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Abstract: Distant learning with the support of modern information and communicative technologies is a frequently discussed field at all progressive institutions of education nowadays. Today there is a range of software assistance for the creation of on-line courses and education management by means of internet. It is, however, necessary that the information systems intended for the creation of learning support and learning management, including all the necessary feedback, did not exist as isolated in order that they employ and provide data reversely during their mutual interaction which are contained respectively necessary for work of other information wholes such as information systems for the support of university management in all the fields of its activities.

The role of ICT in education and their optimizing during complex implementation into pedagogical process will certainly grow not only in the area of present, distant and combined forms of studies but mainly in the area of lifelong learning. Many countries such as France, Canada, the USA, Finland etc. are more developed than we are in this area. It is caused by a different historical development. It can be, however, predicted that development of distant learning with the support of ICT will be quicker in our country because of transmission of experience from other countries and quick dissemination of ICT into all fields of life of society.

One of the changes brought by ICT into the learning process is a partial shift of the importance of pedagogues. Simpler and quicker approach to data is a reason for limitation of need of extended memorizing of large quantities of data. A pedagogue will have to struggle to coordinate student work much more than just convey them facts. This way is obviously a first-rate domain of university teachers.

E-learning

E-learning (EL) represents a brand new approach to teaching process with the use of modern information and communicative technologies. EL is a suitable tool for educating and training staff members of establishments, firms, companies, organizations, institutions of state administration etc. Because of its characteristics it can be employed with an advantage for the support of distant and combined forms of studies at universities. At many faculties the projects of virtual universities has been started, they are something like a vision of the future, which should ensure diffusal of contemporary offer of studies at universities and this way the increase in the number of both potential and real students.

In contrast with traditional teaching, EL represents a brand new concept of educational process. During traditional lesson a teacher, a pedagogue or another competent person frequently conveys facts to a group of people, and a teacher can respond to prospective questions, and make accurate more complex issues. It is necessary during this that both the lecturing teacher and the students should be present. Therefore teaching and training with attendance need exactly determined schedules. These are quite limiting factors if we take into

consideration that the students may be also older people, better expressed, people that study within the framework of distant forms of studies. Lessons on particular hours are rather unsuitable for the distant forms of studies. And EL is intended right for these purposes because of the two advantages:

- **Geographical independence** – it is possible to work with teaching materials and consult the teachers or other students on necessary matters from *anywhere* (from any computer connected to internet).
- **Time independence** – It is possible to work with teaching materials and to consult the teachers and other students on necessary matters (mainly in asynchronous way) *anytime*.

Geographical and time independence are of enormous importance e.g. for handicapped fellow citizens, for employed young people who have started a family and want to study (to educate oneselves generally) during the time when their baby is asleep (during day or anytime at night), staff members in the time assigned to studying by the employer, soldiers in their spare time (when they are off duty) etc. Many more similar examples can be still found.

Software tools for the support of distant learning management at the School of Business Administration

ATHOS

Pedagogical information system at the School of Business Administration, ATHOS, has been created by the staff members of the School, and it processes the following agendas and subsystems:

- **Student and studies** – it reflects the requirements for monitoring the data on students and their studies SIMS. A student is not monitored anymore, but his study (registration, schedule, and results are put to studies, not to the students). The register of students is in consistence with SIMS, and it allows generation of outputs necessary for the needs of the central register anytime. Also the problem of more but the same students in the register was removed this way. Every student is registered as a physical person just once, with more possibilities of kinds and forms of studies concerning this person. It allows an exact monitoring of student′s studies in terms, school years, including exact changes in any data concerning studies (a change in form, subject, financing etc.). The studies are distinguished according to a type – standard, lifelong, foreigner. It allows monitoring of our students′stays abroad.
- **Results** – All the teachers have a possibility to put out the examination dates for their subjects. One date is possible for more forms of studies and more subjects. After setting the date, a particular room of the school is blocked automatically. It will be possible to add the remark „unmarked" to the results in cases when the student has registered the subjects and finished his studies in the middle of them.
- **Subjects** – contains the history of accreditation, accreditations recently put into the database.
- **Booking of lecture rooms** – a schedule for the whole term is generated automatically for any item of the schedule, which enables watching booking of the rooms both in traditional way and in a graphic way. Every staff member can book a room for his/her own needs, booking is obviously checked, and the links are considered too (the same teacher schedule – the same teacher date of exam and so on). It is only the data system Athos what checks

booking of the rooms. It is possible to find an empty lecture room after inserting required information (day, time from to, requirements for a room…).

- **Personal Menu** – every admitted user has a menu of his/her own, a students have a menu „Student", a staff member has a menu „Staff member" and „Section" (menu of its section). A presently admitted user is recognized and his possibilities are offered to him/her. Users can also see their personal cards, it means all the information held at the faculty about the student.
- **Statistics** – enables all the legitimate users access to a view of number of students in detail according to programs, types of programs, forms and subjects of studies for any day, even back into history.
- **Registration, Schedule** – enables registration of students to particular subjects and consequently to apply their requirements for the schedule.

TUTOR 2000

The system TUTOR 2000 ensures needs for management and evaluation of electronic courses in a complex way on one hand, and with the needs to maximize returnability of investments into education on the other hand. It is set only to manage e-learning courses, and it is consistently oriented to platform independence. It belongs to a group of systems indicated as LMS, it means Learning Managing System. It is supported by Czech ambience.

