

TEACHING CBT FOR STUDENTS: GOOD PRACTICE EXAMPLE

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Abstract: *The purpose of the paper is to present a good practice example of teaching CBT (Computer Based Training) for students, to analyze the factors involved in teaching, learning and assessment of CBT discipline and their connection with the growing of the student' interest in CBT . From direct observations, practical experience and from students' grades we noticed that the growing of the interest for CBT is influenced by the variety of the taught software and of the taught and evaluation methods used within this discipline. This study was realized in parallel for three types of programs. The CBT highlighted the importance on the blended learning and its aim is to improve the traditional education and not to renounce at it.*

Key words: *teaching, learning and assessment of CBT discipline, blended learning.*

1. Introduction

The digital era allows a changed approach regarding learning environment, learning strategies and learning resources. Computer-based instructional applications are considered an effective alternative to traditional teaching methods and today in numerous educational and training settings, interactive computer programs are used to teach young students and adults computer literacy skills (Varank, 2006).

The contemporary society requires a new type of culture and civilization. The teacher training must redefine itself according to the new standards of society and students' needs. The teacher should be able to create a learning context in which students can develop active and constructive processes of acquiring knowledge and skills that stimulate students to set their goals and take responsibility for their own learning activities and processes (Voinea, 2009).

Although in most European countries computer aided training is implemented successfully for many years, in Romania, we have still felt a trace of reluctance when discussing this mode of learning. Definitely we are in the technological age, and students' access to information is much higher than 20 years ago.

Computer-based instructional applications are considered an effective alternative to traditional teaching methods (Larkin, 2003; Pucel & Stertz, 2005; Leigh, 1996, as cited in Varank, 2006). Bertz and Johnson (2000) conducted a research study to determine the effectiveness of an innovative approach for teaching basic computer. The innovative

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approach was web-based which was administered over the internet, self-paced that required students to study on their own without attending a regular classroom instruction and competency-based that compared students' technical skills against certain norm.

A study regarding the comparison between the attitudes and motivations of students who attended a computer-based in-class computer course with the attitudes and motivations of those who participated in a classical lecture-based computer course was realized by Varank (2006). The results show that there is no significant difference between computer-based instruction group students' and lecture-based instruction group students' total attitudes scores. However, a significant instructional mode effect on students' motivation was detected.

The online libraries and educational web sites have offered to students many answers, but also the many question marks. We think we can say that because of the abundance of information through the media, through the Internet, more and more of the students are increasingly keen of knowledge of finding answers to various challenges that are offered by these media literacy. Because computer-aided training is not well implemented in the Romanian education system, students encounter their teaching – learning in the traditional way. They come to school with a lot of questions, curiosity that through this system will never be solved. This is one of the reasons for lack of interest appears to school.

2. Purpose and Methodology of the Research

The purpose of the paper is to present a good practice example of teaching CBT (Computer Based Training) for students, to analyze the factors involved in teaching, learning and assessment of CBT discipline and their connection with the growing of the student' interest in CBT. The design of our research is of ascertaining type.

Hypothesis: students' interest in CBT, is determined by how a traditional lesson through modern teaching can be transformed so that their knowledge and assessment to be pleasant for the pupil. This is why each lesson is accompanied by an imaginary character very closed for the pupil. This character will accompany the pupil throughout the lesson, it is considering his friend, the one who helps guides and teaches good things. If the pupil makes a mistake, he will be reprimanded by the imaginary character that will become very sad. In this situation the pupil is guided to the lesson to find the right answers to regain the trust of his friend. At the end of the lesson, the pupil's imaginary friend will give a reward consisting in an educative game or cartoon. The realization of an interactive lesson using CBT techniques requires the knowledge of some specific software.

The pedagogical variables involved in the determining of the interest in CBT: the teaching of various software, the type of methods used in assessment and school results (grades obtained by students in CBT discipline).

The research involved a total number of 174 students from 3 programs of the Transilvania University of Braşov:

1. The first level of the psycho-pedagogical module - a total number of 46 students (L1).
2. The students from the bachelor programs with frequency and from distance education from the 3rd year of study from the section Pedagogy education and preschool - a total number of 110 students (PIPP).

3. the students from the bachelor program with frequency from the 3rd year of study from the section Special Psychopedagogy - a total number of 28 students (PPS).

