activboard @ school

Multimedia whiteboards for school at the Praxisvolksschule (practice primary school) of the church-affiliated pedagogical College Vienna/ Krems, Campus Vienna-Strebersdorf

History of the Activboard Project

The Activboard Pilot Project

Interactive Whiteboards (IWBs) were first used in Austrian primary schools in the course of the Activboard Project in the school year 2007/08. Two classes of the Praxisvolks- schule of the church-affiliated pedagogical College Vi- enna/Krems , Campus Vienna-Strebersdorf took part in the project: form 3a with their teacher Dipl. Päd. Michael Val- lant and form 4c with their teacher Dipl. Päd.in Claudia Pfann.

Prior to this project IWBs had mainly been used in British and American schools and as a matter of fact, they had pre- dominantly been favourably looked upon. It was the aim of the Activboard Project to create and to evaluate teaching units in an Austrian school on the basis of the experience from other countries. This experiment was made possible by the support of the Federal Ministry for Education, Arts and Culture, by Promethean Germany GmbH and by the APC Com- puter Handels GmbH.

The hardware constituted Promethean IWBs, type "Ac- itvboard", with Activpen and Activwand in combination with desktop computers as input devices and LCD projectors. "Ac- tivprimary", the Activboard software, which was especially developed for primary schools, was supplemented by the use of established PC programmes (Word, PowerPoint) and on- line applications (educational games, Google Earth).

The Activboards were mainly used in the subjects Mathe- matics, German and Natural and Social Sciences, but also in English, Religious Instruction, Music, Art and once in Phys- ical Education.

IWBs were predominantly used in phases when pupils were working on new subject matter or practised independently, in one class also as a station of its own during free phases of learning; teacher-centred instruction did not increase through its use.
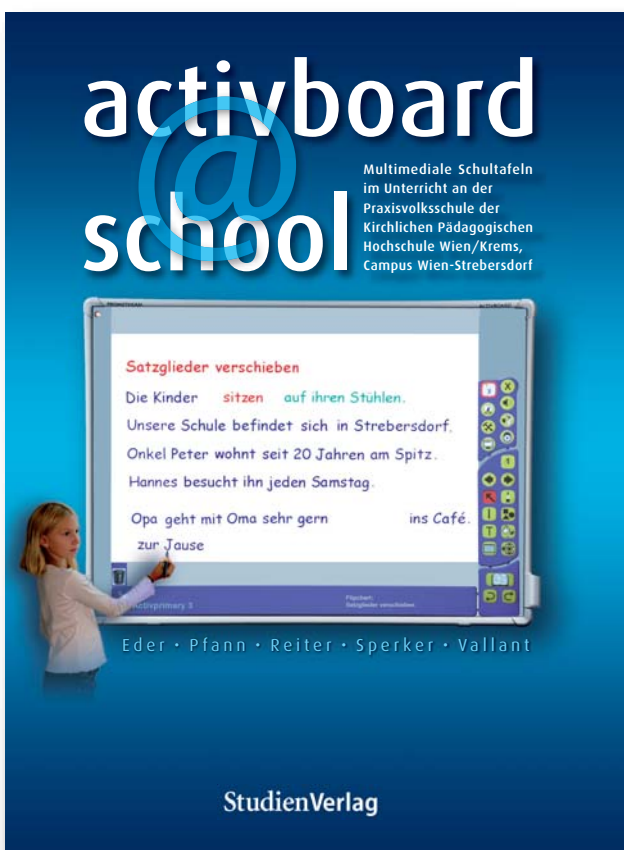
Prof. Mag. Dr. Leopold Sperker was in charge of the scientific evaluation of the project. The methods of collecting data covered qualitative and quantitative questioning, observa- tion in the form of a video study and benchmarking on the basis of test results.

The evaluation illustrated that both, teachers and pupils, as- sessed the classes with the IWBs as positive. Teachers ap- preciate the wide range of multimedia and interactive applications. They value the efficient data recall as well as the facilities for easy alteration and storage of their teach- ing material (Flip charts).

