



## STUDENTS AND THE INTERACTIVE WHITEBOARD

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**Abstract:** The spread of Interactive Whiteboards in Hungary has made students more curious, interested and motivated. The new digital generation claims reform and besides the traditional education they need digital material, extra knowledge since it is much easier to access extra information in connection with a particular curriculum. They spend a lot of time using their computers or surfing the net which is supported by the below survey. If the teacher raises their interest in the topic instead of providing them with material which is boring and difficult to understand, the teachers will be ready to search the topic on the internet and this way they can develop their knowledge. So we need a device which might be used to colour the lesson and the interactive whiteboard is perfect for this purpose.

In this paper I present the opinion of 618 students in connection with the new device. I will describe their reaction to using the board and I will list their positive and negative experiences and their ideas about the future school.

**Key words:** IWB (Interactive Whiteboard), ICT devices, interactive teaching environment

### 1. Introduction

It is the school's task to teach us how to learn, to make us strive for knowledge, to teach us how to be happy when we do something well and excited about creating things to make us like what we do and help us find what we like doing. (Szent-Györgyi Albert, 2011)

As the above quotation states it is the school's task to teach the student how to learn, prepare them for life, so that they can easily find their place in society. The spread of info communication technologies has reached the schools there are more and more new devices which can be used by teachers at school.

International research shows that most of the students are happy and enthusiastic about the interactive whiteboard they listen to the lesson more intensively and they are more interactive.

More and more ICT devices appear in education, modern furniture replaces the traditionally ordered desk, cupboards, the traditional blackboard is replaced by IWB, students will use mini laptops, instead of their exercise books they will get digital homework.

Several questions arise in connection with the boosting innovative development:

- Will these devices completely replace the traditional equipment?
- Shall we find only ICT devices in the future classrooms?
- Will there be exercise books or printed books or only their electronic forms?
- Will everybody use laptops in lessons?
- Will they learn how to write or will it be replaced by typing?

### 2. Pedagogical theories applicable in ICT environments (Gaál, 2011)

It is not only the educational environment that changes with the appearance of new devices but already working pedagogical theories come to the front along with new approaches. The teacher has got more possibilities, there is a wider range of teaching material, with the appearance of new digital material the teacher can select from a huge amount of information.

The traditional teachers' role, where the teacher was in the centre of a lesson, changes. The teacher becomes a helper while the student gets a more active role. Therefore we should put more emphasis on theories on constructive pedagogy which was created by Seymour Papert taking Piaget ideas of constructivism as a base.

According to the constructivist approach learning is an active process where the student organises new information in their cognitive systems with the help of their already acquired knowledge. Knowledge is not just taken in but it is created, constructed. Earlier acquired knowledge plays a basic role.

In the constructing learning approach revelations in connection with learning text also appear and action takes a basic role. The final result of learning is an applicable knowledge, structures which can control our actions and in a broader sense it is the development of the character.

In the constructivist pedagogy the teachers' role is different. Earlier they were the only transmitter of knowledge. In the constructivist learning approach the following roles are stronger:

- The teacher cooperates with the children.
- He is not only a transmitter of knowledge but rather part of the learning process, its mastermind.
- Makes students find out and connect information.
- Applies several interactive techniques.
- Uses a lot of visual aids and help the student discover information individually.

The project method is a learning process which starts from the whole and the details are assigned to it. The project makes students to sum up their knowledge related to a particular topic so it is an integrated approach. It encourages student to work individually and in groups. Ideas supporting the project method:

- Students' motivation is enhanced.
- Improves imagination and attitude to work.
- Helps problem solving.
- Gives self confidence and improves communication skills.
- Develops creativity.
- Helps inductive learning.
- Shows new methods to students.
- Teaches how to work in a team.
- Teacher student relationship changes.
- It makes contact with the environment.

According to Bell (2002): The interactive whiteboard is an excellent tool for the constructivist educator. The above ideas can be well adopted in a lesson held in an interactive environment.

