Distance Education and Videoconferencing

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Abstract
Mainly due to the advancement in information and communication technology, coupled with increased usage of internet, education is not anymore limited to same place/same time framework. This type (and/or form) of education is known under common term – distance education. At the early beginning distance education was organized with help of traditional post, but nowadays it is almost exclusively supported with modern information and communication technology. Distance education therefore could be considered as education in virtual environment. In that context, physical separation of participants in distance education (i.e. students and teacher) is commonly emphasized obstacle in practice. In that frame are often addressed lack of face-to-face interaction with other participants and inability to perceive non-verbal communication. There are many different communication channels, thought which participants in distance education can communicate/collaborate. One among most important is videoconferencing. Using a videoconference can help to overcome obstacles of physical separation among participants in distance education, since it simulates very closely face-to-face interaction. The main objective of a paper is to provide an insight into participant’s interest for learning in virtual environment and in that frame we are focusing on participant’s readiness for using videoconferencing in distance education. Results from survey among Slovenian and Romanian undergraduate students are presented.

Keywords: Virtual environment, Distance education, Video-conferencing.

1. Introduction

Distance education (DE) has been in existence for more than a century (Keegan, 1996). At the early beginning it was supported with traditional post, but nowadays is mainly supported with modern information and communication technology (ICT) (Keegan, 1996; Ponzurick, et al, 2000; Lee et al, 2007). This type (and/or form) of education is often addressed also with term e-learning

A simple definition defines DE as any education where the learning group (e.g. learners and teachers) is separated geographically (i.e. participants are not at same place at same time) (Keegan,
1996; Lee et al, 2007). Therefore DE could be considered as education which takes place in virtual environment (VE) (see: Shekhar, 2006).

In comparison to traditional (i.e. face-to-face) learning, where participants are at same place at same time, DE represents a radical change in education process (Lee et al, 2007). Therefore several issues arise (Sherry, 1996; LaBay and Comm, 2003; Gonc, 2007; Nedelko, 2008): lack of face-to-face contact, participant’s readiness for participation in DE, materials and electronic literature, skills for using computers, technology and software for supporting DE. In the framework of selected problematic is very commonly addressed obstacle in DE lack of face-to-face contact and inability to perceive non-verbal communication of participants in DE process.

There are many different ways (i.e. communication channels) through which participants in DE process can communicate (See: Daft, 2000). Those channels differ significantly in many aspects (e.g. ability to perceive non-verbal communication, amount of information transmission, feedback possibility, record keeping).

For the purpose of our discussion we are focusing on videoconferencing, which could be considered as one among most important communication channel. Videoconferencing stimulates very close face-to-face interaction. Its usage could help eliminate (and/or reduce) obstacles of physical separation among participants in DE. In that frame, videoconferencing enable (and/or make) communication among participants in DE more like (and close) to face-to-face communication.

According to above presented starting points and in the frame of selected problematic, is the main purpose of paper to provide an insight into the participant’s interest for learning in VE (i.e. DE) and in that frame usage of videoconferencing in DE. For the purpose of our discussion we have done a survey among Slovenian and Romanian undergraduate students.

2. Distance Education and Virtual Environment

Most common and comprehensive definition of DE, emphasizes (Keegan, 1996): (1) quasi permanent physical separation of participants in DE process (e.g. teacher and learners); (2) use of modern ICT and media for supporting DE process; (3) the provision of two way communication (e.g. videoconferencing); (4) the influence of an educational organization in providing participant support (e.g. library services) and (5) the quasi permanent absence of learning groups.

For the purpose of our discussion we are emphasizing that there exists different typologies/classifications of DE (Keegan, 1996; Gonc, 2007). A common characteristic of all forms/types of DE is use of ICT and internet to support and deliver instruction (Gonc, 2007). For the purpose of our discussion we define several different formats of DE which are supported by modern ICT (Keegan, 1996; Ponzurick et al, 2000; Gonc, 2007; Nedelko, 2008): (1) Web supported – a DE format which is complementary to traditional learning, where all participants are collocated. A web site (i.e. portal for DE) is provided which, contains course materials, assignments, goals, exercises and short tests; (2) Blended (mixed-mode) DE – course is structured so that part of the class sessions are held in a traditional setting (i.e. classroom) and part of them are held with usage of modern ICT over internet (i.e. DE). Thus mixture of face-to-face mode and distance mode has become commonly used in education practice; (3) Fully online DE format – every class session is held in distance mode in comparison to previously mentioned formats, when face-to-face mode is complementary to distance mode.

