

## VISUAL TEACHING TECHNOLOGY IN IT SYSTEMS FOR THE “MILLENNIAL GENERATION”

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Received: 2015.10.11  
Accepted: 2015.11.14  
Published: 2015.12.04

### ABSTRACT

This publication presents the ongoing development of visual teaching technology in IT systems, which can be used for e-learning for the “Millennial Generation”. The analysis of different models of teaching making use of visual messages, leads to the conclusion that systems more advanced in VPN technologies possess substantial educational qualities. These systems include TightVPN, UltraVNC, OpenVPN, RealVNC or Radmin and ComodoUNITE as well as TeamViewer.

**Keywords:** models, e-learning, visualization.

### INTRODUCTION

Quality of education [1] largely depends on teacher’s organization of work, their teaching strategies and, of course, selection of teaching methods. According to W. Okoń [4] a teaching method is a “conscious and systematic work plan between a teacher and a student that enables the students to possess the knowledge along with the ability to use it in practice, moreover, it gives them the opportunity to develop their skills and interests”. According to F. Szlosek’s division [6] of teaching methods, we can distinguish the following: stating, problem-solving, exposing, programmed and practical. When it comes to didactics, the method that should be dominant is the active training method, because it stimulates students’ perception, helps develop team work spirit and gives room for creative thinking. Teaching technique is either a more specific or a partial method of both teaching and learning [3]. Figure 1 shows the relationship between these concepts.

The right choice of many methods will ensure students’ full participation in the learning process. These methods should not exclude, but rather complement each other. Selecting proper learning methods and techniques depends on: objectives, subject content, number of students,

their age, amount of time, venue at our disposal as well as teaching and methodical skills of the teacher. The choice of the proper method is influenced by the peculiar subject content. For instance science classes require field trips, lab classes, observation and doing measurements. Using different techniques and undertaking different topics when it comes to education pose quite a challenge for teachers. A teacher need to refrain from giving previously prepared activities or imposing his own line of thought. He should present various viewpoints as well as support and inspire students to work. Therefore

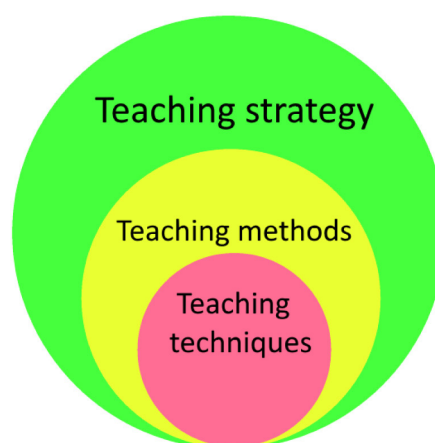


Fig. 1. Interdependence between teaching strategies

nothing stands in the way of using IT in distance learning alongside with visual objects to approach training in a more lateral manner that stimulates creativity in an IT system perception. It may be assumed that the key to learning is using advanced IT systems when it comes to e-learning of the “Millennial Generation”.

### ADVANCED IT TECHNOLOGIES IN ACADEMIC E-LEARNING

E-learning [2] is learning utilizing a computer as the only educational tool. There are different forms of e-learning (various ways of communication) such as:

- **self-education** – when a student sits in front of a computer and follows a course that is for example supplied on a CD / DVD or on an Internet platform;
- **asynchronous learning** – similar to self-education, but additionally a student is in contact with his coach in an asynchronous way (not in real time) by the means of an e-mail or forum;
- **synchronous learning** – when a student sits in front of a computer and uses an educational program that enables him to communicate live through the Internet, which means that at any time there is an “online” contact with a coach-lecturer or a learning group.

While defining synchronous e-learning we need to consider a few important terms. The first one is a webinar (in webcast technology) coming

from two English words: “web” and “seminar”. A webinar is an Internet event that:

- aims to convey certain educational content;
- is characterized by a limited interaction between the teacher and students;
- takes place in large groups that are only limited by the vast technology the Internet offers.

Alternatively to webinars, online workshops are virtual meetings that:

- aim to convey certain educational content with the possibility of practical classes;
- take place in small groups;
- allow for a lot of interaction (exercises with the use of an interactive whiteboard, live audio/video conversations).

While presenting their distance learning systems, universities usually settle for asynchronous forms of education over the Internet, using LMS and LCMS systems give students the content of the course that they can use at any point in time.

