Use of information and communication technologies as a factor in the effectiveness of corporate training in American companies

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Abstract:

The effectiveness of American corporate education in the knowledge economy is ensured by the diversification, variability and flexibility of forms, methods and learning technologies, the choice of which largely depends on the purpose, objectives and content of learning, individual characteristics of the learners, material base and financial support of the learning process. Our analysis shows that these methods and technologies are highly interactive, innovative and practice focused, which ensures a high quality of training and its compliance with the needs of today's global market. Both traditional and electronic learning methods are widely used, though a tendency has been observed over the last ten years to the decrease in the percentage ratio of traditional classroom training hours and the increase in the percentage ratio of technology-based learning hours. The use of technology-based learning methods is rapidly promoted in view of the increasing mobility of employees whose learning needs cannot be met in the traditional classroom only and this process is accelerating in the context of further globalization of the economy. Internet and intranet technologies in American companies create conditions for distance learning of employees. Flexibility and accessibility of e-learning technologies also provide for extensive use of new methods of non-formal learning: mobile learning, social networks, e-coaching, corporate blogs, corporate online libraries (wikis) etc.

1. Introduction

The effectiveness of American corporate education in the knowledge economy is ensured by the diversification, variability and flexibility of forms, methods and learning technologies, the choice of which largely depends on the purpose, objectives and content of learning, individual characteristics of the learners, material base and financial support of the learning process. The need for innovative teaching methods is of particular relevance in the context of the increasing the mobility of labor force whose learning needs cannot be met in the traditional classroom only and this process is accelerating in the context of further globalization of the economy.

The problem of finding effective ways of realization of corporate learning has been the subject of research of various scholars (Brown, & The Hague, 2011; Hoekstra, 2001; Williams, 2009; Strother, 2002; Russell, 1999; Tyechia, 2014; Wegner, Holloway, & Garton, 1999; Salopek, 2000; Noe, 2010; Lytovchenko, & Ogienko, 2017; Lytovchenko, 2016; Ogienko, 2016 and others). However, not all of its aspects have been covered in detail. Given the importance of the problem raised, the authors aim to analyze the use of information and communication technologies as a factor of the effectiveness of corporate training in American companies.

2. The effectiveness of corporate training in American companies

The choice of educational technologies in corporate training, as pointed out by Lusterman (1977), is determined primarily by some of its specific features, including the following: 1) Participants' motivation is usually very high. All of them are adults, and understand that they are in a situation where the rewards for success and punishment for failure are significant, because, among other things, their current and future salary, prestige, self-esteem and career goal depend on the results of their studies. 2) The workplace is a place not only for learning, but also for practice. Much of learning takes place at work in the process of mentoring and coaching, observation of executives and colleagues, solving problems, making trials and errors. 3) Corporate training is practically oriented, because it is an instrument for achieving the main goal of an enterprise – tomake profit and develop its viability. In this role, corporate learning is part of a larger system – the human resource development system – and contributes to achieving this goal in the most cost-effective way.

The arsenal of forms, methods and means of developing the professional knowledge and skills used by corporate education is constantly expanding and updating. Our analysis shows that in modern corporate education there is a creative combination of traditional and innovative forms of education. Traditional methods include lectures, seminars, individual work, etc. They are most often used to convey and consolidate knowledge. Traditional (including classroom) learning, with the exception of independent work, is carried out by the teacher and the students, that are physically present together in a certain place (Gaither, 2009). Historically, it has been the primary way of conducting educational activities in the corporate environment. According to Anderson (2014), in most enterprises the traditional training used to be most popular for majority of content areas of program and for most students, first of all, due to its advantages such as providing direct interpersonal interaction between all participants of the educational process, opportunities for discussion and immediate feedback, being in a classroom environment away from the stresses of the workplace.

However, this trend has gradually changed over the last ten years. Thus, according to the American Society for Training & Development (ASTD), in 2014, the percentage of hours of traditional classroom training was only half (50.63%) of all study time, compared to, for example, 65.60% in 2006 (*2013 State of the industry report*, 2013c; *2015 State of the industry report,* 2015).

Studies show that such a reduction in traditional classroom training is primarily due to its high cost and lack of convenience. Anderson (2014) also notes that the choice of learning methods in companies always depends on the content of programs. They often prefer classroom training to develop interpersonal communication skills in business that involves lively, interpersonal interaction of students with their peers and teachers.

