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INTERACTIVE EDUCATION IN TECHNICAL UNIVERSITY OF VARNA AND HOW DO THE STUDENTS ACCEPT IT

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The following paper aims to present the results of ergonomic assessment of learning environment comprising interactive whiteboards. A great variety of methods were used for the collection of the data. More than one hundred students from the Technical university of Varna took part in the study. The participants were divided into three groups - A, B and C. Group A was composed of students that had not been taught with interactive board, but have had expectations about it; the second group B - students that had been taught using an interactive board and personally had worked with it; the third group C – students that had been taught using an interactive board, but had not worked with it personally. The assessment was made on the basis of analysis of specially developed and completed questionnaires. The paper presents the results from the research. The main recommendations are connected with incensement in the usage of whiteboards in the whole educational process and also adaptation of the classrooms with regard to the comfort, visibility and safety of the students.

Keywords: Assessment, Education, Interactive board, Students.

Introduction

Leading the audience, continuously keeping the attention of the students and the most effective form of presentation of the materials are part of the questions that excite teachers for decades. There is no exact formula on how to attract the attention of the learners. Every teacher uses his own variety of techniques to organize, visualize and present the learning material.

Nowadays the computers are an inseparable part of our daily lives. They are used as a tool in all areas of human activity, including the teaching process. The modern contemporary way of teaching requires some "modern conveniences" such as multimedia devices, interactive whiteboards, professional screens and so on, and without them the teaching process seems a little archaic.

Many authors describe the importance of technology in the classroom of the 21st century. Interactive or "smart" boards make learning more effective, more creative and productive as affect the motivation of students today [1, 2, 3]. In many European countries (Austria, Czech Republic, Denmark, France, Hungary, Italy, Ireland, Luxemburg, Portugal, Spain, Switzerland and the UK) technologies are part of the learning process. A number of studies are conducted to determine the best practices when working with interactive boards [4].

The benefits of the usage of interactive boards are undeniable. Some of them are:

- utilize a variety of effects (show and hide, sound effects, movie clips etc.) when creating whiteboard lessons;
- ensure more time for discussion and explanation of graphics, images and charts;

- allow learners and teachers to work together with software around a large shared screen;
- give possibilities to save lessons in different file formats (.doc, .pdf, .jpg, .ppt etc.)
- provide students the opportunity to feel themselves closer to the technology and to be able to use it in the learning process.

As expected interactive whiteboards have some disadvantages like [5]:

- Height of the placement. The whiteboard position may be too high or too low for some teachers or learners to reach the working area;
- Higher price of interactive whiteboard compared with multimedia projector and PC.

Actually the most important thing is the effective usage of interactive whiteboards, but not as a conventional whiteboard.

Technology cannot address all the issues of teaching in an inclusive environment, but it does provide new and innovative ways to learn. Creative possibilities exist when instructional tools are adapted to meet the unique learning styles of students, permitting knowledge to be shared by all. Technology enables students to engage with subject materials in a way that focuses on their individual strengths [6].

Learning through fun and play is a way of teaching recommended for young children, but recent observation on students' behavior is enough to realize that this approach is also applicable to them. Actually the difference is in the form of games, quality of graphics and different game devices. Very often students do not want to make notes during the lectures, they just photograph the whiteboard with their mobile devices. Other times, their attention is captured by long sessions with their phones. That's why, in our opinion, it is very appropriate the teachers to benefit from the young people's attitude to modern technology and to use it to keep their attention.

What is the importance of interactive approaches to the education? And also what are their advantages? These issues motivated us to conduct a research about the influence of interactive technologies on the quality of teaching process, and their effect as a mean for improving students' motivation on one hand, and perception – on the other.

The research hypothesis is that students were having the approval and the desire to use interactive technologies during the educational process.