Furthermore the pedagogy of action also comes to the front, since the new devices offer new possibilities for this learning approach.

These reform pedagogical movements appeared at the turn of the 19<sup>th</sup> and 20<sup>th</sup> centuries. In this approach the children are not only passive recipients of information but they are active people interacting with their environment who develop as result of this interaction. The reform pedagogical approaches create the idea of the active independent child.

The theorist of reform pedagogy especially John Dewey and Edouard Claparède developed the process of inductive pedagogy. The main idea of this process is that the student discovers knowledge independently by doing experiments and researches and drawing the consequences.

Inductive learning can be enhanced by home assignments, tests and projects since most of the students have got a computer and internet connection (it is supported below survey). By assigning tasks to be made with the use of a computer at home, we can improve students' creativity as well.

Another approach that might be referred to in connection with the new device is sensual pedagogy.

In the centre of Johannes Amos Comenius's sensual pedagogy is demonstration. However demonstration is not a method here but it is also the basic idea of acquiring knowledge. Demonstration or visualization is used to make it possible for the student to meet the real world. The environment has to affect the children through their own senses. The teachers' task is to show the world to the children in the richest and fullest way with the use of different pedagogical devices and methods.

The sensualist pedagogy has been an extremely effective paradigm in the history of education. Transmitting knowledge through the senses and experiences, demonstration the teachers role, developing in dependence and raising interest were tasks which needed solutions and devices.

The IWB can be a very useful tool of demonstration. Think of mathematics lessons where a teacher can demonstrate 3 dimensional shapes or in a biology lesson the inner structure of human body may easily be visualized or experiments can be done in physics or chemistry lessons.

To sum up it offers possibility to visualize things which are impossible to show with traditional methods. Since most of the students learn visually, the IWB can help lot to students in understanding and acquiring knowledge.

### 3. The Teacher-Student relationship

Owing to the ICT devices a new dimension of teacher student relationship may evolve. Beyond the opportunities of traditional education where the teacher communicates with the students only in the classroom, the spread of the internet and the computer made it possible for the teachers to keep in touch with their students outside the classroom, through the internet. The student can use this new channel to ask for help at any time if the teacher is also open to use new technologies.

They can keep in touch by e-mail, different messenger, Skype or within groups in community ports like Facebook, IWIW, Myvip, Hi5 or they may use different forums to help each other in solving their actual problems.

The most popular social network site among the teacher is Facebook. They spend a lot of time this online network activities. Facebook was launched in 2004 just on Harvard University, but nowadays everybody can registration on it.

Facebook provides a personalized profile to the user while allowing for communication, information sharing, creating a friends list, photo albums, forming or applying to social interest groups, and different kinds of online games. In short, as members of Facebook people can share their photos, send messages, chat, tag themselves or others on photos, write on friends' walls, join groups, create new groups, share ideas in group discussions, add kinds of applications, and play games in Facebook. Facebook has been accessed by millions of users in a short time while becoming a part of users' daily lives. (Sacide G. M & Yasemin K. U., 2010)

It could be usefulness in the education to, Sacide G. M & Yasemin K. U., (2010) are found that the educational use of Facebook has a significant positive relationship with its use for communication, collaboration and resource or material sharing, it is revealed that the three dimensions of Facebook's educational uses have approximately equal distributions.

Another possibility is, when the teacher shares the material for the group with the help of an electronic environment the most popular of which are: Moodle, eLEMÉR, Quizlet etc.

### 4. Methods and research questions - Interactive Whiteboard among the students

In my research I used quantitative and qualitative methods to study the experience of IWB usage. My main aim is to estimate the student's attitude while using the new education tool.

Other questions and aims:

- What do they use the computer and the internet for and how often?
- Do they use the IWB? If yes, how often do they use it and in which lessons?
- What kind of positive and negative experiences do they have while using the IWB?

- Why do they find the IWB useful?
- What kind of new ICT or other devices do they miss?