Based on definition of DE and above presented cognitions, we can conclude that DE is a type and/or form of education which takes place in VE (Dričke, 2005; Shekhar, 2006). In paper we will emphasize some important consideration about VE and put focus on issues which arise when education (i.e. DE) is carried out in VE.
The body of literature about virtuality is large and growing, but a great proportion of discussions about virtuality have dealt separately with different facets of virtuality (Davidow and Malone, 1995; Chudoba et al, 2005). Most common facets of virtuality in practice are (Drüeke, 2005; Shekhar, 2006): (1) outsourcing the partner relationship; (2) relationships with supply chain partners; (3) e-business; (4) DE; (5) virtual communities; (6) telework; (7) distributed teams (i.e. virtual teams); and (8) off-shoring. Since, different authors have discussed about different manifestations independently (e.g. DE, e-business) there is no clear definition of VE (see: Chudoba et al, 2005; Shekhar, 2006).

Therefore for the purpose of our paper, we define VE as any environment in which collaboration among entities (i.e. peoples) is enabled and supported with the modern ICT. Therefore VE is comprehended form all previously mentioned facets of virtuality (See: (Drüeke, 2005; Shekhar, 2006).

Several key characteristics of VE are mainly (Dawidow and Malone, 1995; Chudoba et al, 2005; Shekhar, 2006): (1) Collaboration occurs between people at different locations (e.g. work at home, distance education) and there is no need to relocation; (2) Collaboration with people who speak different native languages and from different cultural backgrounds; (3) Collaboration (i.e. work, learning) is enabled and supported by modern ICT; (4) Differences in access to ICT could affect interactions among different entities (e.g. organizations, individuals) in virtual environment; and (5) Often emphasized (main) obstacle in virtual environment is lack of face-to-face communication among people who collaborate with support of ICT and inability to perceive non-verbal communication.

In that frame most commonly emphasized problems in DE are mainly (Sherry, 1996; LaBay and Comm, 2003; Gonc, 2007; Nedelko, 2008): lack of facial contact and eye contact, feeling of isolation, destroyed work-life balance, communication problems, inability to perceive non-verbal communication, readiness for learning at distance, additional stress and inappropriately selected communication channel.

For the purpose of our discussion is most important cognition that communication among participant in DE occurs outside traditional (i.e. face-to-face) communication, using technologies such as electronic mail or a videoconferencing system (Ponzurick et al, 2000; Ohlhorst, 2002; Nedelko, 2006).

Therefore several different communication channels exist thorough which participant in DE can communicate (see details see: Daft, 2000; Nedelko, 2006): (1) formal reports, bulletins, (2) electronic mail; (3) telephone; and (4) videoconference.

Based on above presented cognitions, we can assume that using videoconferencing in DE process could help eliminate (and/or reduce) above mentioned problems, especially lack of face-to-face communication and ability to perceive non-verbal communication, since videoconferencing closely simulates face-to-face talk. In next section we will examine videoconferencing more closely.

### 3. Videoconferencing

Videoconferencing is an interactive tool that uses video, computing, and communication technologies in order to enable people in different locations to meet almost face-to-face and perform tasks in the same manner as they would perform if all participants were in the same room or at the same site (Purdue, 2007). Videoconferencing transmits audio and video simultaneously between two or more sites in both directions. Therefore participants in videoconferencing can hear, speak, and interact with people scattered around the globe. Videoconferences are most commonly used for meetings. Other possibilities include telemedicine,
telecommuting, teleEducation (e.g. DE), judicial applications, remote laboratories, and emergency response applications (Purdue, 2007; Picturephone, 2007).

In the literature about videoconferencing there exist various typologies proposed by different authors according to different criterions (PennState, 2007). Most common typology distinguishes videoconferencing between two sites and between three or more sites. Each type of videoconference can then choose between these two additional options (see: Ohlhorst, 2002; PennState, 2007; Texas State Library, 2007; Purdue, 2007): (1) Desktop videoconferencing (a camera is attached to personal computer) and (2) Room-based videoconferencing, where videoconferencing takes place in room.

Traditionally, room-based videoconferencing has dominated the videoconferencing set-up. However, advances in technology – especially transmission over IP – have enabled videoconferencing from one personal desktop computer to another (desktop videoconferencing). This type of videoconferencing is now becoming more widely used in companies as well as in DE (Texas State Library, 2007).

Several important issues about videoconferencing are also issues dealing with (Nedelko, 2006; Purdue, 2007): (1) needed equipment for videoconferencing; (2) requirements for connecting sites involved in videoconferencing; and (3) protocols used for videoconferencing.

