E-Pedagogy as a Basis for E-Learning

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Abstract: This paper explains the principles of e-pedagogy which are necessary for any effective e-learning. The principles are based on our research studies as well as on our extensive empirical experience from creating and teaching e-learning courses at universities as well as within a corporate context. Our involvement has convinced us that the main obstacles in e-learning relate to the psycho-social aspect of learning experience. Our research indicates that ICT is not the key aspect influencing effectiveness of e-learning – the relation between educators and learners is the one. Therefore, there is a need for creating a set of pedagogical principles applicable for e-learning. Our approach is based on the premise that good teaching methodologies must develop and expand both forms of learners' knowledge – tacit and explicit. In our contribution, we formulate seven core principles for e-pedagogy taking into account communication, students' characteristics and student centeredness.

Key words: eLearning, explicit knowledge, tacit knowledge, e-pedagogy

INTRODUCTION

E-learning becomes more and more frequent method in education in all possible contexts. Universities use it as teaching support of face to face courses, as blended learning or as fully online learning. Companies create so called corporate universities using wide range of e-learning courses. There is of course a vast range of e-learning courses offered by private entities. This paper will be based on experiences and research in two contexts, university and structured company education.

E-learning Methods

Universities prefer to use online learning for transferring the knowledge while corporations use the off-line, so called black box type of e-learning. The main difference between the approaches is in the presence of a living tutor. In online learning a real teacher uses Information and Communication Technology (ICT) for communication with students (explaining the material in video lectures, discussions etc.), for presenting the study materials (videos, lecture notes, online books etc.) and for providing the students feedback on their progress in synchronous and/or asynchronous manner. The black box approach is characteristic for not having a real tutor. Learners work with a preset video lectures, texts and power point slides etc. Their learning is reinforced by interactive tests where they receive automatized feedback.

Both approaches have an advantage in time and geographical flexibility. The online approach is more efficient in adjusting the methodology and study materials according to student's needs. It offers more human context to the learning process. On the other hand, the online communication is quite demanding for the teacher and students and therefore it cannot accommodate large numbers of students in one course. The black box approach on the other hand offers an alternative for reaching a mass number of learners as there is no need for a real tutor to interact with learners which makes it really time flexible. This type of e-learning can be particularly adapted to the needs of Small and Medium Enterprises (SMEs) for geographical reasons (located in remote areas), supply-based reasons (absence of relevant training centers), or organizational ones (difficulty in sending a worker out). E-learning seems to be a method particularly well adapted to SMEs; it suits organizations with fewer employees. As a very flexible tool, it can be adapted to a daily work schedule. Moreover, the course length can vary from several days to several weeks. Last but not least, another advantage for organizations is the cost, often lower than other types of formal in-house training [1]. The trend of using e-learning as a training tool for SMEs is a new trend extensively supported by European Union grant schemes.

Our experience with creating a practical educational portal, that would allow the SMEs owners/managers to acquire new, practically focused, knowledge in strategic

management of their firms clearly indicated a natural demand for such a form of education. The platform is available in four languages: ENG, CZE, SK and SW to make it available to the SMEs managers/owners in the Czech Republic, Slovakia, and Sweden and, thanks to English, also in the UK and elsewhere in the EU. The portal is available at http://strategy4smes.mendelu.cz/en/about [2].

Despite of this demand, there is obvious transition from learning machines and programmed education toward learning by using internet as a mediator of information and communication between real human subjects of education. It seems that the era of closed e-learning courses (off-line courses) will be over soon even in corporate education. There are several advantages of online e-learning. It offers flexibility allowing students to progress in their own pace. This makes students more responsible for their own learning which enhances student centeredness. Using ICT enables students to access the study materials anywhere at any time by using computers and / or mobile devices such as tablets, smartphones etc.

On university level, our experience at Vysoká škola manažmentu v Trenčíne proves that e-learning in an online format can be used as a complete alternative to in-class format. The school is the only university that realizes 100% online bachelor and Master level programs in Slovakia (using ELMS Moodle). Online course is in a form of a virtual classroom having 8 to 20 students. The teaching is done through solving individual or group assignments, synchronous and asynchronous online discussions, and consultations with instructor. If we compared student success rates, we could see that there were no significant discrepancies between the results of learning in traditional and virtual classrooms. The difference in their average grade is less than 0.5 for every course included in our study [3].

E-learning Limitations

We also need to admit that regardless of the popularity and obvious advantages of e-learning, there is a permanent lack of solid research and information about the pedagogical and psychological aspects of e-learning. The literature and conferences are prevailingly focused on the potential of technology, application of new features in specific courses and administrative – organizational aspects of e-learning. As a consequence, teachers are confused about application of didactical and methodological principles; students lack clear expectations and direction, and all this results in frustration for all participants.

We need to be aware that there are limitations of e-learning. As Gutiérrez-Santiuste et al [4] claim, high levels of obstacles in this type of learning can paralyze communication and the learning process and it is worthwhile to analyze what barriers learners may encounter. In our research, we have found that learners perceived online learning activities (AM=1.82, SD=0.75, n=234) and material presented in electronic format (AM=1.71, SD=0.78, n=234) as barriers. The frequent interruption of learning and working on assignments was also perceived as a barrier (AM=2.132, SD=0.761, n=234). However, barriers that are related to the social aspect of e-learning are perceived as significant obstacles to learning. Delayed feedback in answering questions regarding the study material or about instructions in e-learning is quite frequent especially in asynchronous formats. Delayed feedback was perceived as a barrier (AM=2.329, SD=0.822, an=234) by 55.6% of students. The limited frequency of contact with the teacher was also perceived as barrier (AM=2.034, SD=0.799, n=234). Students similarly perceived the limited possibilities for communicating with peers as a barrier (AM=2.260, SD=0.778, n=234) as well as the limited possibilities for comparing the knowledge with peers (AM=2.137, SD=0.801, n=234). To sum up our findings, learners perceived the social (limited contact with classmates and the instructor), communication (limitations of communication transmitted by ICT) and didactical (limited variety of study activities and materials) aspects of e-learning as barriers in their learning. Our follow up research confirmed that learners

perceived passive learning activities, invariable study literature, limited possibilities for communication and contact with teacher and classmates as the key obstacles e-learning [5].