The pupils learned the use of the input tools quite quickly. They regarded the Activboard as motivating, but they thought that it could only partly enhance their achievements at school. They saw a special advantage in the fact that screen pictures can be projected to the board and conse- quently they might be seen far better.

The pilot project showed some possibilities for improvement, which were taken into account in the planning of the follow- up project. These involved the use of an LCD projector with a higher light intensity for short distances. Now it is mounted on a console linked to the board which can be ad- justed to height. This reduces the effects of shadowing. Moreover, white or green covered melamine side wings can be attached to the board, alternatively, side wings with var- ious rulings are available.

The book "activboard@school" provides a detailed docu- mentation of the experience of the school year 2007/08, which presents guidance for further use of Activboards.

The use of the Activboard at elementary...

Basics

The Activboard provides a superb addition to other didactic materials. This electronic board replaces the traditional blackboard in all its range of application. Since it is not only the visual, but also the auditory and tactile perception which are adressed by working with this board, learning via several sensory channels is made possible.

Working with the Activboard might provide a considerable stimulation for pupils. They quickly get accquainted with the use of pen and board and with the functions of the Activboard and after a very brief time they are capable of applying these devices themselves.
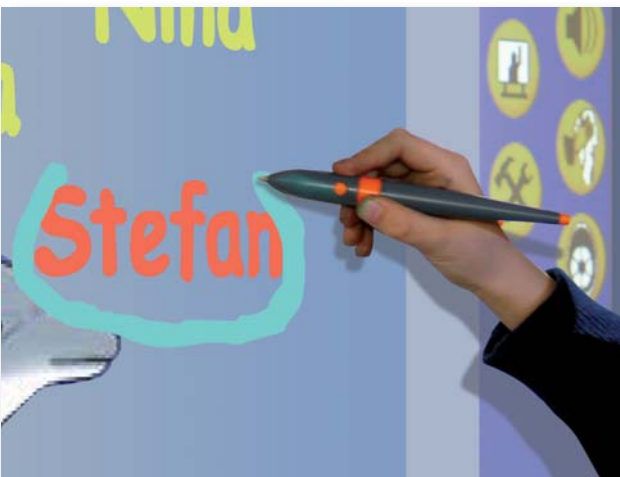
Use in Various Subjects

In the first form there are numerous pleasurable possiblities of using the board in various subjects.

Natural and Social Sciences

For the time being the Activboard is only used in Natural and Social Sciences when it comes to the consolidation of formerly learned topics, as viewing and touching are particularly important during the school entry phase. Actually, it can be utilized very well for classification games and supporting pictures, but also in phases when pupils are doing joint research.

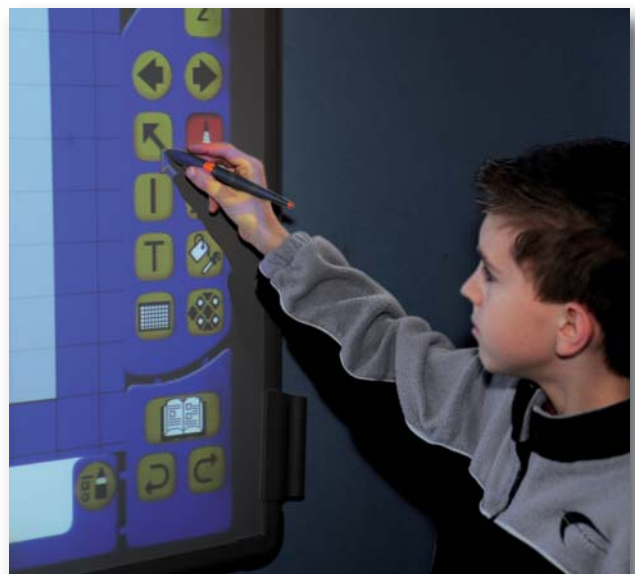## German - Writing, Reading, Producing Texts, Spelling and Grammar

In German there are countless possibilities for using the board: When learning the proper pronunciacton of the individual sounds the pupils can mark the position of the sound. When working on the letters and words the pupils are allowed to trace them on the board. As on traditional blackboards, teachers can write down sentences, which can be greatly facilitated by fading in various rulings.

