



What do you see as the greatest obstacle (economic, social, political, institutional) impeding the widespread adoption of digital games in education?

Discuss what steps could be taken to overcome that obstacle

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Who Are The Parties Involved?

When deciding upon which technologies to use in the class room, several groups are involved. Firstly we have the schools, within which we have the administrators and the teachers. Then we have the parents and their children who will be consuming these learning materials. There is also the Government, who is likely to fund any widespread implementation, and finally the technology and content providers. I have completed a researched look at how Information and Communications Technology (ICT) is currently used in education, looking at whether portable gaming platforms, such as Nintendo's GameBoy Advance, could be a successful medium for delivering learning content, especially when compared to more traditional mobile computing hardware, such as laptops and PDA's. In doing this I have come across the major stumbling blocks preventing games from being a well used learning tool. So let's take a look at each of the parties involved and their stance on technology and games in the classroom:

Do Schools Want ICT?

Schools really are interested in how new technologies can help aid them around the school. This includes uses for teaching and learning as well as administration and organisation. Teachers have traditionally been wary of new technology, but are coming to realise its potential and benefits. Research also shows that the children appreciate the use of technology in their learning.

Electronic white boards are a current hit with both primary and secondary schools around the UK. These act as large touch screens allowing collaboration in the classroom for completing e-learning tasks and games. When using these devices in lessons, the following responses from young pupils are typical:

What did you enjoy most?

- "It was fun writing with the special pen"
- "Using my finger to make the computer work"
- "Having a go"

This kind of reaction definitely shows that children appreciate trying something new, having a variation in lessons and playing with technology.

ICT can also be used as an 'inclusive' device for getting children with learning and/or physical disabilities into the National Curriculum. Research into using various different computer and software setups can be cited, including 'image recognition and memory matching' software. This example can help link school life with home life using images and sounds from around children's homes in software they use at school.

From this we can see that schools are happy with implementing technology or anything that makes learning fun and exciting for the children. As long as teachers are well briefed on how to use it, they are happy.

View From The Top: The Government's Take

Findings from the British Educational Communications and Technology Agency (Becta) have indicated that in schools that have made use of portable machines, especially those that are wirelessly linked, the emphasis is taken away from the ICT and is kept with the main concerns of a lesson. Like textbooks, maps, a protractor or a pair of compasses, it is just



another resource to draw on. The technology becomes transparent, restoring the emphasis on subject content, curriculum context and skills development. Having to move a class of pupils to dedicated computer labs at only certain times of the day for set periods to have a lesson has the opposite effect.

Education & Skills Secretary Charles Clarke announced new initiatives for 2004 at BETT that will see ICT transform education saying,

We have learners enthusiastic in their use of ICT, teachers with increasing levels of skills and confidence and new strategies for learning and teaching. Our challenge is to bring this great resource together with partners, industry and government to deliver an education service fit for the information age.

The Secretary of State has announced that there will be £25 million of additional funding set aside for interactive whiteboards in 2004-2005 alone. So we can see the Government are also all for technology in learning.

The Parents and Pupils

Parents are keen to encourage use of technology, understanding that it is now vitally important for future use in the workplace. Games are understood to be a good form of entertainment for their children but concerns have been raised at the amount of time exposed to 'mindless shoot-em-ups' and the like. In one such example of this, I received an email whilst researching this paper from a parent of a gamer:

My 7-year old son has [a GBA] and he plays with it for hours, but with adventures and shoot-em-ups. I am sure he would benefit from some educational content, and his mother would be a lot happier with him using it.

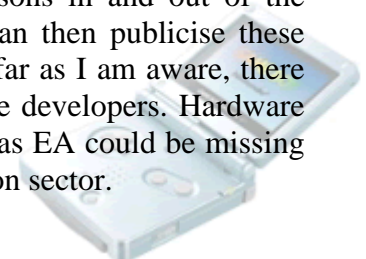
Mark Baker

Children are enthusiastic in using handheld hardware in a variety of ways, but observers of these schemes have speculated on the novelty or 'toy' effect and the 'grown-up' effect. Whatever does it, giving children a PDA lights up their enthusiasm and there is potential here to be exploited by, for example, targeting disaffected boys.

Industry's View

It is certainly in the interest of hardware developers to carefully consider the educational market. RM, the biggest hardware reseller for education in the UK has noted the rise in diversity of purchasing by schools, including Mobile PC's (that is laptops and tablets) and interactive whiteboards.

palmOne, the now separate hardware arm of the Palm handheld device company, have been doing their own trials in education. By helping schools implement the use of their handhelds, both logistically and in terms of how to make use of them in lessons in and out of the classroom. This is obviously an excellent strategy for Palm, who can then publicise these activities and show evidence of exemplar use in test institutions. As far as I am aware, there are no similar efforts from games platform manufacturers or software developers. Hardware companies such as Nintendo and Sony, and software publishers such as EA could be missing a trick, and should try and create a better relationship with the education sector.





What this Means for e-Learning with Games

As we have seen, ICT is highly popular in schools, with the teachers, families and the government all hoping to give their children the best possible experience during their school careers. The pupils themselves are just as keen to get their hands on these gadgets, seeing learning as much more fun. Games only heighten this enthusiasm.

So the stumbling block has been identified as lying with the games industry. Unfortunately a gap has appeared between the acceptance of the technology and the products available. Support is lacking for handheld device e-learning software. Lesson plans can therefore be difficult to create to include games and this new ICT. In terms of hardware, it can still be expensive, complicated and needs care in setting up and maintaining.

In Becta's research, the characteristics of PDA's that met universal approval by schools included:

- Small size – always with you
- Instant-on (no waiting for an operating system to 'boot up')
- Much longer battery life than laptops
- The price advantage over laptops.

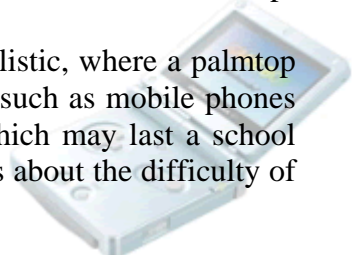
Conversely, the following possible weaknesses were identified:

- Not rugged enough for school use
- Lack of print-out capability
- The time it takes to input data (especially free text)
- The necessity to charge batteries every night
- Costs of software and accessories

But by using a device such as the GameBoy Advance, I believe that a lot of the problems identified by schools and many concerns raised about funding and safety can be acknowledged.

Here are some of the benefits of using the GBA within education:

- Low cost of the device – £80 for the GBA SP compared to £400+ for the latest PDA.
- Easy to supply – many children already own the console. Families are happy to supply them, taking the burden away from the school budget.
- Software is cheap – Around £30, (if the software were developed!)
- Children see the device as a toy – the technology is transparent as well as the learning, making the experience fun for pupils who will gain more from lessons they are involved in.
- A robust device – the GBA was designed to survive the knocks a child inevitably gives it throughout its life.
- Less of a target for thieves – being a common item, potential theft should be kept down.
- Long battery life - for a laptop, about an hour and a half is realistic, where a palmtop or handheld PC is likely to last a school day. Smaller devices such as mobile phones or handheld games consoles have much longer battery life which may last a school week. In research, more complaints were received from schools about the difficulty of keeping batteries charged than any other issue.





Despite these advantages in hardware, the lack of interest from the games industry is staggering. The final hurdle is getting the educational software produced. Games development companies need to be shown evidence, such as The Education Arcade event at E3 2004, to understand the vast amounts of money that is potentially there for the taking.

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There are also many more relevant web links on my project website at:

<http://www.createuk.co.uk/gba/bookmarks.htm>