To achieve the research purpose, the following methods were used: the study of curricular documents (syllabus from CBT course and the curricula for the third study programs) to identify the teaching software, the used evaluation criteria, the number of hours allocated to the discipline CBT for each study program; interviews with students to identify students' interest towards CBT course, the study of students' documents (obtained grades of the students in CBT exam) to identify students' interest towards CBT discipline.

3. Findings

The analysis of the CBT syllabus for each study program showed the scientific content taught within the discipline. Those, the applications should be adapted to the specific of each study program.

All three programs have the same course structure: 1. ELearning platforms; 2. PowerPoint – interactive lessons; 4. Realization of a lesson of acquiring knowledge or revision using Slide Effect software or Prezi online application; 4. Realization of evaluation tests using the Developer environment from Microsoft Office; 5. Realizing of animations with Gif animator and Screen Hunter software; 6. Realizing of auto evaluation tests with Hot Potatoes software; 7. Using different sites that permit realization of collaborative documents: Zoho Show or Google Docs. The last one is very used with the application Google Drive - Forms that is used for generation of evaluation tests; 8. Realization of blogs or sites - here the teacher can publish the lessons and the tests.

In addition of the mentioned structure at PPS it is necessary to include one more chapter regarding the educational software for the pupils with special educational needs (SEN). Therefore, at this program the following software were presented:

1. Educational Software with specific learning and targeted therapies for children with

SEN - Visually deficiency

a. *Application for vocal synthesis*. The most commonly used mode of interaction with the computer applications is using the blind screen reader and voice synthesis.

b. *Magnifier* - is a display utility that makes the computer screen more readable for people with low vision by creating a separate window that displays a magnified portion of the screen.

c. *Balabolka* - software to convert text into audio format

d. *IVONA* brings the TTS technology (text-to-speech) at new and modern standards.

This application is available on both Android and Windows. Ivona has also the Romanian voice – Carmen.

2. Educational Software with specific learning and targeted therapies for children with

SEN - The hearing deficiency

a. Educational software *TARA* - an educational application for children with special educational needs. It is organized into three main sections: Children, learning and assessment. The program contains 1450 words, 1450 sounds, 1450 pictures and drawings as the sign language. It is designed especially for children with hearing loss and deaf and children with mental disabilities. It is adaptable for both preschoolers and for primary education. It allows content development by adding new words, sounds, pictures, movies.

b. *DFB* (Dattilologia Fonologica Bimanuale) – this software was conceived and designed for the needs of the deaf community in order to improve the acquisition of language skills in both directions (understanding the message issued as the issuer).

3. Educational Software with specific learning and targeted therapies for children with SEN - psychomotor deficiency

a. *Viacam* or *eViacam*, is an application that replaces the locomotor function allowing the user to move the mouse cursor by moving his head. The application works on any computer equipped with a webcam, without additional accessories.

b. *Simon* listens is a software for the physically handicapped, designed to enable them to use chat, to write emails, surf the Internet, to do Internet banking and more. The application is designed to be very flexible and allow customization for any application where speech recognition is needed.

4. Educational Software with specific learning and targeted therapies for children with SEN – language disorders

a. *LOGOPEDIX* and *Evalogos* are specialized software in speech therapy for all children with dyslexia, dyslalia and language delays, adaptable for both preschoolers and primary education and enabling content development by adding new words, sounds, pictures, movies.

b. *Miniguide speech therapist*, "I want to talk properly" author Anca Soima Gherle; Universitara Publishing House, 2010. This book offers a rich illustrative and verbal material, with many exercises that support the methodology in four sound stages correction: issue, consolidation, differentiation and automation.

c. *Sebran's ABC* contains color images, pleasant music and exciting games through which children can learn to read and write. The application is available in several languages, including Romanian, English, French, Spanish and German.

At the First level of psycho-pedagogical module (L1) was quite difficult to work because the students' level was different. They came from different profiles: engineering, law, letters, medicine, economics, and sport. Graduate students of technical and economic profiles had advanced knowledge of Information and Communication Technology, reason why students worked in groups, trying to finally being able to be brought to a common denominator. They managed to achieve portfolio that they had to be taught during the semester, so that presentations were held in front of all the colleagues so that those at profiles humanities have managed to understand the importance of educational Minisoftware. Because the students will teach different disciplines, it was very difficult to succeed to find practical applications. The teacher's role was to document and find themes with practical applicability. The subjects most difficult to model in terms of the CBT were civic education and sports. For the civic education discipline was hard to find a theme that can support a different kind of approach than the classical method. Eventually it managed to find issues so they can be implemented all principles of CBT. A problem encountered was with the students of Physical Education and Sport who have reported that they couldn't present interactive lessons to pupils. Sports teachers do not have where to make their presentations because they operate only in the halls or on the sports field. The only explanation we had to stimulate them to realize their theme was that maybe once they will attend to scientific sessions and they will have to make such a presentation.