Another form of distance learning is live image transmission that is set up usually at universities to facilitate teachers from all over the globe to give lectures. Modern IT gives room to full interaction between the lecturer and the listeners. Live image transmission is used to listen to a lecture of a speaker that is a long distance away. During the lecture there are dozens of ways to help the lecturer, such as “mind maps” or “whiteboards”. The only difference between a traditional presentation and a live image transmission that students will have to deal with is that in the second case



Fig. 2. Remote desktop connection

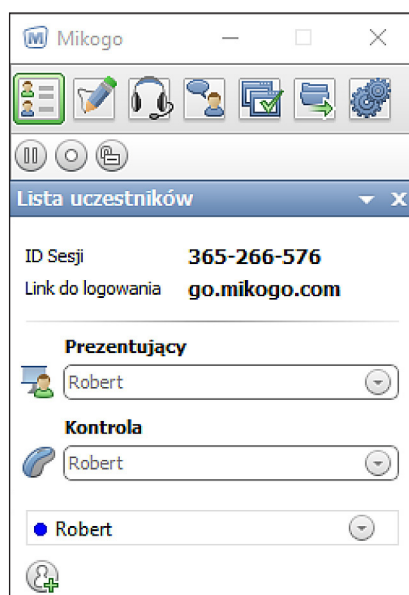


Fig. 3. Mikogo system

the lecturer appears in the screen. The analysis of the literature on this topic shows that there are many concepts forming different systems both for distance learning as well as the traditional learning methods in class. These models include the following:

- cooperation of universities from different countries;
- individual students or student group from all over the globe.

In their essay Megan Hastie, I-Chun Hung, Nian-Shing Chen and Kinshuk [5] who work at three universities in different parts of the world, included interesting experiments and ways of combining synchronous learning with traditional methods [6]. They separated nine methods of con-

ducting traditional and virtual classes with different ways of connecting students, student groups and lecturers.

Combining various educational methods gives a full view on how universal the distance learning techniques are:

- model no. 1 used for e-commerce courses, connected a class in Paris with students in Helsinki that were gathered on the Internet. The class was conducted without a teacher and it was held as a debate on the procedures and the use of eBay;
- model no. 2 where a teacher led a session using 3-Dimensional Virtual Reality on the Discovery Channel. Students could take part in 60-minute sessions by the means of the Internet;
- model no. 3 where a traditional class was conducted by a teacher, while students from outside where connected through the Internet;
- model no. 4 with a typical live image transmission techniques;
- model no. 5 where only teachers came together both in traditional classroom as well as in cyberspace. This method was used as a staff training instead of traditional training centers;
- model no. 6 where teachers in both physical and virtual classroom conducted classes for students that were gathered only in traditional classrooms. The most common example of this model is a class where the teacher while conducting a traditional class, makes use of help from experts present in cyberspace;
- model no. 7 where lecturers conducted classes online for students who were either in traditional classrooms or in cyberspace;
- model no. 8 included teachers both in tradi-

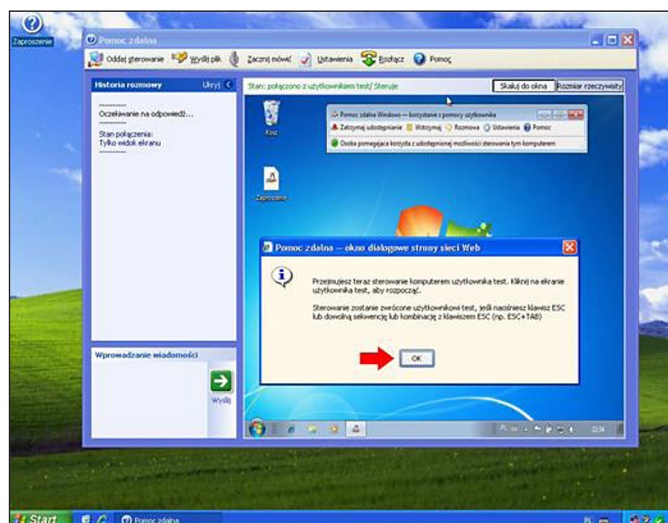


Fig. 4. Using distance learning aids

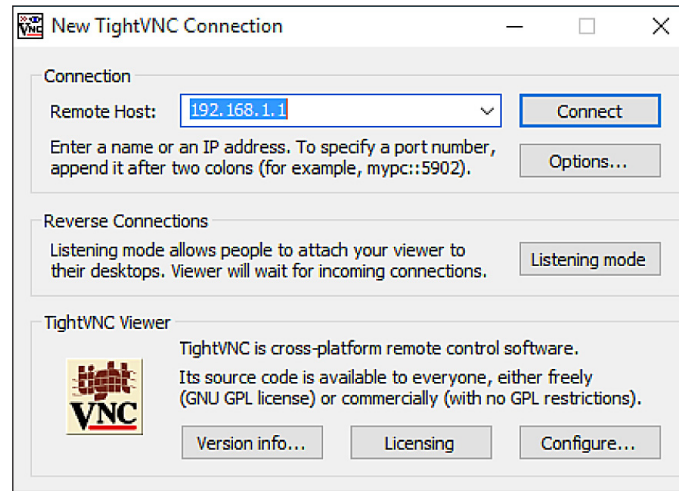


Fig. 5. Example of a VPN system – TightVPN

tional and virtual classrooms that taught student who took part in the class through the Internet;

- model no. 9 connected teachers and students from both traditional and virtual classrooms. The authors claim that after testing different solutions, this model came out as the winner.