Assessment

All the participants in the study were divided into three groups - A, B and C. Group A was composed of students that had not been taught with interactive board, but have had expectations about it; the second group B - students that had been taught using an interactive board and personally had worked with it; the third group C – students that had been taught using an interactive board, but had not worked with it personally.

The assessment was made on the base of analysis of specially developed and completed questionnaires. It uses a five degree scale as follows: 1 – bad; 2 – satisfactory; 3 – good; 4 – very good; 5 – excellent. The majority of the questions were designed as closed ones, and there were several open questions, requiring the students' personal opinion on a particular issue.

Each of the groups completed their questionnaires and marked their opinion to the level of agreement or disagreement with the statements. The number of questions for group A are 35, for group B – 30 and for group C – 25. Some of the questions are presented in Tables 1 and 2.

The data collection took place during the 2012/2013 academic year. More than 140 questionnaires were filled in. The data processing included assessment of the given answers according to the above described scale, and calculation of some statistical indicators as arithmetic average, mean square deviation, coefficient of linear fluctuation and width of the confidence interval. This helped us in proving the hypothesis, and achieving results with a high level of significance.

Table 1. Some of the questions for groups B and C.

№	Question	Completely not agree 1	Not agree 2	Without opinion 3	I agree 4	Strongly agree 5
1	The use of interactive devices (Interactive board, multimedia projector, PC etc.) influences the teaching process positively.					
2	The use of interactive devices influences the learning process positively.					
3	The application of interactive devices in the educational process should be mandatory.					
4	Teaching only with marker and whiteboard is enough for the students nowadays.					
5	The use of interactive devices affects the involvement and attention of students in the learning process.					
6	The use of interactive devices enhances the quality of education.					
7	The use of interactive devices improves the quality of teaching material.					
8	The use of interactive devices helps for better visualization of teaching material.					

Table 2. Some of the questions for group A.

№	Question	No 1	Can not decide 2	to some extent 4	Yes 5
8	Do you think that the use of interactive boards will increase your motivation to attend lectures?				
9	Do you think that the use of interactive boards will increase your motivation to attend seminars?				
10	Do you think that the use of interactive boards will increase your interest and attention to the studied material?				
11	Do you think that the use of interactive boards will increase your commitment and involvement in the learning process?				
12	Do you think that the use of interactive boards will help you to understand better the studied material?				
13	Do you think that the use of interactive boards will improve the discipline in class?				
14	Do you think that the use of interactive boards will enable you to get more information during training?				
15	Do you think that the use of interactive boards will increase the quality of teaching?				
16	Do you think that the use of interactive boards will increase the quality of learning?				

Table 3 provides demographic information about the respondents.

Table 3. Aggregated demographic information for respondents.

Speciality, number of students		Student's year	Education degree		Sex	
			Bachelor	Master	Male	Female
Marine Engineering	26	1		26		
Computerized Technology in Mechanical Engineering	12	1				
Mechanical Engineering and Technologies	12	1	114		88	52
Engineering design	50	4				
Chemical equipment	8	1				
Automotive Engineering		1				
Communication Engineering and Technologies	19+3	2+4				
Age		20 and Under	21 – 25 years old		26 – 30 years old	
		35	92		13	
Total		140				

