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INFILTRATION OF RFID TECHNOLOGICAL KNOWLEDGE IN TEACHING OF INFORMATICS TEACHER MA

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Abstract. We would like to present in this article how the teaching of informatics teacher MA is built in the Eszterhazy Karoly College. The project lab fits into this training, one of the possible project of which it is, making the acquaintance of RFID technology. We have started a RFID lab with that aim help of being occupied with RFID technological, knowledge of tools and examination of characteristic. This lab plays more role. Very important it should participate in competition projects and it should work in this. Likewise important it fit into teaching the students can get acquainted with this new technological, they can put into practice them and they can research during working. The lab is growing continuous with tools so it is possible the students can work in small group, can make little projects with these tools over the theoretical presentation.

Keywords: RFID, education, informatics teacher MA, lab practise

Introduction

The aim of teaching of informatics teacher is that it prepares the students to carry out educational, researching, planning tasks based on the qualification of basic grade or in the scope of higher qualification in public education. Besides they should be able to continue their studies in PhD training.

The acquisition of the knowledge divides into two big areas. Either is the speciality knowledge, such as:

- Informatics and society: The evolution of informatics. Informational and communicational technologies in the society. Data security, the protection of personal data. Legal, ethical, psychological and sociological relations.
- Informatics applications: Document creating. Presentation planning and implementation. Media informatics. Image processing. Graphical applications. Spread sheeting. Database management. Solving employer competition tasks.
- Algorithming and programming languages: The methods of algorithmically problem solution. Programming languages in public education. Program developing environments. Solving programming competition tasks.
- Informational technologies: Info communication, the role of informational technologies in the communication. Informatics surfaces of public utility, informational network services, basic knowledge and usage of informational technologies. Rudimentary library knowledge. Tutorials, e-learning.

Computer science knowledge:

- The basics of logic for programming and applications, theory of computing, automats and formal languages, artificial intelligence, other computer science knowledge.

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The other one is the specialisation methodology knowledge:

- Concepts of informatics, devices, the basic questions of the teaching of methods. The methodology of the problem solving.
- The main questions, methods, tools of teaching subjects: the fundamentals of informatics (hardware, software), document creating spread sheeting, database management, presentation and graphics, algorithming and programming languages, programming tools, information society, informational network services. Methods of evaluation (with special regard to graduation, respectively subject competitions).

Specific competences have to be worked up during the course, such as:

- suitable to use the school's informatics education devices expertly, to involve the informatics devices, distance education substances in his instructor work;
- onto an educational informatics curriculum development, the support of the informatics realization of an other academic specialisation curriculum development;
- onto informatics talent care, competition preparing;
- onto the informatics training of underprivileged ones;
- onto the cognition of new, modern informatics applications and the passing of this knowledge;
- onto the algorithmic expression of the solution of problems, the justification of the correctness of the solutions and the analysis of their efficiency;
- on the basis of his collaborative skill onto a group work;
- onto the following of the interaction of the informatics and the society.

The building in of the research and development and the talent care into the training

We invest serious work to discover those students who will hopefully gain nice scientific results, act well on TDK competitions, maybe, in the long run they will report teaching-researching supply. The inquiring students, respectively those who do well in the first semester attend short challenging lectures through two months given by the institution's researchers. Then they choose the most exciting topic for themselves and the researcher/teacher of course. The common work is already begins on the end of the second semester in BSc training which yields results in the second and third years. The students entering the MSc training can be fitted into the process. Their started work may be continued or they can choose a new topic on the announcing lectures. We schedule a so-called summer scholarship onto all summer which is supported by a foundation of public utility called „Abacus, for Informatics and Mathematics teaching and research", founded with to the Mathematics and Informatics Institution. We set tasks which can be solved under at most a month, the tasks are solved by the help of the supervisor, but mostly by self. The institution has got four project lab, where students can acquire teamwork in the framework of Project Lab subject. One part of the tasks solved here is usable in daily teaching or in the demonstration school, but there are tasks which point beyond the narrow school confines, and appear in industrial applications. The RFID (Radio Frequency Identification) lab is located in one of these labs.

Subjects in the training

Let us review what kind of subjects are in the informatics teacher MA training, and where Projekt Labor appears in this:

Preliminary subjects		**Req.**	**W. lesson**	**Prerequisite**	**Credit**	**Rec. semester**
code	**name**					
NMT_IF122G2	Programming environments	PM	2		2	1
NMT_IF103G2	The basics of artifical intellicence	PM	2		2	2
NMT_IF102K2	The basics of artifical intellicence	TE	2	NMT_IF103G2	2	2
	Sum total:				**6**	

Vocational subjects		Req.	W. lesson	Prerequisite	Credit	Rec. semester
code	name					
NMT_IF137K2	Data security in the informational society	TE	2	NMT_IF124G1**	2	3
NMT_IF108G1	Employer knowledge	PM	2		1	1
NMT_IF114G1	The application of graphical softwares	PM	2		1	1
NMT_IF129G2	Information technology competition tasks	PM	2		2	4
NMT_IF123K1	Programming languages in public education	TE	2	NMT_IF124G1	1	1
NMT_IF124G1	Programming languages in public education	PM	2		1	1
NMT_IF106K1	Algorithming, teaching of data modelling	TE	2	NMT_IF107G1	1	1
NMT_IF107G1	Algorithming, teaching of data modeling	PM	2		1	1
NMT_IF131G2	Distance education I.	PM	2	NMT_IF124G1**	2	3
NMT_IF111K2	Introduction into the library knowledge	TE	2		2	4
NMT_IF138K2	Advanced DBMS	TE	2	NMT_IF139G2	2	2
NMT_IF139G2	Advanced DBMS	PM	2		2	2
NMT_IF118G1	Models in education*	PM	2		1	4
NMT_IF112K2	Preparation onto the education of informatics*	TE	2	NMT_IF112G1	2	1,2
NMT_IF112G1	Preparation onto the education of informatics*	PM	2		1	1
NMT_IF109G3	The content elements of the education of informatics*	PM	4	NMT_IF124G1**	3	3
NMT_KR712G3	School teaching practice	PM	4		3	4
	Sum total:				**28**	

