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# The Interactive Board – an Indispensable Device in Upper Secondary Education

## Abstract

In the face of dynamic social transformations and the lives of modern children and young people, the school should use modern educational technologies to a greater extent than ever before. One of the great opportunities to increase the attractiveness of the school for students is to use, for example, an interactive board that offers greater opportunities for interactive lessons. Children and young people are living in the world of multimedia, which have taught them to demand surprises and new ways of presenting information at an ever faster pace; therefore, they have different expectations from their teachers than previous generations. To use modern technologies in lessons, it is necessary to prepare and motivate teachers. The article presents the educational values of this type of teaching aid, and explores their use by teachers in upper secondary school.

K e y w o r d s: information technology, interactive board, digital school, media competence of teachers

# Introduction

Nowadays, teaching is enriched with many new interactive media, thus increasingly referred to as "multimedia." Today, this term is reserved primarily for computer applications. Interestingly, in the past its meaning was completely different, and meant the simultaneous use of several teaching aids (Nocny, 2007). The development of modern technologies makes it necessary to constantly adapt to new conditions, which allows introducing modern forms of teaching to the educational system. The Ministry of National Education in Poland places an increasing emphasis on the digitization of schools, which aims to ensure that all school classes have interactive boards. An interactive board is an indispensable teaching tool in a modern school. This touch screen, which works with a multimedia projector and computer, enables the teacher to display graphic or multimedia materials. We can provide students with websites, movies and other educational materials, through the use of the interactive board. On the board a teacher can write, underline and work like on a traditional board, but they are also able to save and print the content of what can be seen on the screen. The interactive board is a 21st century school board and makes it very easy for the Polish teacher to conduct interactive lessons (Kupisiewicz, 2013).

Accordingly, it may be argued that students who are raised in the era of the ubiquitous access to computers and whiteboards absorb the knowledge much faster and easier. These devices activate and stimulate their concentration. What is more, teachers can spend less time preparing for their classes and return to a previous topic at any time during the lesson.

In this way, it can help to recollect, reuse and consolidate existing material. The functioning of the European Multimedia Education Center proves the importance of interactive education. Interactive education is choosing a learning process that maximizes participation in the lesson and gives the student the opportunity to choose their own methods and ways of learning. It ensures the effectiveness of teaching, increases the level of motivation and satisfaction of students (Surowaniec, 2007). This center mainly trains school principals who are interested in introducing the newest technology into their institutions. By demonstrating "good practices" from foreign schools which have introduced multimedia tools during lessons, Polish principals, through the training become the precursors and main motivators of the newest technology in their schools.

## The Interactive Board in the Practice of the Learning Process

The interest of children and young people who have daily contact with television, computer games and the Internet is becoming an increasingly difficult task for teachers using static teaching methods; mainly because students become bored quite quickly with traditional methods of teaching. Interactive boards are a great solution for these types of contemporary problems. There are more and more "white boards" in Polish schools. It should be emphasized, however, that they first became particularly popular in British schools. Using an interactive whiteboard has many benefits – above all, it increases the interest and activity of students during classes. Lessons become more attractive. They provide the opportunity to use rich multimedia resources and didactic programs. Moreover, they stimulate classroom discussion, enable interaction with teaching material and motivate to learn (Majewska, 2013).

There are many interesting articles on the use of interactive whiteboards in lessons. These articles deal with such topics as: multimedia help during the preparation of passing mathematics exams (Heba, Smyrnova-Trybulska, & Kapounová, 2017), showing the use of an interactive whiteboard during English lessons (Serowy, 2011), how to work correctly and effectively on a multimedia board (Zbisławska, 2010; Sęczawa, 2008), or the use of this equipment during geography lessons (Rolf-Murawska & Podgórski, 2010). These articles can serve as inspiration for teachers who are starting their adventure with multimedia aids.

