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Tablet in teaching physics

1. Tablet as adjustable device

The original meaning define tablet as adjustable device consisting of a solid pad with an active, usually rectangular or square and flat mobile scanning device as in form of wireless pen. These computer input periphery enable to control computer in a similar way as a computer mouse.

2. Tablet PC

Tablet PC is a portable personal computer equipped with a touch screen. It operates with installed traditional desktop operating system (OS). OS is modified to use with touch screen without any changes from the classic version. The term „Tablet PC” is a concept defined by Microsoft in 2000–2001. The original name refers to the Portable PC, a classical computer on x86 architecture – CISC.

3. Tablet

Since April 2010 the word „Tablet” obtains a new meaning. With the creation of first tablet – iPad from Apple, began to be used for laptops with capacitive touch screen supporting multi touch control.

Currently on the market is already huge number of these devices (40 devices from 16 producers as of April, 9th 2012 in Czech Republic) and they are worldwide very popular. This is not a classical PC, but devices based on processors with AMR architecture – RICS. Because CISC and RISC applications are not compatible with each other – different instruction of two architectures can run on these devices such as the classic Windows applications. Thus arise a problem that created training programs can't be applied to the new technology.

The problem is in the development environment. Each device doesn't supports all current or old technology such as Adobe Flash, Microsoft Silverlight or Sun Microsystems Java SE. If we want to define what are all the devices have common, we can say that it is a web browser. Whether Apple's Safari, Android browser, Google Chrome, Silk Amazon, BlackBerry Browser, Nokia Browser, Opera Mobile, Opera Mini, Firefox, or webOS browser, all have support for HTML, CSS, and probably in the future complete HTML5 [Firtman 2012].

Web browser software is breakthrough of each tablet, and therefore should probably focus the development of educational applications in this direction. If the chosen technology typical only for one producer would be forced, academic institutions will use only certain devices and their choice would not be free.

The Horizon Report 2012 [The New Media... 2012] from the NMC (New Media Consortium) and EDUCAUSE (a nonprofit association whose mission is to advance higher education by Promoting the intelligent use of information technology) indicated that the tablets will be another technology used in education. Since the tablets are now used in many schools in the Czech Republic, we can say that this prediction is confirmed and is likely to be correct.

With web browser students work intuitively and there is no need to introduce them with the environment, where they often work. Orientation is very simple and to the control of the entire system is just by a finger. We can assume that technical skills are not an obstacle and should not discourage students or teachers.

In advanced schools tablet is a part of equipment, and used primarily to support the teaching of English. The reason is easy availability of educational programs. Applications that can be used for teaching is available in the official sales channel applications designed for a specific product (App store, Google play). Each system has its own center for the offered applications, and is not guaranteed that you will be able to use in all facilities the same program. We can assume that technology will create an ideal learning environment as a teaching site for the independent sales channel. It is a technology independent of the operating system and is easily available on other devices (classic mobile phone, smartphone, PC) that can change the current trend.

Educational programs in physics intended for tablets are now very seldom and are specifically targeted. Market in this way is on the start line.

The research: Teaching physics in a broader context – views of pupils [Höfer 2005] shows that students prefer interactive learning and are interested in multimedia. The tablets can be regarded as a product that defines interactivity. Its control by touch, portability, video and audio equipment, it creates a really powerful tool. Duration of paper books is perhaps just at the end and tablets will be the follower. The absence of a computer mouse, the control away from concentration, leads to the same conditions as in classical reading printed text. Tablet is a portable; battery lasts for several hours, averaging about 9 hours. Unlike PC there is no need to work only at the table, or near a power outlet for laptops. Integrated speaker in the material of acoustics offers sufficient opportunities to listen and understand the subject matter. The display is adapted to follow video content and reading too and in case of visual disturbances it is possible to increase the font size to an adequate size, a classic textbook can't offer it.

Physics is the subject of working with many concepts using a lot of abstract thinking. To understand the issues we need to realize and remember the concepts already acquired, which is difficult if their ignorance. Use the links in the text linked to the leading explanation or a continuous section, allows reading of texts, a better understanding. Opportunity to see the physical model of multiple views for the general idea is more beneficial than conventional photography. Tablet in physics education can be very valuable tool, as well as in the other subjects. The concept of electronic textbooks in the event of an adequate training program and tablets received its meaning.

Source

Firtman M. FIRT (2012), *Mobile HTML5: Trying to understand HTML5 compatibility on mobile and tablet browsers* [online]. 2012 [cit. 2012-04-29]. Available from: <http://mobilehtml5.org/>
The New Media Consortium (2012), *Educause Learning Initiative. Horizon Report 2012*. Available from: <http://net.educause.edu/ir/library/pdf/HR2012.pdf/>
Höfer G. ZČU (2005), *Výuka fyziky v širších souvislostech – názory žáků: Výzkumná zpráva o výsledcích dotazníkového šetření* [online]. 2005 [cit. 2012-04-29]. Available from: http://kdf.mff.cuni.cz/vyzkum/materialy/vyuka_fyziky_v_sirsich_souvislostech.pdf

Abstract

Posts define tablet and deal with issues of educational programs for this device. Because this is a new tool used in teaching, outlines its advantages and possible pitfalls.

Key words: tablet, education, physics, technologies.

Tablet w nauczaniu fizyki

Streszczenie

W artykule zajęto się zagadnieniami związanymi z koniecznością określenia roli i miejsca tabletu w procesie dydaktycznym. Jest on nowym urządzeniem znajdującym zastosowanie w nauczaniu, posiada zalety, ale i potencjalne pułapki.

Słowa kluczowe: tablet, edukacja, fizyka, technologie.