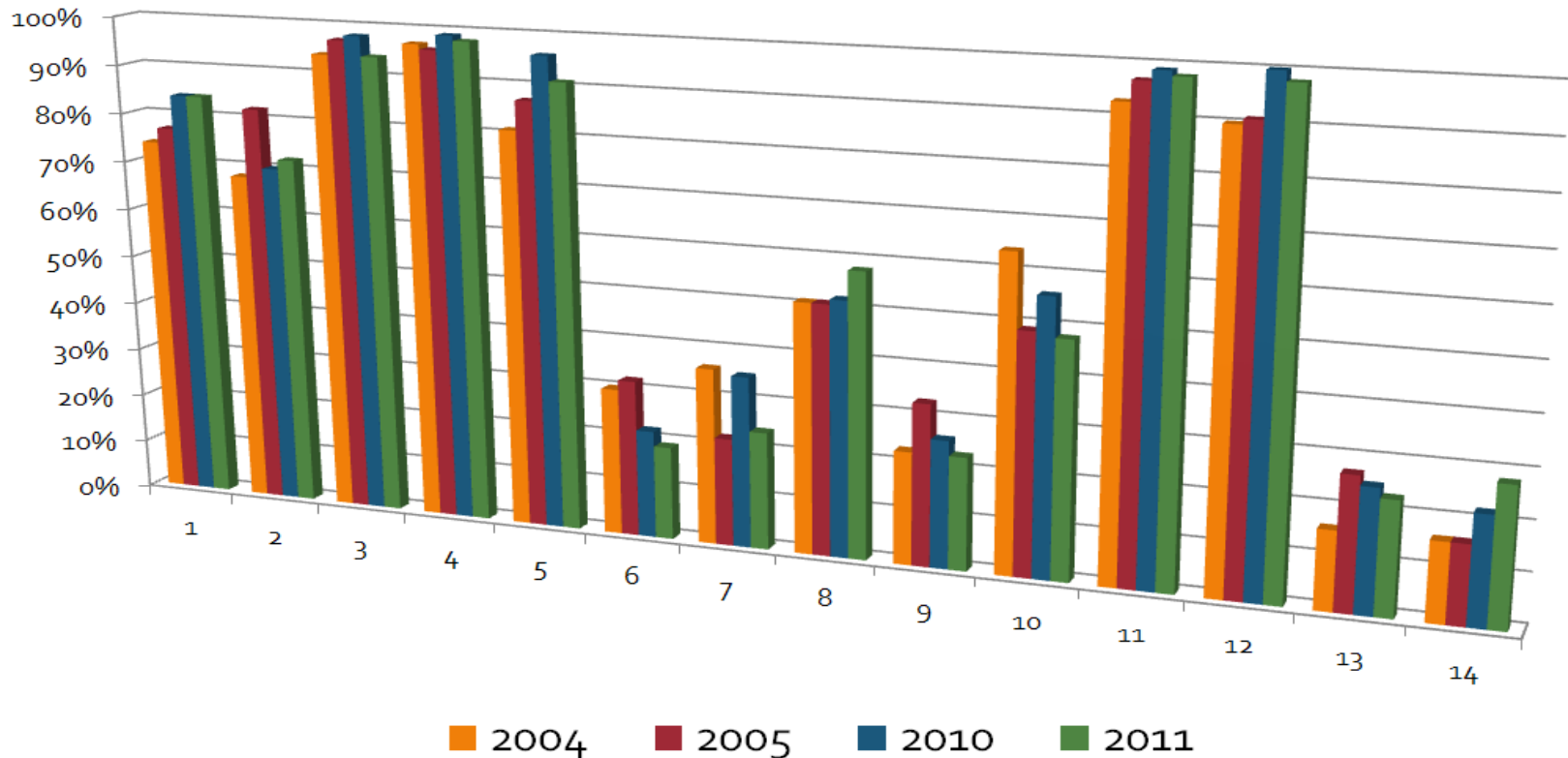
Percentage of evaluation levels of the user requirements projects

