
Evaluation of the possibilities of use of interactive technology in the laboratory

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Abstract: The goal of the contribution was to propose the possibilities of using interactive technology in the laboratory and to create a creative and interesting environment for students. One of the benefits is facilitating and streamlining the learning process and developing students' creativity. Interactive hardware (*interactive whiteboard*) and software (*multimedia systems*) were used to solve the work. The conclusion of the work consists of an evaluation of the benefits of using the interactive whiteboard in the laboratory.

Keywords: interactive technology, laboratory, creativity, multimedia system

INTRODUCTION

Interactive whiteboards are a modern and popular technological tool used in the field of education and presentations. Their use brings many opportunities to improve teaching and student engagement. Currently, trends in the field of education focus on the integration of interactive content into the learning process. Interactive whiteboards help to activate students with the help of engaging topic content, enhance long-term memorization of the given situation (solved problem) and connection with the result of this activity (task), and improve students' interest in the interpretation of the subject matter

during the teaching process. By using an interactive whiteboard, it is possible to achieve mutual active communication between the user and the computer. This type of touch-sensitive surface enables the display of content with maximum clarity. Interactivity requires a new approach, which is reflected in the use of software applications.

1 THE USE OF INTERACTIVE TECHNOLOGY IN THE LABORATORY

A visual standard was created for working with an interactive whiteboard and its accessories in the *Laboratory of Designing Production Systems and*

Processes at the Department of Industrial Engineering, Faculty of Mechanical Engineering at the University of Zilina. This visual standard is placed on the table where educators can view it and follow it if they want to use the interactive whiteboard. By analyzing the possibilities at the university, it was found that the mentioned interactive technology has several possibilities of use. One of the possibilities mentioned is working with different programs that are compatible with the board or the *ActivInspire* program. These are mainly programs such as *Microsoft PowerPoint*, where we can project a presentation on the board and use the *ActivInspire* program to highlight or write notes that would help to better understand the issue of a specific subject in class.

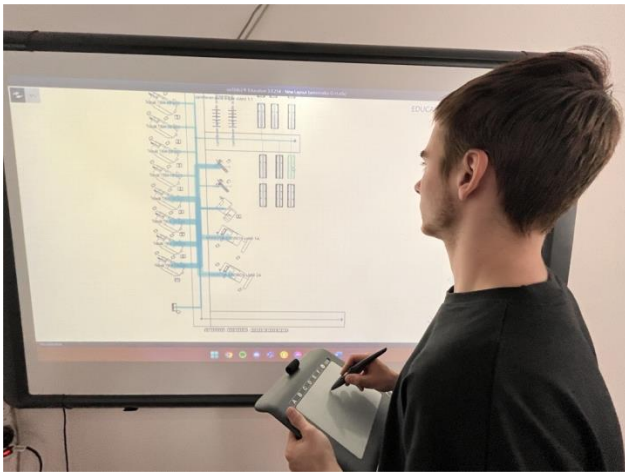


Fig. 1. View 2D - working with *Vistable* software on an interactive whiteboard

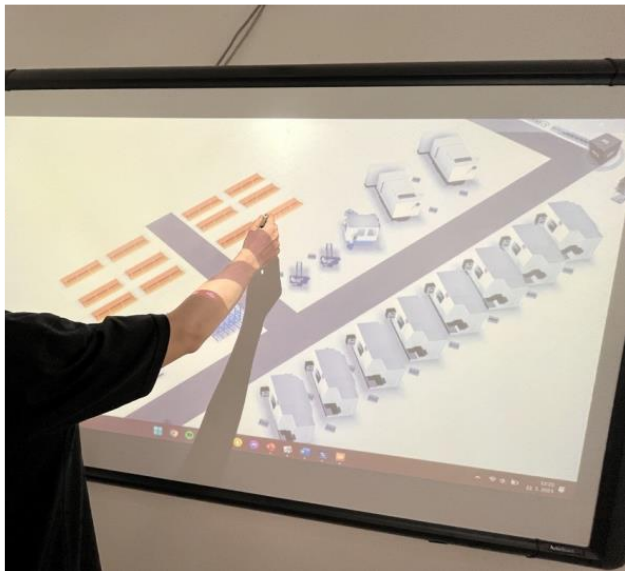


Fig. 2. View 3D - working with *Vistable* software on an interactive whiteboard

The *Microsoft Word* program is similar, when it is possible to move and show the text on the board and then clarify the issue of the given topic using the *ActivInspire* tools. We can also display photos or play any video on the board either on the Internet or