The leading trend in modern corporate education in the United States, therefore, is the growing role of technology-basedor e-learning. According to ASTD, it is a wide range of computer programs and processes, such as web-based learning, computer-based learning, virtual classrooms. It involves teaching via the Internet, intranet, LAN/WAN (local area network / wide area network), audio/video, satellite television, interactive television and CD-ROM (Derouin, Fritzsche, & Salas, 2005).

Technology-based learning emerged in the early 1980s. It was originally called computer-assisted instruction (CAI) and was used to teach computer programs to computer users. Technology-based learning immediately proved effective due to the fact that students were engaged in the active use of the programs they were studying, and subsequently it was used for programs of various content areas (Tyechia, 2014).

Modern e-learning technologies are multimedia, as they mostly use graphics, text, video, photography, animation and sound effects simultaneously. They include computer-based training, CD-ROMs, DVDs, interactive video, the Internet, computer simulations and virtual reality (Noe, 2010). Computer-based training is online learning in which the computer produces the stimulus that the learner must respond to. The computer then analyzes the answers and provides feedback. Interactive video combines the benefits of video and computer technologies and is used to teach technical processes and develop interpersonal skills. It is common across businesses since it considerably increases access to training. For example, Apple corporation created e-learning programs for managers because they did not have time to attend classes. The programs were devoted to the foundations of labor law and used text and video. Federal Express company, one of the leaders in the express delivery and freight market, has a curriculum of interactive video courses, including courses in customer etiquette, vehicle driving in critical situations, and goods delivery processes (Filipowski, 1992; Keegan, & Rose, 1997; Noe, 2010).

Internet and Intranet technologies (internal corporate networks available only to employees of these companies), which are also widely used in corporate education, create conditions for distance learning of employees. Distance learning is a general term that covers a wide range of learning activities in which the student is at a distance from the teacher or other students (Hoyle, 2007). The US Distance Learning Association defines distance learning as the provision of education or training by electronic means, including satellite, video, audiographic and multimedia computer technologies and learning remotely (Leonard, 1996).

The history of distance learning begins with the first correspondence courses that appeared in the late 19th century. Modern distance learning is realized through virtual classrooms using photography, animation, video; audio discussions between the instructor and the student; computer software exchange, use of instant survey technologies, whiteboard (Clark, 2005). Distance learning is widely used in both the private and government sectors in the US. Many companies openly share their successful experience in this field. These include Daimler Chrysler and General Motors, as well as Ford, Boeing, Novell, MCI World Com, Dunkin Donuts, World Bank, Department of Defense, Department of Energy, Environmental Protection Agency (EPA) which use these technologies to train and develop employees (Chute, Thompson, & Hancock, 1999; Burgess, & Russell, 2003).

Technology-based learning is flexible and accessible, permitting to make extensive use of new methods of non-formal learning: mobile learning (m-learning), social networks, e-coaching, corporate blogs, corporate online libraries (wikis) etc. M-learning (using mobile phones, smartphones, tablets, iPods, PDAs, netbooks, laptops) has become a new milestone in the development of education as a whole and corporate education in particular, and occupies an important niche in technology-based learning segment. M-learning is a form of technology-based learning with the use of mobile devices and thus is the point of intersection of the mobile computing environment (use of small, portable and wireless computer and communication devices) and technology-based learning (training using information and communication technologies) (Corbeil, & Valdes-Corbeil, 2007).

The need for non-traditional forms of learning continues to grow with the growth of the mobile workforce whose learning needs cannot be fully met by the traditional classroom training only, and this process is accelerating in the context of global dissemination of information. According to a nationwide ASTD survey, mobile training was used by only 15% of companies in 2010. At the same time 57% of respondentspredicted that their organizations would develop mobile applications over the next three years (*2011 State of the industry report*, 2013a). In 2011, the number of companies which used mobile learning increased significantly and reached 28% (*2012 State of the industry report*, 2013b). According to Training Magazine (*Training industry report,* 2016), in 2016, 2.9% of all learning hours in US companies were realized with the use of mobile devices, which exceeded the corresponding figure (1.8%) in 2015.