Next we will give some examples chosen by the students for different disciplines:

- Letters: The noun, Reported speech, Talking about likes and dislikes, Degrees of comparison of adjectives, Demonstrative pronoun, The Present Tense Continuous,

Mihai Eminescu's work, Wortschatz Tiere (Deutch), Synonyms and antonyms, The Adjective, Communication, Fabula, Français comme langue étrangère (French), *Vizita (The visit)* of I. L. Caragiale, The sentence parts, The verb.

- Law: Corruption, Heritage, Human Rights, Justice and Law, Justice and Equality, Judicial Authority, Modern States.
- Engineering: Capitalization of eggs (Food and Tourism), Method of ornamentation flat (Wood Engineering), Tourism and agro tourism (Food and Tourism), Road Traffic Safety (Mechanical Engineering), Arranging meals (Food and Tourism).
- Economy: The product, Product promotion, Business unit Heritage, Economic Contracts.
- History: The war for 30 years, Michael the Brave and the Union.
- Music: Music-art-therapy.
- Psychology: Logical relationships between categorical propositions, Temperament, Communication types, Skills, Motivation.
- Medicine: Peptic ulcer, Hygiene, First Aid Measures.
- Sport: Counterattack, Gymnastics, Athletics.

The practical experience of the first author and the analysis of syllabus of CBT discipline for each study program showed the assessment methods used. Those, all the participants of such a course are obligated to realize a minisoftware where are integrated all learned applications and in the end of this minisoftware to insert an auto-evaluation test. The goals of the course were achieved with all students except those from the psycho-pedagogical level were we accepted to make a presentation and a test using only Microsoft PowerPoint.

During the entire semester the students are teaching on the labs how to use their skills in the realization of the educational software, using and combining the applications presented at the CBT course. Hence, for the lessons of acquiring new knowledge, as well as for the revision and systematization lessons are used the following software: Microsoft Power Point, Prezi, Slide Effect. For the realization of personalized animations are used the software: Screen Hunter and Advanced Gif Animator. Each educational software should include auto-evaluation and evaluation tests. These types of tests are realized in:

a) Microsoft Power Point, and can be realized differentiate:

- i)** Using the action buttons – this method is usually chosen by older students who do not have ICT skills. This method is recommended only for auto-evaluation tests.
- ii)** Using the Developer environment offered by Microsoft Office, realizing tests with one variant of answer, multiple choice responses, or completing items. These types of tests are used by the students with ICT average knowledge. This method is recommended for evaluation tests. The grade and the feedback are given by teacher.
- iii)** Using the programming environment Visual Basic for Application is dedicated especially for the experimented students. This type of test is used as final test; it can display at the end automatically the grade and the feedback without the intervention of a teacher.

In the cases **i)** and **ii)** the tests can be used also for deepening the concepts taught in the lesson, like self-assessment tests. The feedback on the pupil's answer is given immediately. After the pupil answer at the question, in the case of a right answer he is congratulated by the imaginary character and the minisoftware leads to the next question. In the case of a wrong answer the pupil is guided to return to lesson to learn correctly the

presented notions, and after that he comes back to the wrong question to see if the theoretical notions now are correctly assimilated.

b) Hot Potatoes offers to inexperienced users a friendly interface where can be performed several self-assessment tests:

- i) tests with single variant of response, with multiple choice, with short answer;
- ii) tests with completing items;
- iii) Tests with matching or recognizing between images and words
- iv) Tests with anagram of the words or of the sentences;
- v) Implementation of crosswords.

c) Google Forms offers the realization of questionnaires. The teachers must have a Google account. With Google Drive the user can have access at different applications, mainly the one of the realization of questionnaires. The advantage of using a Google Forms test is that the pupil's answers can be seen instantaneous into an Excel sheet.