**Qualitative data:** case studies, observations, interviews

**Quantitative test:** questionnaires about students' attitude about using IWB at secondary and primary schools.

**Statistical analysis:** data processing with using SPSS and Microsoft Excel.

## 5. Results – Analysis of Student Survey

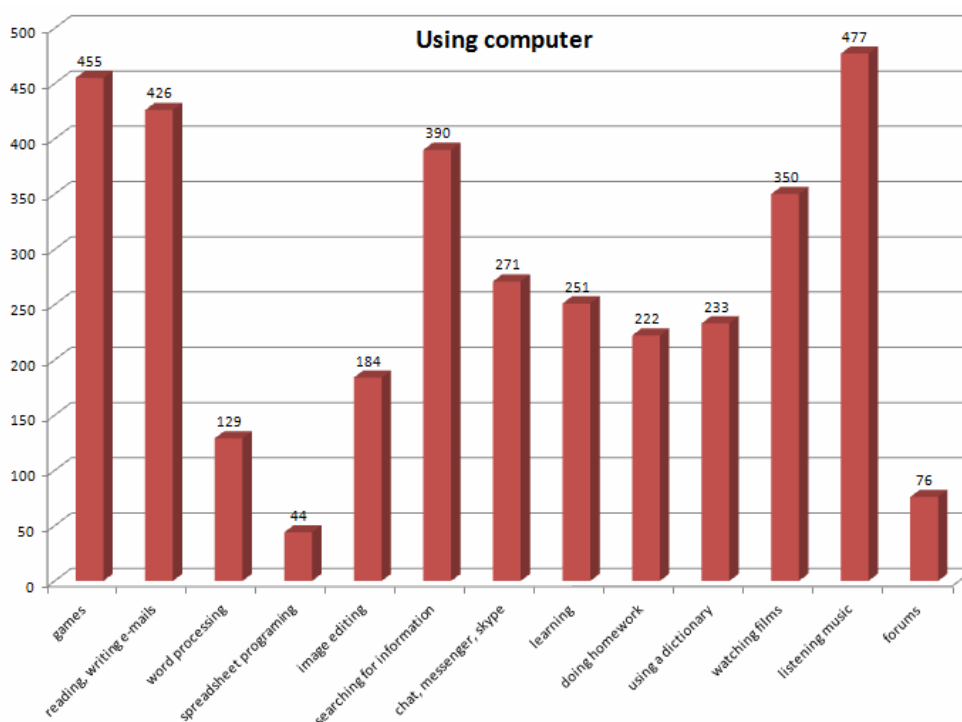
### 5.1. Data collection and analysis

I made a survey in which I asked 618 students from primary and secondary schools in Debrecen. The average age of the students in the sample is 14. If we have a look at the genders, we can see that 53% of the students are girls and 47% are boys.

Most (80%) of the students who filled in the survey attend primary school and the rest of them attend secondary school.

### 5.2. The purpose students use the computer for

Most students, 96% use the computer every day and only 4% of them do not use it at all. In my opinion this 4% can represent the younger pupils or those who cannot afford to have a computer at home. They use the internet less than the computer, but it also shows a growing tendency so 84% of the students use the internet every day. They use the internet three hours a day on average.



**Figure 1.** Using computer

The above diagram gives us more detailed picture of what students use the computer/internet for. The highest columns are the following: listening to music, which can be the result of the different video sharing websites such as the biggest one: YouTube where listeners can reach almost every new hit/video. As we know music plays a very important role in teenagers' life. Besides these popular sites the second favourite is playing online games. Unfortunately, I have to mention the dangers of addiction to games which is a real problem at this age since more and more children fall into the trap of computer games. The original outdoor games for example: football, strategy games and team games

are replaced by their digital versions and young students spend a lot of time sitting in front of their computers.