Differential vocational subjects		Req.	W. lesson	Prerequisite	Credit	Rec. semester
code	name					
NMT_IF101G3	The theory and practice of communication	PM	2		3	2,3,4
NMT_IF104K2	Databases in the school	TE	2	NMT_IF105G1	2	2,3,4,
NMT_IF105G1	Databases in the school	PM	2		1	2,3,4
NMT_IF115G2	Geometric modeling	PM	2		2	2,3,4
NMT_IF116K2	The history of informatics	TE	2		2	2,3,4
NMT_IF120K2	Computer simulation and measurement in education	TE	2		2	2,3,4
NMT_IF121G2	Operating systems in the school	PM	2		2	2,3,4
NMT_IF135K2	Dialogic informatics systems	TE	2		2	2,3,4
NMT_IF126G3	**Project lab**	**PM**	**4**		**3**	**2,3,4**
NMT_IF127K2	Project seminar: New tendencies in modeling of infocommunication networks	TE	2	NMT_IF128G2	2	2,3,4
NMT_IF128G2	Project seminar: New tendencies in modeling of infocommunication networks	PM	2		2	2,3,4
NMT_IF136G2	Free softwares in education	PM	2		2	1,3
NMT_IF132G2	Distance education II.	PM	2	NMT_IF131G2	2	2,3,4
NMT_IF133G2	Dynamic web programming	PM	2		2	2,3,4
	Sum total:				**29**	

We can see, that the subject received place between the differentiated vocational objects. Four hours of practice weekly which is worth 3 credits.

The construction of the subject can be grouped around three main project directions.

1st Project

The available project is collective software development in labs. First of all the student get the hang of the basic concepts of the software development, like for example life cycle, software crisis.

They get two project tasks, a smaller one and a bigger one. They solve the problem in pair, where one of the members is a project manager, the other is a programmer. The occurring mistakes in the course of the program are stored in a mistake tracking system (for example: bugzilla), for the tracing of the changes they are using version follower system (for example: CVS - Concurrent Versions System).

In the software development the CVS allows of the branches easy formation and its maintenance, by this we can use with parallel development an issue's + patch source, and a timely developer tree. It was ready project it is documented. They present the result of the project. The completed projects are documented by them. They present the result of the project.

2nd Project

They take part in performance of a RFID (radio frequency identification) model system, during this they get acquainted with the RFID and the automatic identification's bases. They do the projects in four head groups. It is possible to try the results at an industrial firm using exterior, technology like this, to inspect the industrial use concerned.

3rd Project

Cryptography lab activity. The students digest the more important cryptographic procedures in the framework of a small group project task, and it is accomplished selecting one from this software. All the mathematical and informatics approach have to lay an emphasis.

The RFID lab, and the related projects

The lab forming avoided in the mathematical and informatics institute. Some part of the equipment was given by the institute. Such as furniture, three workstations, and a server. These machines allow doing the essential development works. As well as in the framework of the summer scholarship the students can work calmly. The summer scholarship, is a research scholarship announced by the Abacus foundation, which is mainly for those students whose learn for the OTDK, and provide them two weeks in the summer holiday, when in the institute, using the institute's devices, they may work with teacher leadership.

He managed to obtain the target devices of the lab from a support by an industrial firm. The devices are an industrial tag printer with big performance and RFID writer, and a mobile RFID reader, equipped with a compatible industrial PDA.

Figure 1. *Industrial printer*

Figure 2. *Mobile RFID reader and writer with PDA*

This insures the role of the RFID gate's until, a fixed setup gate, and RFID reading device do not get to purchase. The mobile reader makes it possible in order for us to be able to make examinations apart from the walls of the lab. The devices added diverse with RFID passive tag. Between these can be found, those paper based passive tag what was used by the printer, and for industrial circumstances suitable excellently hard tag.

We start the examination by the usage of the passive tagek. One of the reasons of this in order for the specification of the running projects starting now to require these better. On the other hand for the learning, the accomplishment of the examinations and the cognition of the system excellently suitable, and their price much more favourable, than the active tag's. [3]

Figure 3. *Complex workstation*

They are proceeding about the lab on an application won works being attached to projects, just as well, than mini projects like that, which aim of his the students acquainting it RFID with technology, its usage, its areas of application.

Summary

Summarized, between the differentiated vocational objects inbuilt project lab an object supports the importance of the practice on lifted one in the training. The projects appearing in its provide an opportunity for the students in order for our days to get the hang of a leader's technologies. All the modern software technique, RFID all spreading in the increasingly better one technique worthy that way, that the prospective informatics let teachers receive a picture from the function, and from the different areas of the use.

However the purchase of the advanced devices and its operation may not come true without a support. For this you are in the applications it is possible to find a source, you are the industry his participants we may receive a financial support. This only in case possible, if we can build in such training to our

supply that gives rise to interest in the industrial firms' leaders. or which one claim the workforce arises on a market.

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