Results

The results from the proposed survey showed that the students had particularly positive attitude to the technologies, and realized their importance not only for the future, but also for the present. The fact that interactive technologies had positive influence upon the teaching process was almost incontrovertible, as displayed on fig. 2 (question 8-16 for gr. A, and q. 1-2 – gr. B, C). As it could be seen form fig. 1, the most students considered that interactive tools have helped them for better visualization of the teaching materials. Both statements had assessment above 4, and coefficient of variation – smaller than 0,25 for the three respondent's groups.
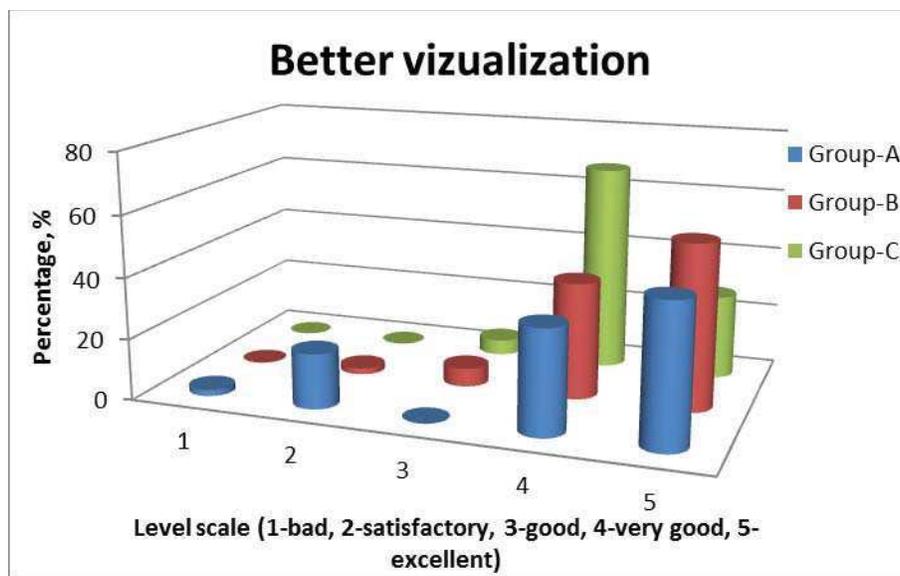

Figure 1. The use of interactive means helps for better visualization of teaching material
and process would contribute to a clearer presentation

It was interesting to note that when the students were given an opportunity to work with the board, they really showed stronger attentiveness and interest, which led to better, results afterwards.
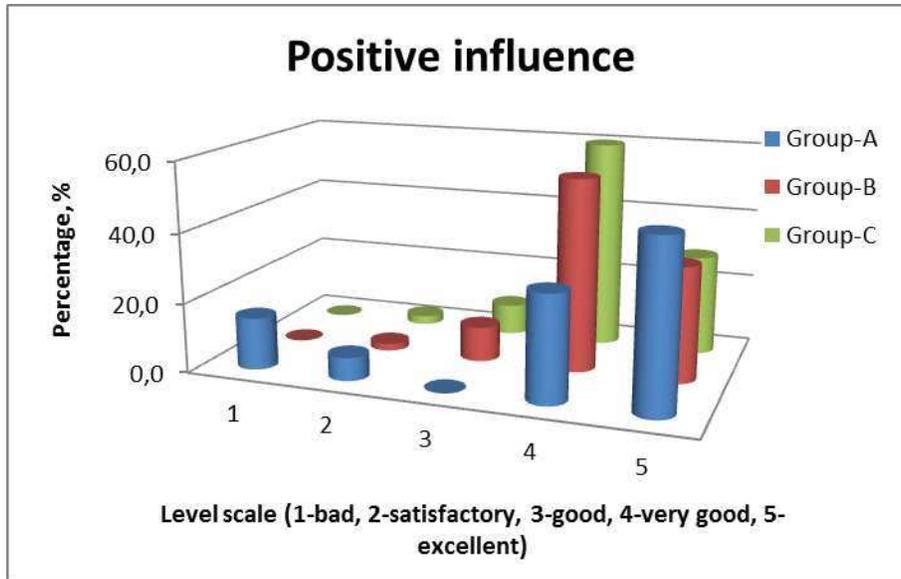

Figure 2. The use of interactive means influence positively teaching and learning processes, motivation to attend classes, interest, attention and understanding the studied material

