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Modular structure and dynamic adaptive character of teaching

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Abstract

The study describes the model of modular structure of content and adaptive character of teaching the subject Informatics for students of Faculty of Education at the J. Selye University in Komárno. In the most countries of the world, its trend to create expectations for result of the schools work, we can say standards, which could be regularly controlled. From the most of products it's required to answer for predetermined standards, and these standards or norms are strictly controlled. In schools they don't do it. Nobody guaranteed, that the student of that school in which he learn the knowledge, skills, etc.
Legitimating of the tutoring outcome is different in several countries. Results of crude tutoring, in Slovak Republic is recognized with successful ending of the secondary school studies, high-school graduation, final exam, graduate exam and state examination. On European level there are no existing rules and regulation.
In this paper we are analyses the current stage of the problem, provides definition of information competency, the standards of information competency are listed, emphasis is put on key competences as the concept of curricula, defining the modul system and subject system in IT education, explaining their advantages and disadvantages.
Schools must to keep tempo with rapid improvement of technology, appraisal of social changes. They must to receive new form of teaching based on the results of appraisals about, how people learn, about effective usage of technology and skilfulness for 21st century. Student, who comes to university, have particular abilities and knowledge about Information and Communication Technology, however the standards are different on every type of secondary schools. That's why universities have to accept new conditions, and teach to student's tutorials, which they don't know.

Keywords:
Choice of Methods
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ICT
adaptive teaching
Informatics

1 Teaching modules

Demonstrate results of education in connection to content of education in singles teaching majors. Express forms, way and content of activity that students have to acquire beneath their studies. Part of educational modules are time support set for the given subject, aim of teaching, function of subject/module, specific steps, form and organisation of education, connection between subjects and didactic source.

Selection of tutorial

The main criteria for selection of the tutorial are the determining those factors, which mostly influences the achievement of educational aim. As the aim changes in the connection of social improvement, the opinion for the choice changes too.

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Arrangement of tutorial

That in education don't occur don't wanted empty gaps, where is missing connection between, what is known and what has to be known, neither to don't reasoned duplication, it's need to correctly structuralize and sort the whole tutorial.

Subject system of education means the education of the given subject as a whole, while the sort of the tutorial is like spiral.

Modular system of education means education of the given subject divided to single parts – modules, while the sort of the given subject is modular. The tutorial is build up from modules.

1.1 Modular sorting of tutorial

Word **module** means in general as independent part (unit), which is complete, but which could be connected to another units and together with them create a bigger unit, supplying to rich wider aims, or the solution of more compounded tasks. So we can say, that module represents an independent unit of a puzzle.

In pedagogy expression module means the independent part of the tutorial, and modular sorting of tutorial means a tutorial of a specific type of school, course, etc., not divided into subjects, subjects divided into themes, but tutorial divided into modules. Time necessary for receiving the module of tutorial used to be shorter, than the duration of the educated subject, about 15-40 teaching hours.

Expression **modular system of education** means expanded receiving the tutorial of the single modules, from which the school program is build up. Certain education – getting a certificate, diploma, etc., is understudied as a puzzle created from fixed number of modules. Successfully learned tutorial from a determined module is introducing the constant part of the puzzle – of the learning and it's not necessary in time, e.g. after some years, to learn again the same tutorial. (2)

1.2 The necessity of realization the modular system of education

Quality is the measure of the perfection, preciousness, usefulness of the education and learning, fulfilling of requirement and expectations of the schools clients: pupils, students, parents, employees, citizens of the country. Quality of the education is able to continuously rise without consideration of the actual level.

Internally the subject informatics on the university is possible to reach only modularly, so all students can study only that, what they don't know. Different kinds of secondary schools have different standards, which students have to reach. There are big differences between the students, who are applying to universities from the area of informatics, and which affect the competence and practical abilities from the enfaced area. Wherever in this area are existing standards, which influences the level of information ability of the senior, in the most cases the knowledge of the students, which are starting the first year on the university, are not reaching this standard. The reasons of these imperfections are different. One of the reasons could be the kind of secondary school, as the level of teaching information and communication technology (ICT). Next reason of the big difference, that not all of the students has connection to these disciplines, and from a lot of students is missing the motivation. The first two reasons we can classify to external conditions of education, which are closely connected with the preparedness of the school, which is concerning with the tooling of material-technology basics and preparedness of the students. The material and technology tooling of the education is the question of the finance, and in a short time it could be changed from the nought to above the average. With the preparedness of the students, it is not so easy. It could be possible, that the different knowledge of the students, coming to universities, will be a problem for a long time. That's why it could be a good solution the modular system of education informatics – teach somebody that, what he doesn't know with a help of cloak test.

For ensure of the informational knowledge on single levels, the educational programs contains basic and special subjects oriented for computing, informatics and information communication technologies.

1.2.1 Subject system of education on the PF of UJS in Komarno

On the Faculty of Education of UJS subject informatics is educated two semesters. The weekly schedule is the following: two hours of lecture and two hours of practice, so 56 hours of informatics for one semester. The winter semester is divided into 14 weeks, and each week has different determined contain of lectures as practices too. This contain of the subject must finish all students in the first class on EF of UJS, wherever their abilities reached on the secondary schools are respected.