A very appealing way of using the Activboard provides the sphere of "reading": When doing a reading memory the pupils can turn the cards round, simply by touching them with their "magic pen". Furthermore, "bar reading" and "reading with a reading lense" is highly motivating for children.

When learning to compose texts pupils can be asked to arrange a scrambled strip cartoon in the correct order.

Likewise, cloze texts can be dealt with easily and perfectly.

To teach spelling and grammar flip charts e.g. with cloze texts can be made up for the children to work on, either individually or in groups.

The pupils learned the correct use of the different tools in next to no time.

Mathematics

Once the large and important part of active doing has been finished, the Activboard may also be used for Mathematics in the school entry phase in order to consolidate quantities, the writing of numbers and arithmetic operations. Pupils enjoy greatly assigning numbers to quantities and they work with great interest and zest.

In Geometry the board can be used to consolidate the learning of the individual simple geometrical figures like circle, rectangle, square and triangle and to build figures with them.

In fact, the activboard does not only facilitate preparations and learning in the main subjects, it also does so in the creative subjects:

Music

In music lessons the Activboard is perfectly applicable for learning song text with the help of pictures. It can also be of great value because it offers visual and auditive support when introducing the various musical instruments to the pupils. It grants access to scanned-in "Spiel-mit-Sätze" (play-along-compositions) at any time. Moreover, the Activboard can be employed as a VCR or for the play-back of music samples.

Art

Introducing different artists and their works of art can be greatly facilitated by the use of the Activboard. Simple step-by-step instructions for doing handicrafts can be offered by the new board.

English

Simple games, video sequences and exercises can easily be made visible and presented to the whole class.

Further use

► A great advantage of the Activboard presents the fact that all the necessary working materials can unhurriedly be prepared at home and all flip charts can be stored and recalled at any time you want.
► Besides, the board is also well-suited for concentration exercises, for left-right orientation and for co-ordination exercises.
► Pupils also enjoy using the Activboard during their breaktime. In fact, there is the possibility for children to either draw freely on the board or to play simple games, which can be created there, on it.

Dipl. Päd.in Ursula Korbl working on and playing a "Spiel-mit-Satz" (play-along-composition) with her form

Basics

At elementary level II the Activboard offeres a wide range of utilization. It broadens the media spectrum of all the lessons.

Children at this age are already well-versed in the use of computers and have no difficulties coping with the desktop. After a little introduction to the meanings of the icons of the Activprimary Software it is really easy for the pupils to activate the functions in the pupils´ mode and to process the flip charts in the Activboard environment. Activprimary-Software also allows the processing of documents which have been edited with Standard-Office-Software. In this process the Office document is virtually "overwritten".The possibility of preparing tasks in such a way, processing them individually and saving, printing or changing them person-oriented, at any time later, is certainly one of the most outstanding features of the Activboard.

Use in Various Subjects

Natural and Social Sciences

In Natural and Social Sciences elementary level II, a great part of the content of learning is based on illustrations. Actually, illustrations can be taken from age-appropriate texts. Whereas in the past cloth boards, magnet boards or overhead-projectors were used now these contents lend themselves to being simply displayed by the Activboard. In addition to the possiblity of preparing a topic on flip charts, the Web can immediately be searched in case of spontaneous

questions. Subsequently, this information can be integrated into the learning process. Moreover, thanks to shortcuts, multimedia contents such as audio samples or video sequences can directly be selected and presented from the flip chart.

