DISTANCE EDUCATION IN FURTHER PROFESSIONAL TRAINING IN ENTERPRISES DURING PANDEMIC PERIOD

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ABSTRACT

Constraints on our personal and professional life imposed by the COVID 19 pandemic have radically influenced our approach to forms of education, including those used in further professional training of employees. This shift means the focus on distance education as a managed educational form, which is suitable for further professional training. The aim of the paper is to present the implementation of distance education in further professional training in enterprises and based on the empirical research propose ways of improving options of education. Distance education is characterised in terms of its principles and developmental stages. Its first generation was correspondence education. The Learning Management System (LMS) and Learning Content Management System (LCMS) are described as the systems applied in further professional training. The research was conducted by means of the questionnaire method, combined with the pre-research survey. Results of empirical research are presented in tables. Separate parts of the paper deal with ICT application in corporate education (correspondence education, Computer-based training (CBT), Web-based training (WBT), Technology Based Training (TBT) and with the utilisation of Learning Management Systems (LMS). Analysis of respondent opinions shows that respondents tend to prefer the face-to-face form of corporate education. The length of the pandemic is going to affect the spread of e-learning in corporate education and its role in education. The learners' interest may be expected to be shifted to LCM and LCMS utilisation. The paper is a partial result of the research scheme VEGA No. 1/0309/18 "Social networks in human resource management" supported by the Ministry of Education, Science and Research and Sports, Slovakia.

Keywords: *distance education, further professional education, correspondence education*

INTRODUCTION

In addition to the educational function, education in further professional education in enterprises also fulfils the information and communication function. This function is manifested not only in the training of employees, who can be trained individually, in groups and collectively, but in teams, which is

accompanied with the complex and original solution to many work-related problems. In the employee education and training, managed forms of education focus mainly on face-to-face form of education in numerous enterprises. Cooperative forms of education are also used, and these are based on the cooperation of learners. Participants are guided to develop the skills related to dividing social roles, planning activities, dividing tasks, learning to advise each other and combining partial results into a meaningful whole. This kind of cooperative learning leads to team working, participative learning, as well as to developing delegation abilities, conducting mutual control, and the like. However, these proven forms of education are currently influenced by the COVID 19 pandemic, which has resulted in the reduction in personal contacts and relationships also in corporate educational activities. The emergence of a global pandemic has damaged the economies of many enterprises to the extent that they have been forced to apply for state aid in order to avoid dismissals and ensure their economic survival. The resulting crisis has divided the enterprises into two groups: those that have reduced their activities or closed down for economic reasons and those whose financial means enabled them to change their core business activities to training employees for their future work in changed conditions. However, established and traditional forms of education have had to change, too. **Distance education** has come to the forefront of interest, and this is the topic we deal with in the paper and the focus of empirical research in terms of its application of distance education in further corporate education. During its development, distance education has experienced several developmental stages, related to the ICT development and employee abilities and their application in managed education. The paper is part of the VEGA project no. 1/0309/18 “Social networks in human resources management” while the aims of the paper are in line with those of the project.

Distance education and further professional corporate education

Distance education as a planned instruction belongs to the controlled forms of education is suitable for further professional corporate education. Distance education is a form of study based on self-study in which learners are not in daily personal contact with the lecturer; instead, they study independently and most of the learning takes place remote from the lecturer locally and sometimes also in time. A successful distance learning depends, above all, on a high motivation to study and the learners’ abilities to systematically manage their spare time and learning. It is a managed active self-education adapted to the learners’ pace and abilities and supplemented with consultations using various communication media. This form of education was also attractive in the past, when information and communication technologies were less developed, and correspondence education was applied. Correspondence education is the first generation of distance education and its creation was supported by spatial distances and the impossibility of regularly participating in full-time education. The Editors of Encyclopaedia Britannica explain the concept of correspondence education as follows: **“Correspondence education (is),** method of providing education for non-resident students, primarily adults, who receive lessons and exercises through

the mails or some other device and, upon completion, return them for analysis, criticism, and grading. It is extensively used by business and industry in training programs, by men and women in the armed forces, and by the governments of many nations as part of their educational program. It supplements other forms of education and makes independent study programmes readily available." [5]

Beginnings of correspondence education can be traced to the mid 19th century in the United Kingdom. Its rise was connected with industrial and urban development in Great Britain, United States and Germany. Sometimes, the instruction in these courses was a "combination of home study and resident seminars or laboratory work" and included for example sound records or tapes, films, or videotapes, and under specific conditions such as in the Australian outback also a two-way radio and a transceiver. The arrival of email in the 20th century contributed to its spread and increased the speed of teacher–learner communication. [5] Nowadays, distance education is perceived as a multimedia form of managed study, which provides new educational opportunities and supportive educational services usually for self-learning participants. The quality of distance education also depends on the provision of supportive educational services in study and counselling centres, available to all study participants. With the development of hardware and software, and information and communication technologies (ICT), new possibilities have also been created in distance education. Classic materials and information packages together with teaching materials in the form of printed documents are gradually being transformed into electronic textbooks and software packages supporting interactive and individual education. In addition to teaching materials, management education systems have also changed. Software systems have been designed that not only contain curricula, offer subjects and thematic units supplemented with electronic materials, and other teaching aids, but also support their organizational and administrative aspects.