Using videoconferencing can result in several key benefits (Ohlhorst, 2002; Picturephone, 2007): (1) reduced travel costs and associated accommodations expenditures since participants in DE do not have to be at same palace at same time; (2) reduced time spent for commuting; (3) participants morale can be enhanced, due to the less commuting and consequently more time for other obligations (e.g. family, job); (4) videoconferencing equipment has become more mature and affordable; (5) videoconferencing closely simulates face-to-face meetings as participants can see facial expressions and body language of other team members, gaining the benefits often acquired from non-verbal communication.

However, videoconferencing has also several disadvantages that must be addressed (Picturephone, 2007; Purdue, 2007): (1) participants in DE may feel uncomfortable in videoconferencing situations because they do not like speaking in front of a camera; (2) slow internet connection and requirement for basic equipment at all involved sites; (3) compatibility of systems protocols; (4) participants in DE are not familiar with using modern ICT, computers and videoconference software; (5) establishing session with multiple sites involved could be very time consuming; and (5) low-quality images can be a serious obstacle for videoconferencing.

According to above presented cognitions we can conclude that videoconferencing closely simulates face-to-face collaboration and brings participants in DE the benefits of non-verbal communication. Therefore videoconferencing could be considered as most suitable (and/or appropriate) tool, which could make DE (held in VE) more close to traditional (the face-to-face) education.

Due to the limited size of a paper and according to the purpose of our paper, we are focusing on participant’s readiness for using videoconferencing in DE. For that purpose we conduct a survey.

4. Results from a Survey

The primary aim of our survey was to assess student’s readiness for using videoconferencing in DE. The research is a part of a research in which we assessed participant’s readiness for incorporation in DE process. Research was conducted among Slovenian and Romanian undergraduate students. There were 155 Slovenian and 151 Romanian participants. Slovenian participants are students of 2nd and 3rd year of undergraduate bologna process study; average age of Slovenian participant is 21.6 years; and 58.1 % of Slovenian participants are
females. On the other hand Romanian participants are mainly students of 1st and 2nd year in undergraduate study program, with average age of 27.52 years. 55 % of Romanian participants in sample are females.

According to questions related to information literacy in our research, we can conclude that an average participant in research is relatively good prepared for working with modern ICT and computers and have sufficient level of skills for working with computers. Skills were assessed on Likert’s scale from 0 to 5. Average value for Slovenian participants is 3.66 and for Romanian 3.46 (See for details: Nedelko, 2008).

Romanian students are already incorporated in DE. Fully online DE is now in its early stages at Romanian university. On the other hand Slovenian students are involved in highly developed web-supported DE. Practically means that Romanian students do not have any traditional (face-to-face) lectures, on the other hand Slovenian students have regularly lectures.

For testing significant differences we are using commonly used chi-square test since our data are categorical and Cramer’s V test for association between variables (see: Cramer, 1998). Only some results are presented, due to the limited paper length.

Participants were asked about their interest for working/learning in VE. 73.5 % of Slovenian participants, in comparison to 78.8 % of Romanian participants, are willing to work/learn in VE. On the other hand 26.5 % Slovenian participants and 21.2 % Romanian participants are not willing to work/learn in VE.

Perceived differences among Slovenian and Romanian participants in their willingness to work/learn in VE, are not statistically significant (Chi-Square result = 1.165, significance level = 0.280). Therefore we can conclude that a little higher interest for working/learning in VE among Romanian participants is not a consequence of participant’s nationality.

Participants were asked what is in their opinion main (and/or most important) obstacle for more mass usage of virtual work/learn in practice. Findings are summarized in Table 1.

### Table 1

<table>
<thead>
<tr>
<th>What is in your opinion main obstacle for more mass usage of virtual work/in business practice and also in studying)</th>
<th>Slovenia</th>
<th>rank</th>
<th>Romania</th>
<th>rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Destroyed balance between work/study and family</td>
<td>4.5 %</td>
<td>4.</td>
<td>6.6 %</td>
<td>4.</td>
</tr>
<tr>
<td>Lack of face-to-face contact and inability to perceive non-verbal communication from peers</td>
<td>78.1 %</td>
<td>1.</td>
<td>24.5 %</td>
<td>3.</td>
</tr>
<tr>
<td>New (and changed) way of work/study and possible work from home</td>
<td>10.3 %</td>
<td>2.</td>
<td>39.1 %</td>
<td>1.</td>
</tr>
<tr>
<td>Inaccessibility of basic equipment for virtual work/study</td>
<td>7.1 %</td>
<td>3.</td>
<td>29.8 %</td>
<td>2.</td>
</tr>
<tr>
<td>Total</td>
<td>100 %</td>
<td></td>
<td>100 %</td>
<td></td>
</tr>
</tbody>
</table>

From table 1 is seen that for majority of Slovenian participants is most important obstacle for more mass usage of DE lack of face-to-face contact and inability to perceive non-verbal communication. On the other hand, for Romanian participants is most important obstacle new and
also changed way of study. Almost 30% of Romanian participants perceive needed equipment as an important obstacle for more mass usage of DE.