directly from the computer. The *Vistable* program is also no exception, all that is needed to work with this program is the complete connectivity of a whiteboard, desktop computer or laptop, data projector, and a tablet can also be used together with a pen. Subsequently, it is possible to move and add modifications (machines, workplaces, buildings, cars) in the program. The program with the connected whiteboard is therefore used more for presentation and partial editing and not for creating a production layout.

A great tool is the display of a 3D visualization of the finished project, when it is possible to present the production hall to the students at the lecture and at the same time move between them and offer them control in the 3D visualization with a tablet. The student can move around the production hall by simply dragging the pen on the tablet screen.

Figure 1 shows the work in *Vistable* in a 2D view, and Figure 2 shows a 3D view of the production hall. This assignment is processed in the subject Designing production and assembly systems in the 3rd year of bachelor's studies.

2 POSSIBILITIES OF TESTING STUDENTS IN VARIOUS SUBJECTS

A great use of a large interactive whiteboard is testing, for example using the *kahoot* application for such testing we will also need an Internet connection. The teacher prepares the test before the lesson begins. When the teacher comes to the class, he turns on the blackboard and sets the test on the blackboard, after starting the test, students write the code that is displayed on the screen of the *kahoot* environment into their mobile phones, tablets, laptops or desktop computers. In addition, *Kahoot* also offers a *Ghost Mode* feature that allows users to play games against their own past performance or against the performance of other users. This feature provides the ability to track and improve your progress and compare yourself to others.

After connecting all the students, the teacher starts the test and the students have a certain time to answer the question. After answering all the questions, the evaluation will be done by *kahoot.com* itself.

3 EVALUATION AND BENEFITS

Studies conducted by university researchers have found *Prezi* to be a more engaging and effective form of presentation than *PowerPoint*. The principle of creating a presentation through a white canvas, gradually revealing information and using the presentation path guarantees that the presentations will be memorable, original and dynamic. The platform is used to bring the presentation to life using movement, zoom and spatial tools. An open canvas

that is unique will allow you to view and organize the presentation as a whole into topics. *Prezi* includes advanced features for inserting images, text, icons, shapes, graphs, video and animations, the presentation can be shared with students.

The term such as concept maps, mind graphs or mind maps have been known for a long time. The principles of creating mind maps can be learned and transferred to the digital space. Clear, creative and original thinking can help students learn, revise and take notes [1].

EdrawMind software is a tool for creating mind maps, diagrams and other visual tools for organizing and presenting information. This software allows you to create and edit different types of diagrams, including mind maps, organizational charts, Gantt charts, process flow diagrams and many more.

EdrawMind also offers various features for sharing and collaborating with other users, such as the ability to share and comment on diagrams in real time, import and export to different formats, and more. *EdrawMind* is used for a variety of purposes, including project planning, brainstorming, creating presentations, and more. The program is free, eliminating the need to invest in software. But it is necessary to download the software [2].

With the onset of the digital era, new possibilities for the university environment also appear. One of these solutions is the *Office 365* platform, which provides comprehensive tools for effective university management, communication and online learning. If a student or teacher wants to learn or improve in using an e-mail client, organizing work time, recording and backing up documents, sharing materials, creating tests, preparing presentations and conducting online classes, this education is intended for him. The *Office 365* platform enables educators and students to access modern productivity tools from *Microsoft* [3].