Level	2004	2005	2010	2011
A - acceptable;	3	2	2	2,5
B - mostly continuous text,partly incomplete;	6	9	11,5	7
C - extensive continuous text with typical lack of exactness, structure, relationships; extent from ½ sheet to 2 sheets.	17	24	21	16,5
D - text in extent from few lines to ½ of sheet; totally unsatisfactory	54	52	54	56
E - no elaboration; most of these students said: "I don´t know what to write.".	20	13	11,5	18
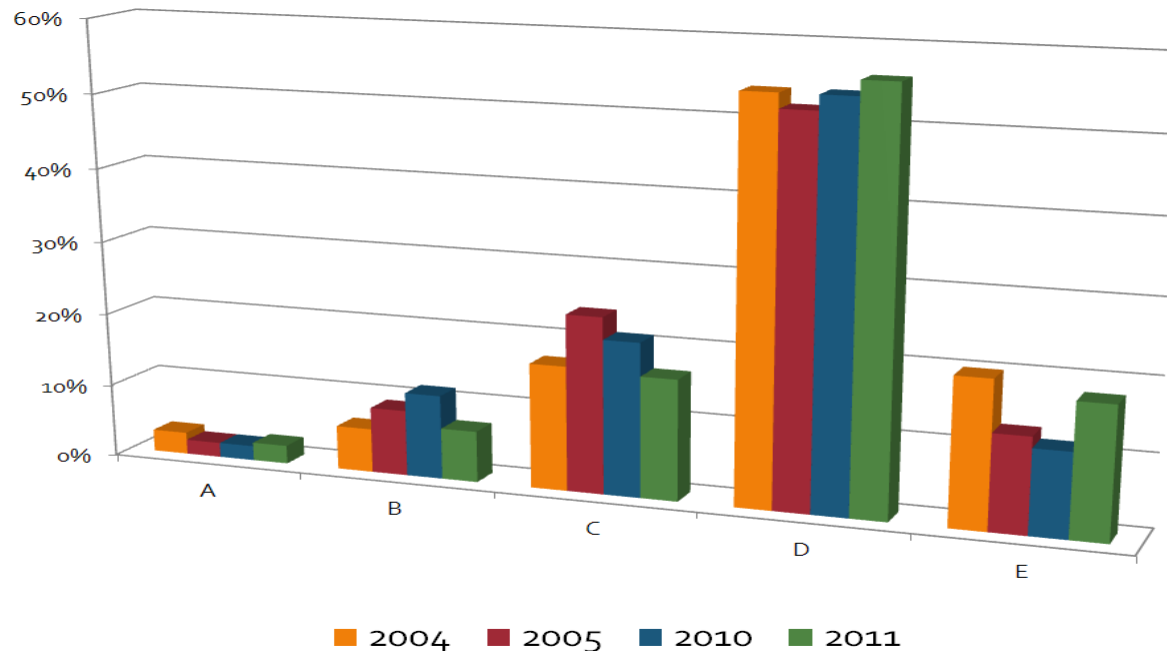
What is the base of the needed knowledge and skills?

- We consider changes in economic environment, development in computer science, development in the area of enterprise modelling and using modelling, simulation and application of knowledge in all areas of life.
- We think, that an advanced user - manager ought to be able to:
  - notice where it is necessary to improve processes or IS by using modern ICT,
  - understand the basic principles of modern technologies,
  - precisely define users' requirements in accordance of every user's needs,
  - create and control the business process model,
  - control the IS proposal in various forms, also a graphical one,
  - appreciate the importance of information strategies and correctly set up IS in a company,
  - actively participate on strategic planning of IS
  - understand such terms as life cycle, architecture of IS.

Modernization of education

- The main question we are dealing with is how to integrate into the education of the future advanced users many aspects of the ICT use.
- We developed an innovative manner of education based on modelling, simulation and on a well known opinion that "no kind of teaching can replace the personal experience".

Modernization of education

Subject Informatics II – second term – 13 weeks

First plane - classical way of teaching - lectures and exercises 2/2

MS Excel   MS Access   MSPowerPoint   Test

Second parallel plane - teaching/learning with application new attitude; the main aim: Development of User Requirements of Information System Project

Face to face teaching, 3 lectures   Project proposal   Project first draft   e-learning, learning-by doing, using Moodle, providing feedback   Project final version, evaluation

Example of students' project

Part

1 - questions and answers of theoretical background in the field of modelling and using IS;

2 - specification of the core business process by text and a graphic model;

3 - text form of user requirements on the IS;

4 - description of the functionality using UML use case diagram;the basis for the data model - UML class diagram

Learning during teaching process

- We can summarize our experience:
    - students accepted this topic and methods very well, many examples of common life can be used,
    - students need not much theoretical knowledge to work out simply project themselves,
    - students can use their own viewand creativity of solving problems,
    - teaching via modelling and simulation doesn't depend on the technical equipment of the school.
- The manner of the education is interesting for both students and teachers. We should see the connection between the sections of business informatics and information systems. There is possibility of real using e-learning, learning-by-doing, inter-subjects connections.
- However this way of education especially preparation for teaching is more time demanding.

Learning after teaching process

- At the end of semester we evaluate students' projects and provide feedback.
- Consequently, students present their projects which were modified according to the feedback they had got.

Conclusion

- In the proposed innovative way of teaching (the second parallel plane) we are trying to transform solving problem process into an active process of cognition.
- At the end we can say, that application of knowledge management is beneficial not only in business companies but also in educational institutes. It helps to create an environment in which people can without any problems use available knowledge with a high added value.

Thank you for your attention.

Contact

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