German

Various exercises for all spheres of this subject can swiftly and straightforwardly be created with the help of Activprimary-Software. The following list outlines only a few of the possible ways of using it:
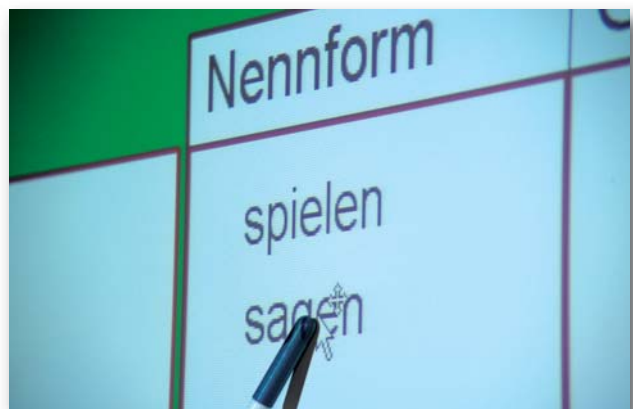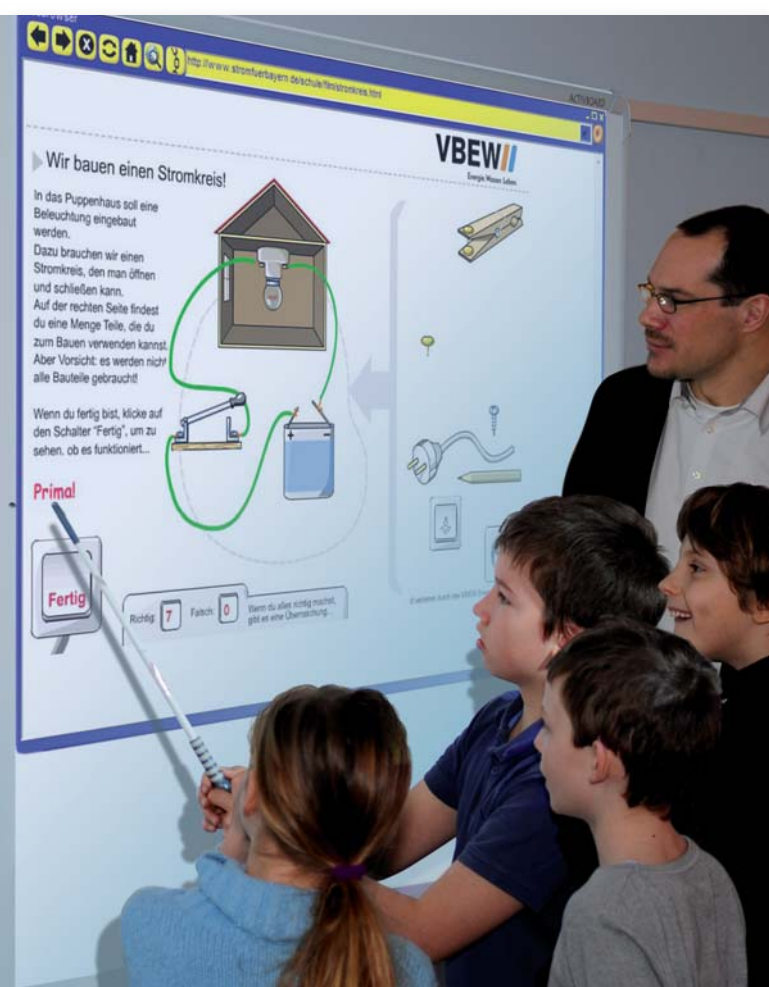
- ▶ **Spelling**
  making puzzles in which syllables must be combined into words according to a given clue, finding word families around a word stem, showing words with orthographic peculiarities
- ▶ **Grammar:** shifting parts of sentences, forming sentences from building blocks, conjugating verbs (personal forms, tenses), providing exercises with the different kinds of words and sentences
- ▶ **Writing texts:** complementing the beginning of sentences, presenting picture stories, providing pictures which trigger a motivation to speak, "word clouds" to improve the wording of statements
- ▶ **Reading:** Reading texts jointly, reading for gist exercises

- • Dipl. Päd. Richard Pirolt with pupils of his form checking a virtual model of an electric circuit from the Internet (© VBEW; http://www.stromfuerbayern.de/schule).
- • Recognizing and labelling changes of the verb forms
- • Training of the method of calculating with predefined checkboxes

Mathematics

There are a lot of different ways of using the Activboard in Mathematics. Once the step to an iconic or symbolic operational level has been made, various exercises can be created. Additionally, the Web provides many really interesting homepages such as http://www.mathematikus.de, with a large number of exercises for children. The following list illustrates the many different ways in which the Activboard can be of use:

- ▶ Structure of the natural numbers:
  numbers and their images for them, tables with their place value, putting numbers into an order and comparing them
- ▶ all arithmetic operations
  exercising and working on them
- ▶ quantities:
  vivid introduction of units (e.g. comparing objects), finding out relations of measures
- ▶ Geometry:
  calculating the perimeter or the surface area, checking cube nets, practising spatial positions and the relative positions of objects to each other, working with a set square

Music

It is exactly this subject which lends itself excellently to using the Activboard: As on elementary level I song texts and musical notes can be presented and with adequate CDs the songs can be immediately accompanied; The like is true for "Spiel-mit-Sätze" (play-on-compositions). In addition, the Activboard proves to be of great value if music resounds with or in a video. In this way music for different occasions can be depicted very well with film sequences. As far as dancing is concerned, the step sequence can be presented with flip charts and each change in the step sequence can immediately be displayed.

Art

The Activboard is particularly convenient in this subject as far as photography is concerned. Digital pictures can easily be displayed and discussed. Moreover, on the basis of these photographs, the difference of the perspectives (worm´s eye - or bird´e eye view) can be shown. In addition, pictures can be processed with the tools of Activprimary-Software e.g. in order to create alienation effects.

Compulsory exercises foreign languages

The Activboard might facilitate vocabulary work e.g. by underlaying the illustrated objects the terms of which must be found by pupils, with the correct words. These words can be covered with a bar. The possibility of playing video sequences in order to advance the learning process might also be of considerable importance.

The included pool of resources provides among other things an image database, which can also be used independently by pupils for the preparation of presentations

Project classes

In project classes or in project-like phases of working the Activboard constitutes a possible form of presentation.

Activprimary-Software enables pupils to understand simple flip charts on which the essential questions of each project group can be shown in catchwords. Depending on the range of the flip chart, children can use the camera in order to insert pictures from the Internet into their presentations.

All these examples above provide, of course, only a small insight into the wide variety of uses of the board. On the other hand, it goes without saying that the board on its own is no guarantee for a good lesson. However, apart from the undoubtedly highly stimulative nature of this medium, it is the integration of the various digital contents which makes teaching and learning more varid and colourful - invariably with the aim of encouraging learning with as many senses as possible.

Objectives, options and problems

The Activboard

The Activboard is a flexibly appliable educational medium, which combines the possibilities of a blackboard, an overhead projector and a PC in just one device. It lends itself both to the presentation and the working on contents in tied sequences of the lessons and to independent exercises of the pupils or to working on questions of their own choice in open phases of learning. It´s particularly at elementary level II that the various forms of self-directed learning are gaining importance. Moreover, direct Internet access provides a considerable extension of available sources of information, which might become an important factor in the planning of lessons and can spontaneously be used. As daily practical experience shows, there are also some drawbacks apart from these chances. In fact, organizational changes of teaching as well as technical development contribute to a solution of these problems.

Possibilities for implementation and utilization

► generating whiteboard drawings, which are storable, processable, and available for download at any given time
► Networking of one`s own data sets, Internet hypertexts and multimedia applications

Use for lessons
Application in tied as well as in open forms of teaching:
► as an impulse
► to follow up on something already learned
► to work on new subject matter
► to secure and consolidate the contents of the former lessons
► as a station for exercise
► to show operations on the computer which all pupils of the class are supposed to be acquainted with
► to provide easy integration of audio - and video sequences into the lesson

Possible educational objectives for pupils

Handling of information technology in general:
► Learning of basic functions: operating the Activboard with Activpen or Activwand
► opening, saving, printing of documents
► working with hypertexts, multimedia contents and interactive worksheets