Office 365 is applications and services that exist on mobile, computer and web browser. *Office 365* for schools includes: office online (*Word*, *Excel*, *Powerpoint*), document sharing (*Sharepoint*), shared calendar, professional email (*Outlook*), personal data storage (*Onedrive*), online education (*Teams*, *Classnotebook*) [4].

These applications can be used in most subjects; the advantage is that the changes made by the teacher on the interactive whiteboard are simultaneously updated in the document available to the students. The *University of Zilina* provides this package to students completely free of charge [5-6].

The *Buncee* interactive tool shows the real experience of the lesson, presented in the form of multimedia posters, interactive worksheets and online quizzes. With this application, the subject matter can be explained in a new and engaging way. Online login

and diverse material libraries provide inspiration and simplify the use of individual applications.

The *Buncee* platform is used to create interactive digital presentations and teaching materials that can be used in a university environment or for corporate presentations. It allows users to add various elements such as images, videos, sounds, text and animations to presentations to create dynamic and attractive presentations. *Buncee* also provides a number of pre-made templates that users can customize as needed. Thanks to the *Buncee* platform, educators and presenters can engage and motivate listeners and improve their learning and retention. Students can create a multimedia poster with which they can present the assignment in an engaging way.

Wizer.me is an online platform for creating interactive learning materials such as tests, quizzes, challenges and other activities. It serves educators and educational workers as a tool for creating personalized and dynamic educational materials that can be adapted to the individual needs of students and thus improve their educational experience. *Wizer.me* allows educators to create and customize their materials using a variety of tools, such as multiple-choice questions, organizing, text completion, working with images, videos, and audio. Students can complete these materials online, and educators can track their progress and evaluate their work using built-in tools.

Files in the *ActivInspire* program are created in the form of demonstration notebooks (flipcharts) with an unlimited number of pages, which can contain various elements such as texts, animations, videos, audio samples, hyperlinks, embedded Internet browser, active elements from the resource library or created according to your own ideas, notes, annotations on the desktop and assignments or tests. Actions and restrictions can be assigned to each object. By using drawing tools, geometric shapes, images and sounds, you can create a basis for creating interactive tasks, such as secretarial, peke, eight-way, completing words or creating pairs. The benefit of creating a quiz in *ActivInspire* is that students can test their knowledge in a fun and competitive way.

Creating videos for educators is an important part of teaching, but many are often afraid of the complex preparation. However, with *Video Editor*, this is no longer a problem. With this tool, he can quickly and easily create videos for his students and share them instantly [7-8]. In the *Video Editor*, you can easily control converting sources, cutting video, applying filters and transitions, editing audio, inserting subtitles and many other functions that will help you create quality teaching materials. *ClipChamp* is a web application for editing and converting videos. It serves for simple and fast processing of videos directly in the browser.

CONCLUSIONS

The use of an interactive whiteboard in the field of education represents a modern and innovative approach to teaching. Based on the analysis of the use of the interactive whiteboard, we came to the conclusion that this technology can have significant benefits for teaching and learning. One of the main benefits of an interactive whiteboard is improving student engagement and teacher-student interaction. An interactive whiteboard allows information to be presented and shared in a dynamic and interactive way, which can lead to better understanding and retention of the subject matter.

In addition, the interactive whiteboard allows educators to adapt teaching methods to the specific needs and preferences of individual students. Another benefit of an interactive whiteboard is the possibility of easy access to various tools and applications that allow you to create interactive presentations and exercises. On the other hand, interactive whiteboards can be quite expensive and require technical support. In addition, their use requires a certain level of technical skill of teachers and students. Despite these limitations, the results of the analysis show that the interactive whiteboard can be a very useful tool for teaching and learning. Overall, it can be concluded that the use of interactive whiteboards in education represents a new and modern way to improve the quality of teaching and motivate students. With an increasing number of schools and institutions introducing interactive whiteboards into the classroom, this technology is expected to play an increasingly important role in the future of education.

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