Some of the questions received their answers with a big level of dispersion (3, 4, 11, 12, 13, 14, 16, 18 for group B and C, and 2, 5, 6, 7, 22, 27, 28, 29 - group A.). These findings indicated a lack of direct relationship between the interactive tools on one hand and the attendance and concentration of the students in class on the other. It also could not be definitely said on the base of these questions if the students preferred or not their exams, tests and tasks to be performed electronically.
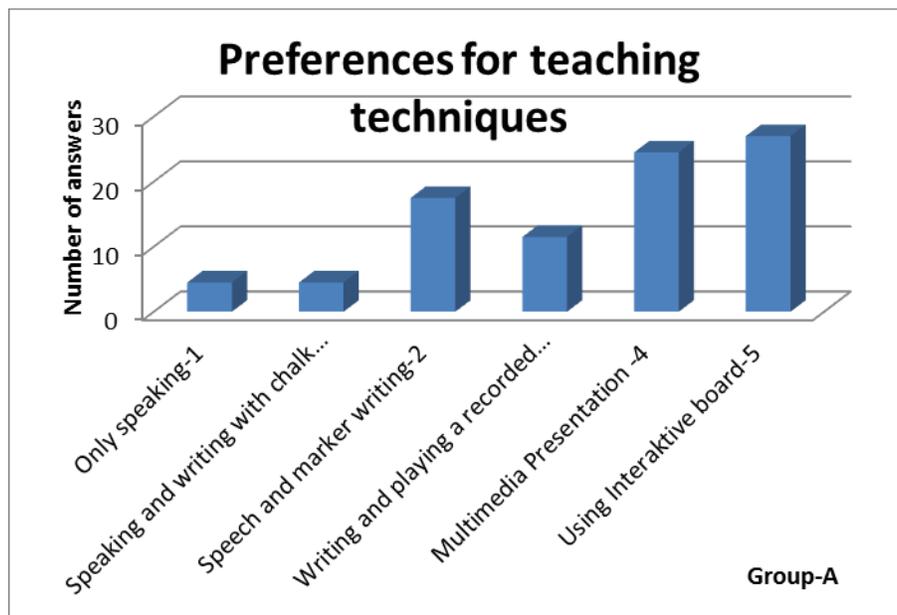

Figure 3. The student's preferences on techniques for teaching.

It is necessary to be mentioned that part of the dispersion was due to the fact that some respondents had given more than one answer (and as a result - the number of the answers exceeded the number of the respondents - 3, 4, 19, 20, 21, 23, 30 group A). Another reason for the dispersion was that one part of the so called open questions was not answered, distinguished from the closed questions – all of which found their answers.
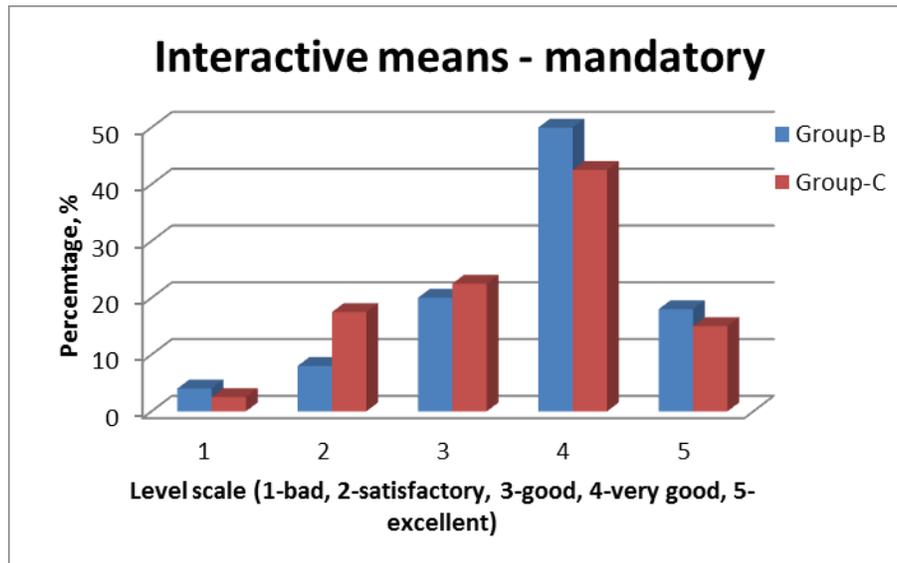