The interactive whiteboard belongs to new media that allow the use of digital recording and algorithmic processing techniques to process and send any large amount of data in the shortest possible time (Ruman, 2018). Thanks to the use of an interactive whiteboard during the lesson, the teacher does not provide students with information and ready-made ways to solve problems, but directs their work so that they independently search for answers by performing exercises specially prepared for this purpose. The many advantages are also visible in class with the varying pace of work. When writing examples of exercises on a traditional board, at some point, the teacher must erase the record. The interactive whiteboard gives you the opportunity to return to specific content at any time. Thanks to this, students who work faster can be asked to perform another task, and students with a slower pace of work can return to previous messages and the teacher can calmly explain its content.

It should be mentioned that the interactive whiteboard is multisensory. Parallel impact on many senses allows for quick and effective assimilation of knowledge and longer retention of knowledge. The student may experience learning in many ways. During the use of the board, young people become the co-creators of the

image, notes, choice of colors, themes and ways of writing. The student may feel that the lesson is not only reproduced by the teacher, but that they are actively involved in it (Miernik & Piasta-Siechowicz, 2008/2009). Keep in mind that: "The basic idea is that students, who will come of age in the 21st century, need to be taught different skills than those learned by students in the 20th century, and that the skills they learn should reflect the specific demands that will be placed upon them in a complex, competitive, knowledge-based, information-age, technology-driven economy and society" (Morze, Makhachashvili, & Smyrnova-Trybulska, 2016, p. 42). Information education is education preparing students for life in an information society. Today's students are tomorrow's teachers – they will be teaching other people (Ruman, 2017).

Thanks to such a board, the teacher controls the course and pace of the lesson by explaining the harder parts without interrupting the application. Furthermore, they have the ability to use ready-made multimedia materials and the students' independent handling of the board ensures their active participation in the lesson. The interactive whiteboard also has drawbacks. First of all, the time to prepare materials for the board is very long, and the markers quickly break down. What is more, often launching a whiteboard takes a lot of valuable lesson time, the board freezes and does not offer as much writing space as a traditional blackboard. It can also be unreliable when launching websites or programs. Continuous use of the board can cause students to become accustomed to it and thus discourage them from traditional working methods. Despite the wide possibilities of the interactive whiteboard, the teacher should use a traditional whiteboard so that students do not forget how to write on it (Sałasińska-Andruszkiewicz, 2015).

There are several factors that affect the efficiency of using a multimedia whiteboard. This includes a high level of blackboard use skills, ensuring constant training depending on the individual needs of teachers, preparing their own materials for the board, cooperation between teachers and an exchange of experience in using the board. Administrators should also pay attention to the proper assembly of the board and technical support to quickly eliminate any problems. There are several types of interactive whiteboards:

- touch – these boards have a matt surface resistant to reflections and ensure a high quality of reading. They are controlled by means of a pointer or finger and are also resistant to damage;
- electromagnetic – these are operated using precise electronic pens. They allow simultaneous use by several people and can be treated as dry-wipe boards;
- infrared – the boards of this type are equipped with a matt surface that guarantees resistance to mechanical damage. Even in the case of defects they will work properly;

- capacitive – this kind of board is characterized by the ability to be operated by several people at the same time. The properties they have include high resolution and control with a finger or a pointer (Mamroł, 2018). There are many models equipped with special programs for schools that have work tools adapted to different subjects.

A teacher who works with an interactive whiteboard should also read the pages of the instruction manual that are useful in the course proposal, as well as tips from other teachers that are related to their particular field of expertise. There are materials related to various topics and subjects at http:/www.scholaris. pl. There are also pages where teachers share entire lessons with their own outlines. Such materials can be found at http://exchange.smarttech.com. Publishers have also proposed e-books and multibooks for interactive boards that would be helpful to the teacher in preparing their lessons. The first suggestion is a repetition of textbooks that can be used to guide students as to which page of the textbook they are working at a given moment to avoid unnecessary confusion. Multibooks are very interesting tools – they are also textbooks, but supplemented with songs, texts read by celebrities, films, interactive exercises and more (Sałasińska-Andruszkiewicz, 2015).