More broadly, e-learning could be defined as a tool for designing, updating, distributing, and evaluating education and knowledge management through network technologies and a computer with appropriate software and hardware [7]. E-learning also includes knowledge management systems and learning management systems (LMS) and systems for content management and provision of electronic courses (LCMS) [9]. It exists in several basic variants depending on the communication technology it uses [3] and is basically divided into off-line and on-line e-learning. Online e-learning is characteristic of interconnected computers in the network, through which information is transmitted, and this way, the learners are connected. [6], [1]. On-line e-learning comes in two basic forms of communication, namely synchronous and asynchronous [11]. The synchronous version of online e-learning requires a constant connection to the network and allows the learner to be connected to the lecturer (tutor) and other learners at a given moment. Here, time independence is lost [4], but its great advantage is the ability to communicate over long distances using chat, virtual phone, interactive video, video conferencing service, etc. Synchronous communication takes place

in real time, i.e. actors have to be present at the same time. Historically, it was the telephone connection that first made synchronous communication possible. Today, it is also possible to use Internet telephony (e.g. Skype). The ICT development has enabled the emergence of other means of communication, such as chat or video conferencing [2]. The asynchronous version of e-learning is less demanding; it does not require a permanent connection to a computer network. Participants and the lecturer communicate through standard e-mail, web, Skype consultations, discussion forums – discussion groups [10], and the like. This version uses all forms of asynchronous communication and various didactic activities: discussion forum, virtual seminar, computer simulations in virtual laboratory, group project, electronic mail, etc.

E-learning in enterprises can be implemented by their own activity or through vendors of software supporting e-learning. It can also be implemented by means of e-learning systems, namely for the management of learning/teaching called Learning Management System (LMS) and the system for content development Learning Content Management System (LCMS). LCMS refers to a new generation of systems for managing the learning process. Most LCMS systems automatically administer the entire learning process (assessment, results, etc.) and the functions of developing learning content, importing, exporting, and sharing. LMS is usually expected to involve: management and registration of all types of learning/teaching from electronic asynchronous courses, through virtual classrooms to classical teaching in classrooms; a central catalogue of all educational events (electronic courses, virtual classrooms, video conferencing, classrooms, external teaching), registration processes, resource, and financial management related to it; modelling of the organization and competences, recording the individual skills achieved; access to educational events, monitoring of the activities of individual users, reporting of all types of learning activities together and individually; a rich number of synchronous and asynchronous communication channels between students, lecturers and education managers, means for capturing, exchanging, and sharing information and knowledge [8].

In general, LMS can be described as a software product that offers automatic support for the learning process. In the previous text, we mentioned the related term LCMS, which is a combination of LMS and CMS [3]. The LCMS system should address: team process of content development, administration and re-using content sources, decomposition and composition of the content into learning units of any extent, supply of individually customisable learning units to end users, detailed monitoring of users' activities over learning units, support to the integration of e-learning learning strategies. However, original functions of LMS were oriented to administration and organisation of instruction; it was only later that other functions were added, those for content management, options of synchronous and asynchronous communication, and even some authoring tools. This way the functionality of LMS systems was increasing, while that was no longer reflected in their names. LMS and LCMS are to some extent independent systems. Nowadays, they are interlinked in the standard of SCORM (Sharable

content object reference model). The standard defines the description and behaviour of learning units of the content so that LMS was able to cooperate and act as an intermediary the functions mentioned above by means of any content, meeting the SCORM standard. In the theoretical description of the present paper, our focus is only on some basic characteristics that created the basis for critical analyses of the problems under study.

METHODOLOGY

The emergence of the global COVID-19 pandemic has had a significant impact also on education. Measures to combat the virus bring a number of economic problems in enterprises, which have made numerous enterprises close down. However, each crisis has its time limits and is followed by a period of recovery that requires employees who are ready to perform their work activities. The aim of our research is to describe the implementation of the distance education in further professional corporate education and propose the ways of improving options of education based on respondents' opinions in sections, according to the Statistical classification of economic activities SK NACE Rev. 2 in accordance with the Decree No. 306/2007 Coll., which were considerably affected as a result of corona crisis. The object of our research was Section G, divisions 47 Retail except for motor vehicles and motorcycles in group 47.5 Retail in other household goods in specialised shops and group 47.6 R Merchandise for culture and recreation in specialised shops and sections R–Art, entertainment, recreations, and divisions: 91 Activities of libraries, archives, museums and other cultural facilities and 93 Sports, entertainment and recreation activities. The research was conducted by means of the questionnaire method. Questionnaires were distributed electronically. From the original number of 360 dispatched questionnaires, only fully completed 135 questionnaires could be considered for the purpose of statistical processing. Since these sections are represented mainly by micro- and small enterprises, which were facing existential problems, the rate return of questionnaires was 37.5%. Employees were selected according to completed education, i.e. university education of all levels and secondary vocational education with *maturita* (equivalent to GCSE). The aim of our research was to explore the possibilities of applying distance education in enterprises. Based on respondents' opinions, there are efforts for eliminating the problems identified in our research, which are connected with the implementation of distance education and with searching for the ways of increasing interest in this form of education.