2 An offer for modular system of education on the PF UJS in Komarno

To avoid redundancy in the education process, and that all students could make connection between the present studies and studies before about informatics was created the modular system of education of this subject, wherever the main attention is on the type of finished secondary school. Every type of secondary school has an elaborated standard from the subject informatics, which students have to reach.

Modules, which providing as a over to education in modular system way, has particular determined instructions to education, introduction, aims of the module, contently and effect standard, tutor text, summary, auto test, extra literature, ending and bibliographic links.

Modular system of education containing from 5 modules, where modules 1,2 and 3 are educated in the first – winter semester on the PF of UJS and modules 4 and 5 in the second – summer semester. Each module contains about 20 hours – together for one year it is 104 teaching hours. In the beginning of the first semester students works out an entering test, which is out worked modularly, and by the results they sing up for the module, which they don't know.

Offer for the content and aim single modules

Educational support of modules are divided and structured, that the learning of the participants would be maximally effective. Affectivity mainly is on, that participant could concentrate on the learning content, because he's not occupied with the study, because the study text contains elements which accelerate the right auto regulation. Participants after the signing up to the subject (course) get the study material.

The input diagnostics of the module – lector with the help of diagnostic dialog and cloak test conclude the knowledge and ability of the student. If it's need to the lector define an individual task (or more), which participant of the course solve and send in electronic way to lector for evaluation. With this way it will be ensured the comparable level of incoming knowledge and abilities of the participant and established a requirement for successful absolving of the course.

2.1 Cloak and emergent test

One of the parts of the tutorial process is feedback of the students. In consideration of**,** that students after the cloak test will be divided into groups, test could be anonym. The questions was selected based on them practical usefulness for the valuation of modules and according to standards for the standard high schools worked out by pedagogic institution. In the beginning of the semester students get two types of tests. First test is dealing with the basics of the information, about the finished secondary school, number of hours from informatics weekly, as basic knowledge about the subject. The second test is divided up to 5 modules, where students must to answer for questions, wherever all of the questions has value of 1 point. By the results, were worked out individual studying plan for students, by which they visit the hours. In the end of the semester they must to take the same test – cloak test, where was checked the affectivity of the teaching process and reached knowledge from the semester, and than they were compared with the first – cloak test.

2.2 Results of the experiment

The number of students, who have worked out the cloak test in the first semester, was 181. We had divided students into two groups – A and B. In the group A were 89 students – the education of informatics was in subject system, in the group B were 92 students, the education was in modular system way. Students must reach minimally 60%, to not repeat the test.

Total claim of students on PF of UJS first year

Modules	Don't have to take module	Must to take module	Together
Module 1	107	74	181
Module 2	99	82	181
Module 3	52	132	181
Module 4	20	161	181
Module 5	0	181	181

Table no. 1 Result of the formula in the first class

From the results, it's excelling, that from the fifth module, any one of the students doesn't answer rightly to the questions, however themes are in the standards. It could be reasonable with the not learned tutorial, the not interest of the students about informatics, or forgetting the tutorial, which could be the cause of not reading the tutorial for a longer time. While in high-schools informatics is educated only in the first class – as it is reflected from the form – it's very plausible, that the bad results from the fifth module is caused by the forgetting to the tutorial.

Weeks	1 - 5	6-9	10-14
Need	74	82	132
Don't need	107	99	52
Number of groups in week	**3**	**3**	**5**

Table no. 2 Number of needed groups in weeks in the first semester

Therefore in the first semester are educated only modules 1,2 and 3, we had divided the semester in to three parts.

The number of contact hours based on the facts from the table no. 2 will be decreased 38%. Originally for 181 students it is necessary to create 6 groups, so-called number of hours of informatics in semester could be 336. After the applying modular system of teaching, the number of contact hours will be decreased for 208 hours for a semester. Exam from the subject must take all of the students.

3 Conclusion

With respect to, that the transformation of subject system of teaching to modular system of teaching belongs to the most actual themes in the university system, the main benefits will be:

- Working out modular system of teaching of informatics in theoretical field, as in practical realisation too.
- With the survey we have find out, that the launch of the modular system of teaching is reachable with individualisation of preparing students in big quantities and finally rationalisation of the teachers work and reach higher affectivity of the teaching process.
- Launching the modular structure of content and adaptive method of teaching subject of informatics will save the needed number of contact hours of the teaching hours. It follows that the requirements for the classrooms technique will be fewer.

- The chance to use the teaching method "learning by doing" as the compensation absolving the contact hour.
- The number of needed direct teaching hours will be decreased 38%. Single thematically wholes probably will have different replacement in the time plan of teaching process.

In the validation process of the modular system of teaching it's need to work with the process of cloak motivation, with the process of rating and classification of single modules with the process of exposition of the new tutorial, with the process of defining the home work.

In the beginning of the semester its need to find out, the level of the students knowledge in the first class on the Faculty of Education of UJS in the area of informatics, and its need to find out their requirement and their preferable learning style.

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