The fact that an interactive whiteboard is a very universal teaching aid is demonstrated by its use at many levels of education. For example, Mirosława Iwasiewicz showed that one should not be afraid of using the blackboard even when discussing a work of art – a painting by Jan Matejko, *Jan Kochanowski over the dead body of his daughter, Urszulka*. Among other activities, students marked and labelled which elements of the image indicate the funeral mood of the work (Iwasiewicz, 2011/2012).

Collecting and preparing multimedia materials for the lesson is unfortunately time consuming and requires considerable skills from the teacher. It is easier to use ready-made applications from the whiteboard resources or take advantage of ready-made multimedia lessons published on the Internet. The new generation of educational computer programs and interactive charts can be purchased from many specialist publishers and can also be found on the Internet, e. g. at the School and Pedagogical Publishers website. The texts, images, sounds and animations collected at www.wsipnet.pl, often obtained from foreign resources, can easily be adapted by the teacher to meet their individual needs. The board significantly facilitates the use of feeding methods (e. g. stories, lectures, talks or descriptions), as it enables enriching the verbal message with films, animations or static images, e. g. photos, drawings, tables, diagrams, diagrams and other source materials. On the board a teacher can display important information, definitions and formulas. This helps the teacher in conducting the lesson, because they do not have to use notes during the lesson, as everything is pre-prepared (Wojtanowicz, 2013).

Czesław Banach, analyzing the challenges and tasks of Polish education for 2012–2025, states that one of the priorities is, among others, preparing learners for effective social and professional functioning and "lifelong learning" in the information society (Banach, 2012). Therefore, taking this concept into account, the interactive whiteboard advances the adaptability of students to learn in a multimedia environment while also advancing the idea of "lifelong learning" among teachers who are unfamiliar with new technologies.

The types and characteristics of multimedia teaching aids are presented by H. Noga, who believes that the general division of multimedia resources includes multimedia devices, e. g. projector, screens and software, as well as e. g. multimedia applications, multimedia proprietary systems and multimedia presentation systems (Noga, 2010). The factors determining the use (functions) of multimedia teaching aids are as follows: education, including distance learning, multimedia presentations, interactive television, communication (multimedia mail), hypermedia (browsers, the Internet), digital film editing and production systems, computer simulations and virtual reality (Kołodziejczak & Zieliński, 1995). These devices are used at schools in the following way:

- computers – online translations, educational games, creating multimedia presentations, writing essays, searching for information on the Internet, printing documents;
- interactive boards – writing, watching presentations, watching educational films, drawing, making class quizzes, enlarging materials, etc.;
- smartphones – online translations, educational games, quick information search, conversations about absence from school;
- digital cameras – taking photos for an educational project, a school's Facebook account;
- MP4 players – listening to music tracks learned in class, e. g. during lessons on culture and/or religion.

## The Use of Interactive Boards
## by Upper Secondary School Teachers – Own Research

Research carried out at the Marzano Research Laboratory in 2009 shows how valuable of a multimedia aid a whiteboard is. The research results indicate that the use of an interactive whiteboard in 75–80% of the class increases the knowledge acquired by students by 29%. The blackboard should not be used too much

(85–95%), because the results of the research indicate that the acquired knowledge of the students is then lower (Majewska, 2012).

In the Powiat School Complex No. 2 in Pszczyna, all teachers who were employed full-time at school, i.e. 112 people, participated in the multimedia project. Thanks to their participation in training and workshops, teachers expanded their skills, which they later used when conducting classes in the field of introducing technology during lessons. The school received equipment (multimedia boards, projectors and speakers) that were used by teachers and students. In order to create the article, the authors conducted a survey among willing teachers, as well as an interview with the principal of the institution.

The research, the results of which are presented below, was conducted at the Karol Miarka Powiat School Complex No. 2 in Pszczyna during the 2018/2019 school year. Each teacher spoke about the use of an interactive whiteboard in their lessons. The research group consisted of 84 people, including 57 women and 27 men. 28 respondents came from a rural environment and 56 from an urban environment. They were teachers who expressed their willingness to participate in these studies, and were selected from a group participating in a school project on technology where the overall number of participants was 112.