RESULTS

The empirical research was carried out in two sections: section G consisting of 46 respondents and section R, represented by 89 respondents. Based on the preliminary survey, the sample of respondents available was reduced to 115, consisting from the respondents who really use distant education forms in their further professional education during the corona crisis. Managed education comes

in various forms derived from the possibility of applying employee technical and digital competences and skills.

Tab. 1 Implementation of education via various IC technologies

Form of education	Supported items	Sections of SK-NACE Rev. 2	
		Section G	Section R
Correspondence education	Materials sent by post	4	-
	Utilisation of mass media (radio, television)	-	-
Computer-based training (CBT)	Educational materials on CDs and DVDs	17	27
Web-based training (WBT)	Educational materials in web pages and available via Web browsers	10	41
Technology Based Training (TBT)	Broader concept as e.g. CBT and WBT (LMS, LCMS)	-	16

Source: results of empirical research

Original LMS functions were oriented only to administration and organisation of instruction; it was only later that the functions for the content administration, synchronous and asynchronous options of communication, and even some authoring tools were added. This way the LMS systems functionality has been rising.

Tab. 2 Time alignment in employee enterprise training

Time alignment (harmonisation)	Instruments applied	SK-NACE Rev. 2 sections	
		Section G	Section R
Synchronous education	Audio and video tools (telephoning)	10	57
	Internet telephony (via the Internet, e.g. Skype,WhatsApp)	10	57
	Live transmissions of lectures with online (immediate) feedback	4	24
	Chat	10	57
	Videoconference	9	19
Asynchronous education	Electronic mail	31	84
	Discussion fora	9	36
	Electronic education sources dispatched	28	84
	Sending short messages	31	84
	Written assignments	-	12
	Visiting education portals	-	24
	Visits to electronic libraries	-	79
	Social networks	22	81

Source: results of empirical research (in some enterprises, also several instruments are applied)

Synchronous education in section G is used by ten enterprises, while several tools for synchronous education are used in these enterprises. This is similar in section R, where synchronous education is used in 57 institutions, while these institutions use several tools. Asynchronous education is used in all analyzed enterprises, i.e. in 31 enterprises in section G and 84 enterprises in section R; several tools are also used simultaneously. The difference is only in the frequency of their usage. It should be noted, however, that some tools are not applied by all enterprises. In section G, LMS systems are not used, but in section R they are applied by several institutions, according to respondents. Learning Content Management Systems (LCSM) are not mentioned, but LMS is considered to be an equivalent of the concept of LCMS (even though it is not the case).

Tab. 3 Utilisation of Learning Management Systems (LMS) in section R of Statistic Classification of Economic Activities SK NACE Rev. 2

Learning Management System (LMS)	Most frequently used LMS systems	Application in section R
Commercial LMS Systems	Blackboard	4
	Pearson's eCollege	3
	iTutor	2
Open LMS	Moodle	16
	ATutor	5
	Canvas	11

Source: results of empirical research in divisions 91 and 93, Section R

Institutions that use LMS select mainly open systems (which occur in particular in Division 91 Library activities, archives, museums, and other cultural facilities; Division 93 Sports, entertainment, and recreation activities use) use also commercial systems apart from open systems. In general, these institutions use Moodle and Canvas systems. E-education is a new philosophy in education, in which the learner occupies a central role, while the instructor's role is that of a facilitator. Within lifelong education, this form of education enables to satisfy learning needs of heterogeneous target groups of learners with various time and space constraints. It is becoming a significant innovating element in further professional education.

CONCLUSION

The corona crisis phenomenon is viewed in the paper as an opportunity for the development of educational activities in enterprises. The global situation caused by the pandemic has led to the massive utilisation of two historical trends in education, namely distance education and e-learning, and these in turn, are being improved by the ICTs. However, ICT is not the only factor that determined

the historical e-learning e-learning development. The needs and desires for education without physical participation led to the emergence of various forms of education described in the paper, while these forms were based on communicating via postal correspondence or telephone. The content of the training was also delivered by post in the form of printed materials and through mass media.

Respondents' replies indicated numerous barriers and disadvantages of this education as well as their preference for a traditional in-class learning. The length of the pandemic will affect the spread of e-education users and its role in educational process. Learners' interest is likely to be shifted also to utilising various LCM systems and their modern LCMS version. These developments are going to result in increased requirements placed on systems designers. Given the limited application of LCM systems so far (as indicated by our research), we recommend to adopt the following LMS selection criteria: monitoring an overall system functionality (course organisation, user courses, develop content, adding activities, communication, group work, and evaluation instruments); developing learning materials; organization and administrative functions; user friendly interface and intuitive design; technical resources; language versions; and funding (purchase, implementation, and operation). The LMS selection has to be based on an education strategy established in a given institution. The formulation of requirements placed on LMS, cooperation with LMS designers, demonstration of the system designed, and placing one's own specific requirements have to precede the decision on a particular LMS system.

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