The next outstanding values are reading e-mails, surfing the net etc. Surfing the net can also mean a real danger for the students since not all information is valid and at this age pupils are more credulous, they cannot make a difference between the true and wrong content. A positive fact to see that 40% of the students asked used the internet for learning and this value also shows a growing tendency. Therefore it is very important to help the students to be able to select the right information and content and the teachers can give a great guidance in it and motivate their students to visit the proper sites at home as well. Students can develop their knowledge and skills while using the computer. 36% of the pupils in the sample use the computer to do their homework and to write their essays.

In the following part I wanted to find out if there is a connection between the above customs of computer use and a gender differences. My first hypothesis that the girls play less was supported. As we can see in the table below there is a significant difference between the two groups.

**Crosstab**

Count		Games		Total
		0	1	
Gender	Boys	29	262	291
	Girls	135	192	327
Total		164	454	618

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	77,471 <sup>a</sup>	1	,000		
Continuity Correction <sup>b</sup>	75,873	1	,000		
Likelihood Ratio	83,061	1	,000		
Fisher's Exact Test				,000	,000
Linear-by-Linear Association	77,346	1	,000		
N of Valid Cases	618				

**Figure 2: Genders and Games**

There is also significant difference in the correlation age and games. Younger generation play games more often.

**ANOVA**

Age and games					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	219,968	1	219,968	19,040	,000
Within Groups	7116,608	616	11,553		
Total	7336,576	617			

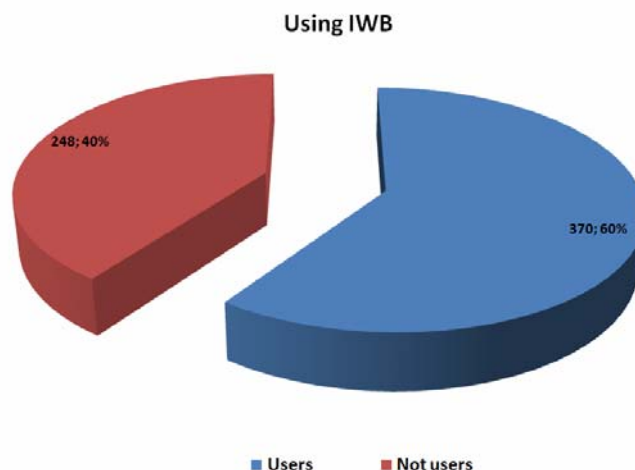
**Figure 3: Age and Games**

There is another significant correlation between gender and following: e-mail, image editing, doing homework, using a dictionary and listening to music.

The next question was about the websites most often used. The students had to indicate them according to the following categories and you can see the favourites below:

- Social network sites: Facebook, IWIW, MyVip, Hi5
- Browsing, surfing the net: Google, YouTube, Startlap, Wiki
- E-mail, correspondence: Freemail, Gmail, Citromail, Msn, Yahoo
- Other popular sites: Index, Honfoglalo, games, etc.

### 5.3. Using Interactive Whiteboard



**Figure 4:** *Using IWB*

The main question of my research is using the IWB. 60% of the students in the sample answered that they used the IWB in their lessons. The rest of the students, which means 40%, said that there is no IWB in the school or the teachers do not use it. The most frequent answer of the students shows that the teacher uses IWB 2-3 times a week.

### 5.4. Students' attitude

I am going to quote some of the students' positive and negative opinion on the IWB.

**Positive** answers to the question whether they find the IWB useful in classes.

- it is easier to acquire the material and it gives a great help to understand the subject, so our school achievement is better and it also helps us to learn to use the computer
- it is more spectacular, easier to learn with it
- it makes the lessons more interesting and demonstrative, lessons are not so boring
- we do not have to make out the teacher's writing
- we do not use chinks, we can save the material, it makes learning easy
- it provides a good practice for certain materials
- it is clearer and it is easier to understand
- it makes the lessons more interesting, it is easier to demonstrate the tasks and we can understand them easier
- the teachers have to explain and write less
- the atmosphere is more relaxed and the lesson is cooler and if some information is missing from the book, we can look for it on the internet
- we can learn a lot with it, I think it is useful and sometimes we use it in groups
- it is easy to correct mistakes, it is more interesting and enjoyable than an average lesson, the materials can be used again and again and with the help of the pictures, sound effects and crosswords the lessons are more fun
- it is good fun and we can learn easily and we can learn in a playful way
- it helps to develop our knowledge a lot