The main problem that this work examines is the question: do teachers use technological aids (such as a multimedia board) in their work? The main problem was supplemented by specific questions closely related to the concept of technological tools that can support school work. These questions were answered by teachers of the Powiat School Complex No. 2 in Pszczyna. The questions are:

- How often do teachers use the interactive whiteboard in their lessons?
- Do they support their work through multimedia aids?
- What knowledge do teachers have about the various possibilities of an interactive board?
- How do they know about the use of technology in school?
- What are the benefits of using an interactive board in the educational process?

The participating teachers were told the following: "polling can take the form of a survey or interview depending on how you respond – in writing or orally." The researchers were then dealing with one of the techniques: a survey or an interview, as well as the adequate research tools related to them, i.e. questionnaires and an interview.

For the purposes of this study, a questionnaire for teachers and an interview questionnaire were constructed, which was addressed to the school's principal. It consisted of four open-ended questions.

Unfortunately, the question regarding supporting the teacher at work with technologies other than a multimedia board during school activities was omitted by 81 respondents, only two men and one woman answered as follows:

> I am not afraid to ask students to find information and definitions on the Internet on their smartphones, during practical classes, this way the work is much faster. In the process, they will see their new messages (e. g. on Facebook), which they would read anyway in the classroom, only secretly, leaving the class or becoming distracted from the topic of the lesson. On smartphones, they have a lot of handy applications, which are also needed in class, a smartphone is like a portable board in their pockets, we can work in groups more efficiently. Of course, students know what the smartphone should be used for during the lesson, so that they do not record or photograph themselves, but rather follow the rules and want to learn in this way (Vocational teacher).

> The board is so multifunctional that in principle you do not need any other help, although of course if it malfunctions, I can teach the classes without any problem. I don't use any other technological aids (Math teacher).

> In addition to the interactive whiteboard, I use a platform that supports testing and uses e-textbooks (Geography teacher).

The next research topic explored concerned how often the teachers use the interactive whiteboard in their lessons and whether they have knowledge of its various possibilities. The respondents' answers show that more than half of the teachers (55%) use it "often," 25% "very often," 10% "from time to time" and 10% declared "rarely."

70% of respondents defined the level of their knowledge about interactive boards as "high," while 15% indicated an "average" level. Only four people (5%) declared the level as "very low" and the same number chose "very high" level because of their profession – an IT teacher.

Many teachers (60%) obtained their knowledge through courses and training organized by various institutions such as the Voivodship Center of Information Technology Development and the Regional Center for the Development of Education, and also participated in trainings organized at the school. Mostly, however, teachers instructed each other on how to use the board. A significant proportion of teachers also searched for information using the Internet (35%).

All teachers agreed that the use of an interactive whiteboard in the educational process allows for the greater motivation and participation of students. This view is expressed by 85% of respondents. They admitted that:
- greater involvement of students in the lesson can be seen;
- an interactive whiteboard helps in transferring knowledge;
- it is helpful in checking students' knowledge;

- it enriches the lessons with books, it is a "stepping stone";
- it is easier to prepare for the lesson.

Examples that illustrate the enrichment of lessons thanks to the board are presented below.

- After a trip on November 28, 2018 to the Museum of the History of Computers and Computer Science in Katowice, students from the IT Technician classes prepared multimedia presentations that they presented on the class forum using interactive boards.
- There was a cyclical competition for garden design by students of the Landscape Architecture Technician classes in teams, using technological assistance.
- Math teachers sent out classroom notes by email on the interactive whiteboard, so students had more solved examples in class because they did not waste time rewriting them.
- In biology and nature lessons, the gradual disclosure of fragments of the message allowed students to focus on content relevant for the given moment and fragmentary approximation.

Despite many positive results, many teachers believe that even greater knowledge and skills are necessary for the full use of the boards, and also non-technical problems related to both the operation of the board itself and the functioning of the Internet, from where the appropriate lesson materials are downloaded. It is important that teachers had no main concerns with using interactive whiteboards. Almost everyone uses them and believes that they are a helpful didactic tool.