Figure 4. The application of interactive means in the educational process should not be absolutely mandatory.
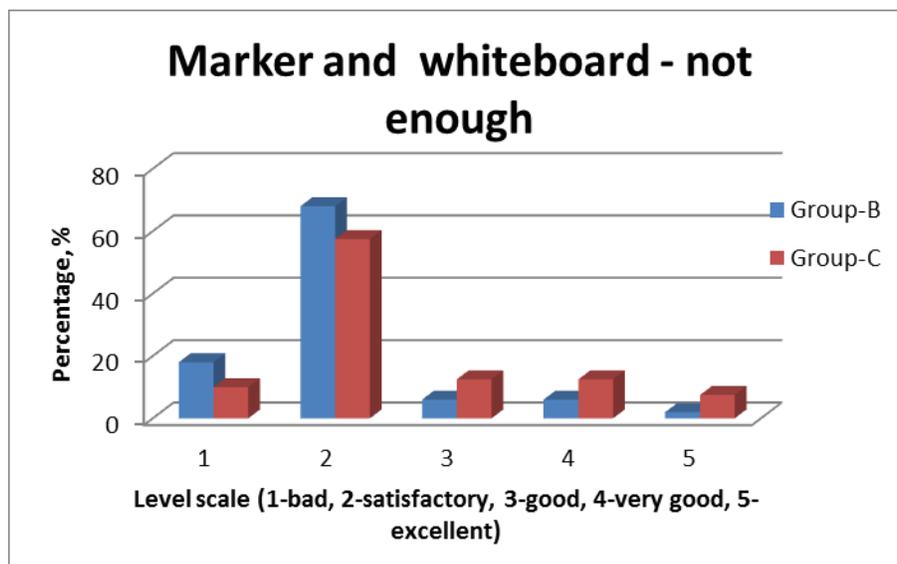

Figure 5. Teaching only with a marker and a whiteboard is not enough for the students nowadays.

The traditional education that exists from ages is preferred from 42% (speaking + writing, group A, fig. 3) of the respondents. This method however is not enough for above 60% (group C) of the students – fig. 5. According to them the advantage of the use of interactive equipment in the educational process is twofold. The first (direct) advantage reflects the better presentation of the material. The second (indirect) advantage consists of the increased time that remains for discussions and more detailed and specific explanations.

It must be said that above 50% of the students preferred education with interactive technologies, but only 20% found it compulsory and really important (fig. 4). The overall opinion was that for some subjects it should be given preference to the interactive tools, while for others the conservative white board with marker could work better.

The role of the teacher as psychologist, speaker and mentor could not be replaced by any technical equipment. The student as every human being has necessity for direct communication and conversation. The modern technical devices could not change this. They only could make the educational process easier, more interesting and as a result – more effective. The use of these technics and technologies should be made with due measure. And in that sense the good teacher must find the border and the exact balance between the new and conservative, the commonly accepted and innovative.

Summary

The use of interactive whiteboards for education in technical universities provides new opportunities for both teachers and students - for visualization, presentation and transmission of information, and for training and improvement of skills.

It is difficult to determine whether the interactive resources affect the absorption of the material by students A because more serious and detailed observations and analyses are required for at least 3-4 years. On the other hand the technology and devices are rapidly growing and not only students, but teachers also need to improve their skills related to new technologies.

Finally, and as a conclusion of all stated above it could be said that the application, the necessity and the positive impact of the interactive devices are well appreciated by the students. Their use makes the training material more accessible and attractive. It is a task for every teacher to find the appropriate technical device or tool, and the right approach for the respective subject. When the interactive tool is effectively used, it can provide variety of opportunities for the students.

Acknowledgement

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