- it helps a lot in learning, students pay more attention to the lesson
- we understand the material better and our progress is quicker
- it is easy, simple, quick and joyful to use it
- it is easier for the teacher to test the students
- easier, more enjoyable, more exciting, more useful and it is full of feeling
- it is more interesting and attractive
- it makes the process of learning quicker
- learning is more playful
- learning is not so boring
- it is easier for the teachers to teach and more demonstrative
- the teachers do not waste the chalk
- it is better than the blackboard
- the teachers have to dictate less, the teachers have to write less

### Summary

As we can see from the above mentioned opinions, students sum up the most important advantages of the IWB very well. Based on their positive reactions they appreciate the new equipment since it makes the lessons more interesting, more enjoyable, more fun and easier to understand the material. Students are more motivated and more interested in the material which suggests that they will deal with it at home, they will search for information on the internet, the internet helps them to enjoy the process of learning as they are keen on digital form and it does not seem to be dry, they feel that learning is fun for them.

### Negative opinions

- not everybody can see the IWB very well
- it is hard to write with the special pen
- we can do the same with the blackboard
- it can distract the attention from the main point of the lesson
- we do not use it at school and we can do without it
- everything we have to know is in the books and the teachers explain everything, so it is just a waste of money
- although it was not used earlier, science developed, they could do the tasks without it in the past as well
- simpler devices are perfect for me
- in case of a technical problem we cannot have the lesson
- it should not be used every day because the traditional hand-writing develops the children
- not everybody is able to use it
- our progress with the material takes more time
- it takes a lot of time to switch it on
- teachers are not well prepared for the lessons, we go on with the material too fast and our teachers do not explain clearly
- it is useless because the books also demonstrate the lessons
- it takes a lot of time
- it distracts the students' attention
- it wastes a lot of current
- it motivates children to be addicted to computers
- I like playing for time with cleaning the blackboard
- I think it has no sense, it does not catch me, it is boring and we use it all the time
- teachers are not well prepared so they spend a lot of time searching
- I do not know what it is

## Summary

The opinions show that students mostly complain about technical problems, they do not like when IWB does not work properly but if the board is installed properly technical problems can be eliminated. Another problem they mention is the inadequate skills of teachers to use the IWB. It can be explained by the fact that IWBs have been around only for a short time and teachers are still getting used to them. It takes time for them to become proficient and handle technical problems easily when they arise.

When the IWB goes wrong there is less time in the lesson to acquire the material which understandably makes the students upset therefore the teacher should prepare for such situation. It is also important for the teacher to find a balance between the traditional methods and the modern ones involving computers and the IWB. It is not necessary to use the new devices in every lesson, the two methods should be mixed.

### 5.5. The teachers' preparedness/attitude to IWB according to the students

I asked the students about their teachers' attitude. How they receive the new ICT devices? Are they prepared to use it? The opinions which I received can be divided into three bigger categories.

The first groups' opinion can be characterized as completely positive and they are satisfied.

- the teachers are very well prepared
- those teachers who need the IWB are competent in using it
- they are well prepared
- in our school all the teachers are ready to learn and they prepare for their new tasks in a short time
- after training them they can use it quite well
- they are very skilled
- absolutely well prepared
- almost all of them are prepared but it can be said easily if some of them did not attend the training
- perfectly prepared
- a lot of teachers can handle the ICT devices but those who cannot could learn it easily
- they can use the IWB and they can explain the exercises very well with its help
- in my opinion 80% of the teachers can handle it and the others try to understand the mysteries of modern techniques

In the second group you can see those students opinion who are not completely satisfied with the teachers' preparedness and they explain the lack with the age of the teachers. In this case students often help their teachers to solve technical problems.