The use of multimedia aids by teachers during the classes depends on the purpose of the lesson. Sometimes, teachers use computers as an element of integrating and teaching students to collaborate, then they assign several students to one computer. During the selected lessons, students have access to websites and Internet portals, where they have the opportunity to do exercises in the online system. Tasks which are compatible with the blackboard are the most popular among students. Teachers' observations show that multimedia boards add variety to standard lessons, in particular for students with learning disabilities.

Unfortunately, fewer teachers claim to use ICT during extra-curricular classes to develop students' talents, or to level the students' knowledge. In these classes, the only introduced approach is the traditional method of teaching students. This however may by the result of the teachers' unwillingness in participating in any form of workshops, courses or training dedicated to ICT methods.

In addition, an interview was conducted with the principal of the Powiat School Complex No. 2 in Pszczyna, MSc. Eng. Piotr Cygan, on the usefulness of interactive boards in class work, as well as the importance of new technology in Polish schools. The principal, when asked about the need of introducing technology into the classes, presented the following reflection:

> Technology certainly enriches the current workshop of the teacher, no matter what subject he/she teaches. A condition for the success and effective use of new tools is to orient teachers' improvement on developing their substantive and methodological competences, so that they can find their place in the digital reality. This, of course, is not so simple, it requires workshops and training, during, for example, pedagogical councils. New technologies mean that the teacher plans and prepares didactic classes, aids, and collects materials differently. What is more, I see that students are much more likely to come to such a lesson, they are more interested and this is our goal above all. (P. Cygan, Technology to support teachers, February 3, 2019)

The difference between the students' natural digital environment in which they are immersed outside of school and the traditional school environment creates a tension that some students find difficult to overcome. The problem is not the school equipment itself or its lack, but the teachers' reluctance to use modern technological methods, including whiteboards, during their classes.

The next issue was the question about the effectiveness of using interactive whiteboards at school. The headmaster broaches the subject as follows:

> The school must equip students with competences that will facilitate their life in the future, i. e. the ability to solve problems, search for and manage information and process ideas. To achieve this goal, the use of new technologies in teaching should consist of changing the role of the student from an observer into an active multimedia user that he/[she] can use during the learning process. It's such a digital revolution in science. Interactive boards and other modern IT tools that work effectively in school curricula around the world create a completely new model of school teaching. It is focused on the active acquisition, use and processing of information. The use of modern technologies in the teaching process increases the level of motivation and concentration of students, and, as a consequence, the level of retention and recall, also provides better results. I regret that in the past, we did not have such an opportunity. This potential should be used, students are waiting for lessons to be conducted in this way. (P. Cygan, The effects of using modern technologies at school, February 3, 2019)

The third question concerned the programs in which the teachers were trained by their educational institution. The principal mentioned the whole range:

None of the teachers would certainly want to, because it is a huge number of hours of training. It is certainly worth mentioning that the teachers have enriched their knowledge of working with a SMART Board interactive whiteboards, working with an e-learning platform, and using IT tools to create interactive teaching aids. The teachers were presented the capabilities of two computer programs: FastStone Capture – a program for screen shots to be used in science and professional subjects, as well as XMind – a program for creating mental maps, which works very well in our school during English and history classes, and is admired by principals of other schools of the Pszczyna powiat, which I am very proud of. (P. Cygan, Description of teacher training on technology, February 3, 2019).

During workshops and trainings, the teachers of the researched school gained knowledge and important skills in the application of modern technologies in teaching, including SMART Board interactive whiteboards, which they can successfully use during school activities.

The last question concerned the teachers' satisfaction with the acquired knowledge gained during the workshops, trainings or courses. The question was addressed to the principal. The reply was as follows:

Now, after over two years since the introduction of whiteboards in our school, I can definitely say that all the teachers who participated in training, courses and workshops not only feel more comfortable with new technologies but are much more eager to use their knowledge during their classes. However, the process of using this knowledge and skills by the teachers was complex. First, they felt a bit reluctant to use new tools, nevertheless, after some time and some other motivational factors, the teachers overcame their concerns. They are slowly becoming aware of the positive influence of the new methods on learners in the process of teaching and learning. What is more, the students became more interested in the lessons. Of course, this required self-discipline from teachers, and a lot of work input at the beginning to get used to the equipment, but the results are great. Teachers see that thanks to the introduced changes, the pace of work has changed, students can see, understand and assimilate faster. Through the interactive board, the teacher can load notes from the board into the computer's memory and play movies with the possibility of taking notes directly on individual frames. Using the facilities mentioned above, they have the ability to enlarge the image during the visual presentation of phenomena, static elements and details on charts, which is very important in our school, as more and more visually impaired students come to us.