According to above presented general findings from a survey we can suggest, that difference exists also due to the level of involvement and experiences with DE classes, age of participants and their readiness for working with modern ICT and computers.

Table 1 shows, that there are differences between Slovenian and Romanian participants concerning the issues about most important obstacle for more mass virtual work/learning. Differences are statistically significant since Chi-square result of 90.447 has a significance level of 0.000. There also exists fairly moderate association between participant’s opinion what is most important obstacle for more mass virtual work/learning and participant’s nationality (Cramer’s V test is 0.544).

Next we examined the issue about felling of loneliness when work/learn in VE. Students were asked if they (will) fell lonely when they (will) study at distance, therefore in VE. Results are summarized in table 2.

### Felling of loneliness in DE

<table>
<thead>
<tr>
<th>Country</th>
<th>Not fell lonely (0)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Fell very lonely (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slovenia</td>
<td>6.5 %</td>
<td>7.1 %</td>
<td>12.9 %</td>
<td>27.1 %</td>
<td>31 %</td>
<td>15.5 %</td>
</tr>
<tr>
<td>Romania</td>
<td>26.5 %</td>
<td>15.2 %</td>
<td>20.5 %</td>
<td>21.9 %</td>
<td>9.3 %</td>
<td>6.6 %</td>
</tr>
</tbody>
</table>

Table 2 shows that there exist differences between Slovenian and Romanian participants, regarding perceived felling of loneliness in DE. Only a small proportion of Romanian students fell very lonely when learning in VE.

Participants were asked which tool (and/or technology) used in DE process will make it more similar to traditional learning. Results are summarized in table 3.

### Making DE in VE more similar to traditional education

<table>
<thead>
<tr>
<th>Country</th>
<th>Electronic mail</th>
<th>Voice mail</th>
<th>Audio-conference</th>
<th>Video-conference</th>
<th>File exchange</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slovenia</td>
<td>12.9 %</td>
<td>5.8 %</td>
<td>7.7 %</td>
<td>68.4 %</td>
<td>5.2 %</td>
<td>100 %</td>
</tr>
<tr>
<td>Romania</td>
<td>33.8 %</td>
<td>2.6 %</td>
<td>4.6 %</td>
<td>41.1 %</td>
<td>17.9 %</td>
<td>100 %</td>
</tr>
</tbody>
</table>

From table 3 is seen that a great proportion of participants in both countries consider videoconferencing as tool, which could make learning in VE more similar (and like) traditional, face-to-face education. One third of Romanian participants consider also electronic mail as a tool which could makes DE more close to traditional education.

Table 3 shows, that there are some differences between Slovenian and Romanian participants concerning about most appropriate tool for making learning in virtual environment alike traditional, face-to-face learning. Differences are statistically significant since a Chi-square
result of 38.566 has a significance level of 0.000. There also exists a weak association between participant’s opinion which tools will make DE in virtual environment more similar to traditional learning and participant’s nationality (Cramer’s V test is 0.355).

5. Discussion and Conclusions

Education which takes part in VE (i.e. DE) has become widely accepted practice for transferring knowledge from educational organizations to interested participants. Since this way (and/or type) of education is very different in comparison to traditional (face-to-face) education several issues arise. One among most important is lack of social interaction, lack of face-to-face contact and inability to perceive non-verbal communication. In that frame videoconferencing could be used in DE, since it very closely simulates real face-to-face interaction, of course with certain limits.

Therefore general readiness for leaning in VE and in that frame readiness for usage of videoconferencing in DE was examined. We can conclude that there exist differences between Slovenian and Romanian students on selected issues about learning in VE, perceived obstacles for mass usage of DE in practice (and also work) and perceived felling about loneliness when learning in VE. Perceived differences could be a consequence of different age groups, experiences with DE classes, personal values, general readiness for learning, etc. Above presented results therefore present state on selected issues and are important starting points for more detailed and deepened investigation on factors, which lead to the differences between Slovenian and Romanian students in their readiness and preferences for learning in VE in the frame of DE process.

REFERENCES