- **Student division** of the system enables the students an immediate access to allocated courses, a catalogue of courses, news or information for identification. It contains such information on courses as: length of duration, contents, time spent or a number of points achieved. The courses can be put on from this division, and the student can come back to place where he/she had finished. By means of this division the student can communicate with other students or teachers both on-line and off-line. Supervision division enables legitimate persons effectively set students, courses, creation of hierarchical structure of organizations and courses, alloting a particular group of students required courses, monitoring of activities of individual students and evaluate data on particular courses and students. It is possible to define a conditioned management of teaching here, to import courses and organizational structures from other systems, to print required materials, or to found discussion clubs over the courses or groups. Division Tester 2000 enables the legitimate people to define unlimited number of questions of many kinds and these questions can be classified into a field of questions. Furthermore it is possible to define rules according which the tests will be automatically generated. In the rule a test can be divided into unlimited number of blocks, each block defines a field of questions from which it stems and the way of it (all the questions from the field, X questions in random or concrete questions), further it is possible to determine a specific behaviour in the block and access of controlling elements. On pressing one key the system will generate a test of required qualities, which will be automatically shown in the supervisor division if it can be alloted to required users.

- **Flexible solution** – Support to AICC standard enables a supervision of courses produced by means of tools of the distinguished world suppliers of developmental tools for the creation of courses as click2learn.com, NETg, SkillSoft, SmartForce.com, or Macromedia. The employed technologies such as MS SQL Server, MSDE, Oracle and MTS enable growth of the system with the growth of the customer′organization. This is also consistent with the pricing policy, the system can be not only bought but it can also be used as hired or in

the form of full outsourcing. The system can be fully integrated into the standards and other customer′ systems, e.g. SAP R/3.

The connection of LMS with the IS of the university

The faculty IS permeates the whole structure of the faculty, and therefore it must function as an integrated system enabling communication between individual departments. The IS of the university belongs to a field of social-economic information systems. Every IS is a number of individual subsystems, each of which contains functions ensuring enhanced labour effectiveness in the sections. We can find the following subsystems in a general model of university:

- Subsystem „Pedagogy"
- Subsystem „Research and development"
- Subsystem „Human resources science"
- Subsystem „Economics"
- Subsystem „Operational-administrative"
- Subsystem „Accomodation and board office"
- Subsystem „Library".

To implement distant learning by means of ICT into teaching activities of the university it is necessary to have prepared comprehensive functioning structure of the system of management of distant learning (LMS – Learning Managing System) (at the School of Business Administration TUTOR 2000) and of information system. A basic requirement is a linkage of TUTOR 2000 with the subsystem Pedagogy, especially with its part Student and studies.

Structure of distant course

If we consider distant learning as education supported by EL, then every course is created as an electronic textbook. Teaching materials intended for EL are designed into so called hypermultimedial look, which means that they contain not only a basic text and hypertext but also photographs, videosequences, audiosequences, interactive elements and their combinations. Pictures, videos and suitably written hypertexts together with interaction, which should be a part of any teaching material, enhance effectiveness and quick understanding of the matter learnt.

The course containing individual modules is at the highest level. The situation can be illustrated as a subject containing individual lectures. Each lesson is created according to suggested standards of textbook texts intended for distant learning. It contains not only a matter of the subject but also exercises, homework, and tests etc. Individual courses and their lessons are available in the ambience TUTOR 2000.

Monitoring of studies by means of the system TUTOR 2000

A computer can be used to work with the course, and the used technologies together with LMS enable monitoring of studies of individual clients. If the client is connected to a server, and begins to work with the lesson of the course, then TUTOR notices data about his/her work with the course, with particular lessons. The whole process of the study of the course is monitored only in the TUTOR ambience.

Because of the development of the distant form of studies we can predict a great increase in the number of students. To make managing activities of the studies more effective LMS and the university IS will be integrated. LMS and IS cannot be expected to exist by themselves. The connection of LMS and the university IS appears as a crucial step for implementation of effective management of distant learning. The basic condition is that the university IS, as well as LMS are open systems, it means systems from/to which it is possible to extract/insert data in formats defined in a specific way. It all depends on the university IS and used LMS.

Steps to support distant learning at the School of Business Administration in Karvina (SBA)

At the SBA in Karvina a number of steps with the aim of creation of the above-described connections and an integrated system have already been implemented. The ATHOS pedagogical system is fully used, and its operation can be designated as useful. Presently a testing phase of TUTOR 2000 possibilities is under operation. The first demo- lessons are created, which are implemented into the TUTOR ambience. They are available at http://elearning.opf.slu.cz/.

An important assisting element is organizing of VIRTUNIV seminars, which are being implemented between three universities in the Moravian-Silesian region. It is the Silesian University, University in Ostrava, and VŠB- the Technical University in Ostrava. Seminars are of great benefit for the reason of transmission of experience during realization and implementation of assisting elements at individual universities. This kind of cooperation proves to be useful, and it makes the development of study programs for distant forms of studies quicker. After the implementation of study programs for distant form of studies we can expect a much large opening of the institutions of higher education to students, but also to other universities. Distant studies presuppose open educational system. This can be created only if the presupposition of cooperation between individual universities will be fulfilled.

Summary

A distant form of education is a new alternative for enhancing education of our society in our country. One of the assisting elements of distant learning is e-learning, which seems to be a good way of dissemination of information in the age of development of information society and a quick implementation of information and communicative technologies. The whole process of distant learning with the use of e-learning must be controlled by appropriate systems, generally marked as LMS (Learning Managing System). These cannot exist by themselves, but they must be consistent and integrated within the information system of the university. Because distant learning is not fully implemented anywhere in our country, to accelerate the process of implementation it is necessary that all the universities cooperate, which should ensure quicker dissemination of experience with the realization and implementation of the distant form of studies. Only this way a quality functioning open system of education can be created.

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