> What more can you say? (P. Cygan, The implementation of the introduction of technology in teaching, February 3, 2019)

Summing up the statements of the school principal of the examined school in Pszczyna, the key challenge was to use interactive boards from a new methodological point of view. This, in turn, has increased the school's educational attractiveness to prospective students. It should be remembered that the use of interactive whiteboards and multimedia devices is the inevitable future of every school. The use of the board in the didactic process is attractive, interesting and makes learning by observing, acting, feeling and thinking more attractive. Learning becomes more effective through a visible increase in student activity. Students are involved in all activities proposed in the classroom, and after completion show a high degree of retention of the knowledge learned and skills acquired.

## Advice for Teachers Using an Interactive Board – Summary

In the modern world, students acquire knowledge and skills presented through images. The teacher should meet the expectations of students and conduct lessons in an active way to interest students and encourage them to interact with the intellectual work presented in class, regardless of the level. The interactive whiteboard gives the opportunity to conduct dynamic classes, thereby making lessons attractive.

Chris Betcher and Mal Lec, practitioners who have worked with an interactive whiteboard for many years, created seven valuable tips for teachers who are starting their adventure with the interactive whiteboard:

- "Teacher, be proficient in your art!" – be fluent in the use of a computer.
- "Control the technical organization" – teachers should have control over the location of the interactive whiteboard, the efficiency of the whiteboard, access to external devices, whiteboard and computer software.
- "Teacher, be interactive" – the authors want to remind teachers about the interactive properties of the board when preparing an exercise.
- "Teacher, be flexible in your actions" – learn to use the blackboard in the context of the Internet.
- "Teacher, be constructive" – when working with an interactive board, remember that there are several advantages of multisensory teaching aids.

- "Teacher, have an open mind" – analyze the goals you want to achieve during the lesson and choose the most advantageous option of working with information technology.
- "Teacher, remember to cooperate."

Teachers should remember about the many functions that boards have in their menus and, trying to make their work easier, use as many of them as possible. (Majewska, 2012).

Probably, the teachers who did not have contact with the board wonder whether it is easy to learn how to use it. "Anyone who has mastered computer skills should not have difficulty working on the board. It is a quite simple and intuitive teaching aid. Additional training in this area will allow complete mastery of the device" (Wojtanowicz, 2013, p. 215).

An interactive board is a great teaching aid that should be found in every class. Teachers should constantly find newer and better ways in which students may be motivated during a lesson. If anyone still has doubts, the researchers wanted to quote a sentence that should encourage every teacher to constantly improve. "Who stands still, goes back – so, let's look for the best for students, they are the most important here" (Brewczyńska, 2009, p. 5).

An interactive whiteboard is a great convenience for the teacher because it has a wide range of applications, e. g. in a nature lesson, all that is needed is one microscope, operated by a teacher and connected to the board, where the microscope image can be seen at high magnification, which above all, reduces the time needed for each student to approach the microscope. However, in history, language or Polish language classes, you can move to important places discussed during the lesson, or in a book, which enriches the student's active imagination.

The tools supporting e-learning in upper secondary schools can be divided into two groups:

- facilitating the implementation of the educational process, which can include various types of electronic diaries;
- streamlining the implementation of the teaching process, which includes all programs or environments used to create various types of multimedia teaching aids or entire e-learning courses (Bednarek & Lubina, 2008).

## Conclusions

An interactive board is a teaching aid for teachers, which is characterized by simplicity and ease of use. Such a board is a very valuable didactic tool that sup-

ports education and arouses interest in students who have been connected with technology from an early age. An example of the use in education of the interactive whiteboard is certainly the Powiat School Complex No. 2 in Pszczyna. Although it is certainly a challenge for teachers who would not willingly replace traditional methods with newer ones, students do not have to wait long for the effects of their work. The school principal spoke about the correctness and success in the interview mentioned above and provided encouragement to other teachers not to be afraid to introduce interactive boards in their classes.