Development of E-pedagogy Principles

Focusing on the pedagogical aspects of e-learning is therefore a necessity if we want to provide a solid basis for delivering and transferring the knowledge students really need for real life situations. Habitually courses tend to transfer facts, formulas, definitions, numbers, statistics etc. All of them fulfill the characteristics of explicit knowledge. However, human knowledge is composed of two constituents: explicit and tacit. Explicit knowledge encompasses pieces of information that can be expressed in conventional formats such as texts, mathematical or chemical formulas, symbolic notation, diagrams etc. Its presence can be easily demonstrated and tested. On the other hand, explicit knowledge can only be discussed and operated using tacit knowledge. Tacit knowledge guides the usage of the elements of explicit knowledge and tells to people which operations are correct and which are not. Owners of tacit knowledge may not be aware of its possession and/or capable of explaining how they use it and why. Mastery of any theoretical or practical field requires acquisition of both explicit and tacit knowledge. Explicit knowledge here represents the "raw material" for thinking and reasoning; tacit knowledge its "mental processor" and "assessor" [6].

Teachers need to incorporate both levels of knowledge into their teaching regardless of the subject and technology used for delivering the course. The teachers need to be aware that their traditional approaches cannot be directly applied. Transferring explicit knowledge over the Internet is possible whenever a proper (encoded) notation is at our disposal. Our study has confirmed that tacit knowledge can successfully be transferred too and can bring similar fruit as teaching in traditional classrooms settings. The results confirm that there are no significant differences between the results of learning in traditional and virtual classrooms [6].

Tacit knowledge is exclusively adopted via interpersonal communication (during Socialization) or via introspection (during Internalization). Its transfer must therefore be incorporated into the learning group's communication or individual's activities. Teachers who want to succeed in e-learning have to prepare environments supporting these active and constructive approaches to targeted concepts and procedures. Although such approaches do not guarantee construction of tacit knowledge they do increase the probability of its creation.

There needs to be an educational strategy which supports the preparation and delivery of courses, intensifies formal and informal communication among instructors and students, and increases the students' motivation and introspection. This is in line with the contemporary trend of student-centered education. It is significantly influenced by humanistic pedagogy and psychology with the emphasis on creative potential of every human being and the ability of his self-change. [7].

Therefore, common principles for e-pedagogy seem to be a crucial step in further development of e-learning. Our experience shows that e-learning is being promoted and implemented mainly by administrators and IT experts. Teachers usually have only a secondary role. The role is usually limited to being followers of administrative recommendations on how to use ICT in teaching – following 'best practices'. These are usually focused on technological potential rather than on pedagogic and psychological principles. The success in courses substantially depends on the development of tacit knowledge; we can claim that it is achievable regardless of the format. With an appropriate methodology of teaching, the online format of study does not create a barrier. Its decisive element is the teaching strategy, consistency and appropriateness of methods which follow the principles of e-pedagogy.

Based on previous research studies and our empirical experience we have formulated basic core principles for e-pedagogy in a form of guidelines:

- Ensure and guarantee frequent and regular contact between the teacher and students as well as among students.

- Develop reciprocity and cooperation among students.

- Provide students more with feedback than evaluation.

- Create positive and supportive learning environment.

- Include all levels of Bloom's taxonomy in the course plan [8] :
  - Knowledge (facts, terminology, recall of information),
  - Comprehension (grasping the meaning of concepts and relationships among them, ability to describe them),
  - Application (using gained knowledge in new situations),
  - Analysis (seeing patterns, recognition of hidden meanings),
  - Synthesis (formulation of hypotheses, solution planning and reasoning),
  - Evaluation (critical assessment of results, verification of evidence).

- Respect the diverse talents and learning styles in creating the learning activities and materials.

- Provide students with clear expectations from the beginning of the course.

- Provide students and teachers with appropriate training for e-elearning.

The key areas to focus on are active communication among the participants of the educational process and variability in study activities which reflect the individual differences among students and teachers. These principles could be the backbone of all e-learning courses, because they promote interactivity, collaboration and active learning. They can be seen as a way to humanize the educational process transmitted by information and communication technology. These principles can contribute to elimination of barriers in learning such as lack of communication with classmates and teachers which result in social isolation passive knowledge acquisition.

Conclusion

Arvan [9] claims that classical e-learning course that is based solely on the study materials (text and / or video) published on a website has close to zero educational value. If it does not allow students a more intense contact with teacher and classmates it reduces the overall outcome of education. Interactions with peers and teacher include several levels of activities. O'Donnell and O'Kelly [10] indicate a combination of cognitive (e.g., understanding of subject matter), affective (the joy of success) metacognitive (monitoring of understanding) and social (e.g., awareness of the presence of others, interest in other members of the group) activities. Therefore, no matter whether we use systems like Blackboard, Moodle etc., the aim should be cooperative learning. An e-learning course will be successful only if it can create synergy and balance between the activities of all group members. Wider discussion of educators on the principles is necessary as the methodology may differ in accordance with the course content.

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