The rapid development of technology-based learning is caused by a number of its important advantages. It enables the organization to provide uniform training programs for workers in different countries of the world; reduce the time required for the study of employees; create the most comfortable conditions for learners; minimize overload of learners with information; reduce costs, including transportation fees and expenses related to the absence of employees at workplace during training; quickly update the content of learning programs. These benefits are best realized when the company has to teach a big number of employeesthat are geographically separated and there is a frequent need for training (Welsh, Wanberg, Brown, & Simmering, 2003). Education technologies provide timely learning, opportunities for employees to learn the content they need most and expand access to resources.

An important advantage of technology-based learning is digital collaboration, that is, the use of technology to promote and enhance opportunities to work together, regardless of their geographical proximity. Such digital collaboration technologies include electronic text messaging systems, online learning communities that provide access to interactive discussion forums for exchanging educational resources, as well as document sharing systems. Digital collaboration can be synchronous (in real-time) and asynchronous (in non-real-time) (Salopek, 2000; Noe, 2010). As pointed out by Techia (2014), most technology-based learning is asynchronous. It is flexible and can better adapt to customers' needs. The learner can start, stop, or resume such training whenever he / she wishes and study at any convenient place. When done in synchronous mode, it enables all participants of the learning process to interact with each other like in in real classroom.

However, it should be noted that along with many benefits technology-based learning also has its disadvantages. For example, Rao (2011) found that 67% of participants believed that they lacked the "human touch" needed to create an effective learning environment, and that technology-based learning could not provide opportunities for human communication, debate, exchange of knowledge between students and teacher. However, it is obvious that recent advances in telecommunications and the speed of computer processes have significantly increased the level of interpersonal interaction between all participants of the learning process.

The results of the study show that along with classroom and technology-based learning, blended learning is increasingly expanding in today's corporate environment.It is defined by scientists as a conventional learning approach with the use of electronic content, such as video or computer learning integrated into face-to-face learning (Bersin, 2003); as a learning activity that integrates aspects of technology-based learning and traditional learning (LaBranche, & Ward, 2003); as an integration of knowledge management and learning management (Sloman, 2002). So blended learning is a combination of face-to-face learning, coaching, mentoring and self-directed technology-based learning in a student-friendly mode.

One of common technologies of blended learning in business is flipped learning, which is called so due to the fact that students look through small lectures at home and discussthem with the teacher in class. The most important thing in blended learning is the choice of the optimal combination of different learning methods that have the most favorable impact on the performance of the organization and require the least investment. A strong feature of blended learning is the ability to combine the benefits of traditional and technology-based learning.It may be particularly suited if the content is difficult for the study purely in classroom or via e-learning.

It is important to note that experimental studies of scientists show different results in the comparative analysis of the effectiveness of different learning methods. A number of researches, in particular,those by Brown andHaag (2011), Maki R., Maki W., Patterson and Whittaker (2000), Hoekstra (2001), show the benefits of technology-basedlearning over traditional learning. Other studies (for example, those by Williams, 2009), on the contrary, show greater effectiveness of traditional learning over technology-based learning. Some scholars do not find any significant differencesin efficiency levels between the traditional learning, technology-based learning, and blended learning (Strother, 2002; Russell, 1999; Tyechia, 2014; Wegner, HollowayandGarton, 1999). However, there is a steady and obvious trend towards the increase in the share of technology-based learning in organizations due to its numerous advantages over face-to-face classroom instruction.

3. Conclusions

Based on the results of our study we can conclude that corporate education in the USA uses a diversity of learning methods and technologies characterized by considerable variability, interactivity, innovation and practical focus, which ensures a high level of quality of training and its compliance with the needs of today's global market. Both traditional and electronic learning methods are widely used, though a tendency has been observed over the last ten years to the decrease in the percentage ratio of traditional classroom training hours and the increase in the percentage ratio of technology-based learning hours. The use of technology-based learning methods is rapidly promoted in view of the increasing mobility of employees whose learning needs cannot be met in the traditional classroom only and this process is accelerating in the context of further globalization of the economy. Internet and intranet technologies in American companies create conditions for distance learning of employees. Flexibility and accessibility of e-learning technologies also provide for extensive use of new methods of non-formal learning: mobile learning, social networks, e-coaching, corporate blogs, corporate online libraries (wikis) etc.

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