The presented conclusions may become an inspiration for other upper secondary schools to further improve their teaching staff in the field of information technology. It is optimistic that the participation of students in classes based on multimedia aids is enthusiastic, provides good results, and students, by consolidating knowledge, demonstrate their skills, often surprising the teachers themselves. Teachers should be aware that IT is not a threat to them, but a valuable asset, as it strengthens students' knowledge of using ICT equipment and materials and will certainly observe an increase in the skills of any given subject. The multimedia board, on the other hand, assembles the capabilities of all existing teaching media as a tool that affects many receptors, entertains and teaches, helps in the transmission of material, and accelerates the teaching process. Of course, everything can be done only if the school facility is well equipped with such devices.

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### Tablica interaktywna – niezastąpiona pomoc w edukacji ponadgimnazjalnej

S t r e s z c z e n i e

W obliczu dynamicznych przeobrażeń społecznych i życia współczesnych dzieci i młodzieży, szkoła powinna w większym aniżeli dotąd stopniu wykorzystywać nowoczesne technologie edukacyjne. Jedną z wielkich szans na zwiększenie atrakcyjności szkoły dla uczniów jest wykorzystanie np. tablicy interaktywnej, która daje duże możliwości w tym względzie.

Dzieci i młodzież żyjący w świecie multimediów, które nauczyły ich domagać się zaskoczenia, nowości, szybkiego tempa, mają inne oczekiwania wobec nauki szkolnej. Do większego zastosowania nowoczesnych technologii w szkole konieczne jest odpowiednie przygotowanie i zmotywowanie nauczycieli. W artykule ukazano walory edukacyjne tego typu pomocy dydaktycznych, ich wykorzystania przez nauczycieli w szkole ponadgimnazjalnej.

S ł o w a   k l u c z o w e: technologia informacyjna, tablica interaktywna, szkoła cyfrowa, kompetencje medialne nauczycieli

Наталья Мария Руман, Агата Покладник

### Интерактивная доска – незаменимая помощь в старших классах средней школы

А н н о т а ц и я

Перед лицом динамичных социальных преобразований и жизни современных детей и молодежи школа должна использовать современные образовательные технологии в большей степени, чем раньше. Одной из замечательных возможностей повысить привлекательность школы для учащихся является использование, например, интерактивной доски, которая предлагает большие возможности в этом отношении.

Дети и молодые люди, живущие в мультимедийном мире, которые научили их требовать удивления, новостей, быстрого темпа, имеют разные ожидания в отношении школьного образования. Для более широкого использования современных технологий в школе необходимо подготовить и мотивировать учителей. В статье представлены образовательные ценности этого вида учебных пособий, их использование учителями в старших классах средней школы.

The Interactive Board – an Indispensable Device in Upper Secondary Education

Natalia Maria Ruman, Agata Pokładnik

**Tablero interactivo – ayuda insustituible
en educación secundaria superior**

R e s u m e n

Ante las transformaciones sociales dinámicas y la vida de los niños y jóvenes modernos, la escuela debería utilizar tecnologías educativas modernas en mayor medida que antes. Una de las grandes oportunidades para aumentar el atractivo de la escuela para los estudiantes es utilizar, por ejemplo, una pizarra interactiva que ofrezca grandes oportunidades a este respecto.

Los niños y jóvenes que viven en el mundo multimedia que les han enseñado a exigir sorpresa, noticias, ritmo rápido, tienen diferentes expectativas para la educación escolar. Para un mayor uso de las tecnologías modernas en la escuela, es necesario preparar y motivar a los docentes. El artículo presenta los valores educativos de este tipo de material didáctico, su uso por parte de los docentes en la escuela secundaria superior.

P a l a b r a s   c l a v e: tecnología de la información, pizarra interactiva, escuela digital, competencia mediática de los docentes.