The final assessment at this discipline, CBT, consists in the presentation of minisoftware. During the presentation the exam committee decides on three applications from minisoftware that will be performed practically by the students. The aim is to verify that the student is the author of the minisoftware. For the student's majority this type of assessment is very fast. In our evaluation we encountered other situations like: the minisoftware was copied from the Internet, or it was realized by a friend of the student. In these cases the students weren't able to prove the originality of its work. There are some special cases, where we had to use the CBT techniques. A special case was a student girl with total deficiency of seeing. She followed the courses of Psychology and Science Education to give her help to other pupils with the same deficiency like her. In this situation the minisoftware wasn't realized in video mode, only in audio mode. She presented the lesson using a voice recording application.

At this course other students with locomotor disabilities participated. Due to the fact that they could use their hands, they succeeded to realize interesting interactive lessons.

The analysis of curricula of the three study programs showed:

1. At PIPP with frequency the course structure is 1 hour of course and 2 hours of labs on week. The correspondence of these hours in the form of studies with reduced frequency is equivalent with 28 hours on the entire semester, named assisted activities (AA).
2. At PPS with frequency, the structure of this course is 2 hours of course and 2 hours of labs on week.
3. The first level of psycho-pedagogical module, where the activities are similar with those from reduced frequency, there are 28 hours of assisted activities (AA).

The interviews with students to identify students' interest towards CBT shows that at the starting of this course 22.4 % from the total number of students weren't interested in the necessity of participation at this kind of course. At the end of this course the majority of them understood the importance of the blended learning and the computer based training. The percentage of the total disinterest was very small 6.9% in this percentage were included also the absent students. If this category is neglected than the disinterest is lower 2.3%.

The study of students' documents (the obtained grades by students in CBT exam) was realized to identify students' interest towards CBT discipline.

The data are shown in the table 1.

Students' results in CBT on the mentioned study programs

Table 1

PIPP with frequency		PIPP with reduced frequency		PPS		L1	
Number of students	Grade	Number of students	Grade	Number of students	Grade	Number of students	Grade
6	10	8	10	5	10	23	10
11	9	6	9	2	9	20	9
7	8	6	8	6	8	15	8
12	7	1	7	7	7	15	7
4	6	1	6	1	6	9	6
1	5	1	5	1	5	4	5
2	4	2	4	0	4	0	4
3	abs	3	abs	2	abs	0	abs
Total = 46 students		Total = 28 students		Total = 24 students		Total = 86 students	

We noticed that the interest in CBT is highlighted in the results obtained. The percentage of the students which obtained grades greater than 7 are the following: PIPP with frequency 78.26%; PIPP with reduced frequency 75%; PPS 83.33%; L1 1.62%. We observe that the best results are obtained at the specialization PPS. An explanation is based on the special software for the people with disabilities. The worst results were obtained at L1. A possible explanation is the fact that some teacher expertise is not very easy approachable from the perspective of computer based training. Another explanation could be the age of the participants at this course.

The pedagogical variables involved in determining the interest in CBT are: the various taught software, the type of methods used in teaching-learning-assessment process and school results (obtained grades by students in CBT discipline).

4. Conclusions

Because the formation of the students is humanistic and not realistic, most of them are reluctant initially when talking about an integration of multimedia materials in the development of lessons. It should be explained very well the difference between traditional learning and blended learning. We have to be careful in using CBT in teaching because of the risk of renounce totally to traditional learning. The goal is to combine and to obtain interactive lessons to stimulate pupils' interest. Although current trends are to have electronic textbooks, we believe that computer based training should not neutralize the physical textbooks and notebooks. Based on the differences between traditional and modern learning on the start of CBT course there is debate after that the students together with the teacher have extracted the strengths and weaknesses. After students have understood blended learning is, than the course continues with the presentation of software. Students will decide what software will be used into their minisoftware, based on their technical abilities. As mandatory elements must be found on each minisoftware: lesson structure, the moment from the lesson that is computer based training specific and operational objectives, contents and bibliography. Minisoftware should include: a lesson of acquiring new knowledge or a revision lesson, self-assessment tests closely with the lesson and a final evaluation test. Because the shown software are various, the students'

interest begins to be increasingly higher. When they start to see the partial results of their work they are becoming increasingly optimistic and self-confident. Minisoftware parts are made in the laboratories of CBT, following that in the end they are put together, thus achieving interactive lesson itself.

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