All concepts presented above can be used in virtual, traditional or mixed classes. After analyzing these methods and trial network connections, one can say that they prove very successful when conveying information where presentation of the topic plays a great role. Nevertheless, none of the trial network connections the authors presented, possessed a mechanism that would guarantee an interaction with the student. Therefore, in an era of IT development, model no. 7 that uses e-learning in a synchronous form,

seems to have a gigantic potential both when it comes to organization and didactics, as it connects teachers from different parts of the world with experts and makes way for a mutual on-line education through the Internet.

The solutions listed below describe the technology of creating remote virtual labs that go beyond just presenting knowledge, but become online workshops where teachers can interact with students. The following systems can be distinguished when it comes to interaction:

- based on content presentation with the option of online student communication;
- based on working together on the student's desktop with the option of online communication;

Due to their popularity and ease of use, the first group can be represented by:

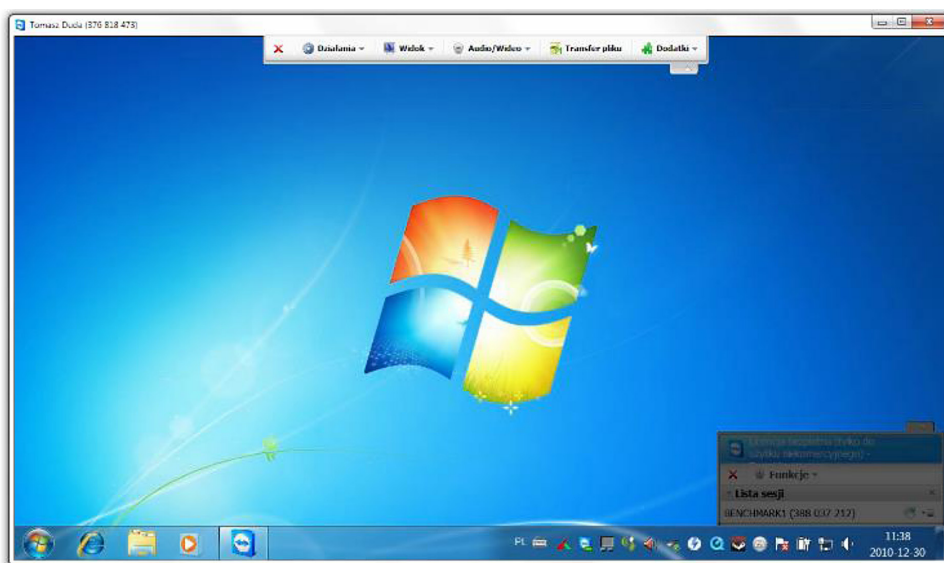


Fig. 6. A remote session with the use of TeamViewer



- Windows Remote Desktop;
- Mikogo – an online presentation system.

The second group however needs technologically advanced systems like:

- Windows Remote Assistance;
- VPN system such as: TightVPN, UltraVNC, OpenVPN, RealVNC or Radmin and ComodoUNITE;
- TeamViewer.

E-learning is a teaching technique that is perfectly adjusted to modern models of education in an IT society, where the idea of lifetime learning is prevalent. As a synchronous model of teaching it is certainly more effective and efficient than a traditional model of education.

## CONCLUSIONS

The analysis of teaching methods and the possibility of using advanced IT systems leads to the following conclusions:

1. In visual education technology, using IT systems to teach the “Millennial Generation” one model seems efficient where teachers conduct lessons online for students who are both in the cyberspace and in traditional classrooms.
2. In the era of IT development, using that model of e-learning in a synchronous form, seems to have a huge potential both when it comes

to organization and didactics, as it connects teachers from different parts of the world with experts and makes way for a mutual on-line education through the Internet.

3. The efficiency of this e-learning method can be aided by technologically advanced VPN systems, such as: TightVPN, UltraVNC, OpenVPN, RealVNC or Radmin and ComodoUNITE as well as TeamViewer.

## REFERENCES

1. Bednarek J., Lubina E., Distance learning. Basics of didactics, PWN, Warsaw 2008.
2. Hyla M., E-learning Guide. Wolters Kluwer Polska, Warsaw 2009.
3. Krzyżewska J., Active training methods and techniques in primary education. AU OMEGA Publications, Suwałki 1998.
4. Okoń W., Introduction to general didactics. Żak Publications, Warsaw 1998.
5. Shea-Schultz H., Fogarty J., Online learning today: 7 strategies that work. E-learning Magazine, January 8, 2003, 46–68.
6. Szlosek F., Introduction to teaching vocational subjects education dep. of High Engineering School. Institute For Sustainable Technologies, Radom 1995.
7. [www.puw.pl](http://www.puw.pl)
8. [www.e-mentor.edu.pl](http://www.e-mentor.edu.pl)