- those teachers who graduated long time ago cannot use ICT devices very well but it is not a problem for the younger generation of teachers
- they are use to it, they know it
- older teachers are less prepared than the younger ones
- they are not well prepared at all, we have to help to turn on the video although it is not modern equipment, but there are exceptions
- some of the teachers can use it well but others know nothing about it
- some teachers are not prepared so the students had to help them
- it depends on the teacher, some of them can use it, some of them can not
- the younger teachers get on with it better
- not all of the teachers can use the internet, so we help them
- I think only the IT and math teachers can use it but our headmaster always has problems with it, so half of the lessons are not active
- variable
- older teachers have some problems with ICT devices



- most of them are prepared but there are some less prepared. Some of them ask for our help, because we know it better.

The third category shows the negative opinions. In this category the students criticized the teachers' preparedness and technical knowledge.

- those teachers who are unable to use IWB should not switch it on at all
- they are not competent
- some of them do not want to use it
- they used to the traditional devices so they are not prepared enough to use these modern devices
- they are not skilled in it
- some of the teachers do not even switch it on
- there are some teachers who are almost unable to use it
- they are not prepared

### Summary

According to the students most of the teachers are ready to use the ICT devices but of course there are some young teachers who struggle with some problems during the first few lessons since they do not have any experience and their IT knowledge is not sufficient. Sometimes the teachers and the students cooperate to solve the technical problems. In Hungary the usage of IWB is still at an early stage and the teachers need time to be able to handle it confidently.

### 5.6. Future ideas about the new classroom

The following opinions represent what ICT devices students miss from the classroom:

- they would like to have their own laptop in each classroom
- more modern ICT devices
- equipment needed for experiments
- interactive education programs
- documentaries and all kinds of practical devices
- piano, new benches
- chalks, print papers, maps, computers and more sports equipment
- IWB, office chairs, lift, pool, own laptop for everyone, plasma TV, restaurant, gym and even more IWBs, new benches and chairs
- earphones and better computer for language lessons
- videos
- which help to understand and learn the material and dictaphone
- projector for every classroom
- IWB for every classroom

### Summary

To sum up students would like to work with a laptop in each lesson and they want to have and IWB which is connected to their computers in every classroom. They also wish to have more ICT devices and digital material and more modern educational equipment.

### 6. Future implementations

We will find more ICT devices in the classroom of the future owing to a project through which lot of Hungarian schools will get new IWBs and teachers are now taking part in special trainings to learn how to use the device. It is very important for teachers to cooperate and help each other, especially in the beginning. Beside the IWB other supplements will also be distributed to help the teachers' work. Among these devices are the voting systems which help quick and prompt feedback and document cameras, which facilitate digitalization and enlargement. There are different audio devices to produce sound of appropriate quality.

## 7. Conclusion

Students' ideas about the interactive whiteboard are basically positive, they like using it, discovering the opportunities it provides, it motivates them, and it has a great influence on their interests. However, in schools where IWBs are not properly used yet, either owing to technical difficulties or because of the teachers' inappropriate training, there are more negative views. Despite students' negative opinion of the IWB, the new devices are still present in their ideas of the future school. The digital generation would like to study using digital devices.

In schools where the devices are present, it is the teacher's responsibility to learn how to use these ICT devices and use them to students' advantage.

The most important aim in the new interactive learning environment is to keep up students' attention and help them understand the material making the material interesting and exciting for them, so that it will be their curiosity that forces them to acquire knowledge instead of the burden of requirements.

I would like to emphasize that the teacher has got a very important role in this new educational environment, since the IWB is not a magic device, but a good teacher might do magic if they use the device in the right way and chooses the appropriate teaching methods.

The devices will soon be present in each school and will be integrated in everyday education as well. On the one hand it is a long and difficult process, however it is also full of excitement and discoveries for both teachers and students.

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