Handling of specific Activprimary - software elements in the lesson - independent use of the tools which have been released for pupils for working with Activprimary flip charts
► Tools: pen, marker, rubber, magnifier
► creating and processing areas and lines
► set back function for flip charts, which can be used by several pupils at a time
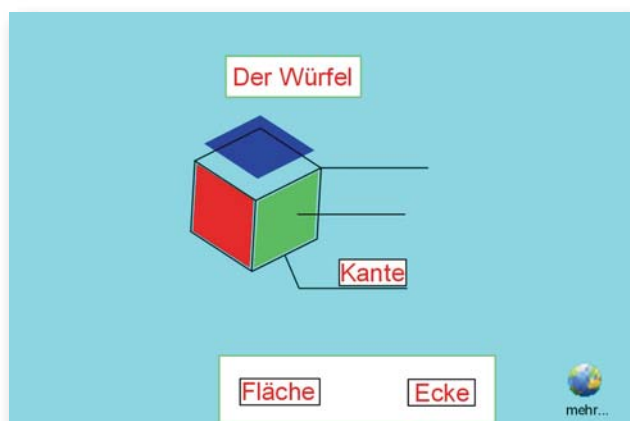
Elementary Level II:
► pocket calculator
► inserting highlighted fields, use of the virtual keyboard
► cooperative acting: using the Activboard independently and jointly in open phases of learning
► boosting creativity: use of the Activboard and Activprimary-software for the presentation of minor projects by pupils

Possible drawbacks and Attempts at Solutions

► Distracting backlighting, respectively stray light from LCD projectors with lenses that let through only little light, might be prevented by dimming the windows which are nearest to the Activboard.
► Working while the curtains are largely drawn and without artificial light is harmful for the pupils´ eyes. Consequently, full dimming has to be preferred for collective activities at the Activboard. When partly dimming becomes necessary, other activities should be transferred to a part of the classroom which gets enough light, either from natural or artificial sources.
► Models which are fixed to the wall present a difficulty for smaller children: the upper range of the board is out of their reach. This, however, can be counterbalanced by the use of the Activwand and by the support of the teacher. In a follow-up project vertically adjustable Activboards with LCD projectors with a higher light intensity for short distances are used to respond to these challenges.

Examples of flip charts in the first and fourth form:
• **"What goes into a satchel?"**
• **"The cube" - consolidating geometrical terms**

Hard- and software used

Board

Activboard AB 78 by Promethean corporation
Screen-size: 78" (approx. 199 cm) aspect 4:3
Mounting: fixed to the wall
Data transfer between board and computer: via serial cable
(USB-connection possible)

Input devices

Activpen: input device in the form of a pen functioning like a PC-mouse (corresponds to the movement of the mouse, resp. the pressing of right or left mouse button), maintainance-free, does not require batteries
Activwand: approx. 54 cm (2 ") long pointer with limited function of a PC mouse (corresponds to the movement of the mouse, resp. pressing of the left mouse button)
The position of the input devices can be spotted electromagnetically.

LCD projector

Type: Optoma EP719R
Brightness: 2200 ANSI-Lumens
Acoustic Noise level: max. 32 dB
Expected lamp life: 3000-4000 hrs
Resolution: 1024x768 pixels
Display on screen and LCD projector via screen splitter with signal amplifier (prevents attenuating of signals due to long cable distance between PC and LCD projector)

PC

PC used in the project:
CPU: Intel Core-2, 2x1,8 GHz clock speed
RAM: 512 MB
Graphics: onboard,1024x768 pixels
Operating system: Microsoft Windows xp

Minimum performance to operate the Activboard:
CPU: 233 MHz clock speed
RAM: 32 MB
Graphics: 1024x768 pixels
Possible operating systems: Microsoft Windows 98/ ME/NT/2000/xp, Apple Mac O.S. 9.2.or higher

Software

Version 3 of Promethean Activprimary Software with the possibility of automatic updates

Useful links

Kidsweb:
Information, games, etc. especially edited for children (http://www.kidsweb.at)
LehrerInnenWEB:
Portal with interactive teaching Webs and teaching materials (http://www.lehrerweb.at)
Mathematikus:
Online educational games for Mathematics (http://www.mathematikus.de)
Promethean Planet
- the world´s largest interactive whiteboard community(http://www.prometheanplanet.com)
VS-Material Wegerer:
Teaching material for primary school (http://vs-material.wegerer.at/)
Crickweb:
interaktive Ressourcen für die Volksschule in englischer Sprache (http://www.crickweb.co.uk)
eChalk:
interactive resources for primary school in English (http://www.echalk.co.uk)

Projektteam

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