
Games and mobile technology in learning

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Current policy framework

- i-2010
 - improve the quality and effectiveness of EU education and training systems
 - ensure that they are accessible to all
 - open up education and training to the wider world
- EU Communication (2006) *Adult Education: it's never too late to learn*
 - countries to promote adult learning
 - place firmly on the political agenda
- Action Plan on Adult Learning (2007)

Lifelong learning

- Takes place in a range of sites and over sustained periods of time

- Wide 'ecology' of learning
 - schools, colleges, homes, families and friends, workplace, libraries and museums

- Increasingly mediated by digital technologies
 - computer games; use of chat rooms; exploitation of digital media; digital television, 'social networking'

Learners in the digital era

- Today's learners as digitally literate
 - 'always on', mobile, experimental and community oriented
- Those born after 1982 are 'digital natives'
 - grew up with exposure to the internet and mobile devices
 - stay in contact through SMS, mobile phones, chatrooms and email
 - simultaneously plays computer games, listens to music and watches television
- Older than 25 are 'digital immigrants'
- Numbers are huge and growing rapidly in all age groups

Digital Literacy: what is it?

- Knowledge about ICT components, operations, capabilities and limitations
- Skills in using ICT to perform relevant tasks, retrieve and make use of digital content
- Positive attitudes toward ICT use personally and in society

Kids are different today (Prensky 2001)

- Operate at 'twitch speed' rather than conventional speed
- Parallel processors rather than linear processors
- Choose graphics and animation over text
- Random accessors of information
- Active not passive
- Expect reward for effort
- See play as work and work as play
- Expect fantasy and reality in equal measure
- View technology as life, not a separate activity

Kids are different today (2)

- Young children spend twice as much on 'screen time' as playing outside and as they do reading
- Work with multiple sources of information at the same time
- Use SMS, IM and email to keep in touch, conduct multiple conversations
- Use computer technology almost as much as television

“Web 2.0”: empowering the learner

- Social networking software
 - Blogs, WIKIS, podcasts, IM
 - MySpace, Facebook, Flickr, YouTube etc
 - Tagging and social bookmarking
- User contributions and user combinations
 - GPS and map-based technologies
 - Mashups
- Creative user technologies
 - animations, music, videos, graphic and web designs

Games and mobile technology in learning

- Constructivist concepts (vs instructivist)
 - learners actively construct their own understanding of the world
- People learn best when they are motivated and entertained
 - games provide a 'flow' experience
 - playful experimentation to develop understanding of the world and our place in it
- Use location to trigger events
- Equip learners with powerful, mobile tools for access, creation and use of content

Mobile learning characteristics

- Ubiquitous
 - 100% penetration rate for Western Europe: a mobile phone for every person in the population (March 2006).
- Bite sized
 - in short segments, simple, structured, easy access, task-based
- On demand
 - Flexibility to access learning in best time and place
- Typically 'blended'
 - used as part of a wider set of learning interventions
 - NOT e-learning on a phone

Sophisticated mobile devices enable richer learning content

- Growing use and acceptance
 - increasing bandwidth and browser software
 - reduction in data access costs
- Digital phones and other devices
 - huge range of handsets available: Nokia, Sony Ericsson etc
 - 3G phones, audio/video/flash/java capabilities,
 - larger screens
 - Pocket PC, Smart phones, Blackberry, Converged Mobile Devices (CMDs) eg new iPhone
- Non-telephony mobile devices
 - portable MP3 players (iPod): 100 million+ worldwide
 - allow content to be downloaded and used offline”
 - beyond music: podcasts and videocasts

Mobile Learning Reviewed

	U.S.	France	Germany	Italy	Spain	U.K.
Online population (000)	152,698	23,980	32,085	17,389	12,281	29,589
Online population accessing Web from mobile phone (%)	19	28	34	34	26	24

Note: The online population consists of people 15 years old and older, accessing the internet from home and work.

Source: comScore Networks, 2006

Mobile devices and games

- Mobile devices well suited to simple, structured quizzes and games
 - delivered as SMS messages: user options, response by deadline
 - 'push' delivery to WAP-enabled phones,
 - Java-based quizzes/games
- Feedback can come from a teacher
 - PC to SMS applications for large groups
- Care needed with costs for the learner
 - download or connection charge
 - alternative formats? e.g.download to PC first

Games

- USA market
 - 248 million games sold in 2004
 - 38% of game players are under 18- average age is 37
 - 55% male, 43% female
 - 75% of heads of households play games
 - 63% of parents believe games are a positive part of children's lives
- Nearly 60% of teachers in UK willing to use games in classroom

Digital games and learning

- Potential remains largely unrealized
 - lack of alignment between the worlds of education and games
 - false starts and misunderstandings: learn from past
- Designers of "edutainment" games have not understood:
 - how and why games are effective in learning
 - how to align curriculum with games without taking the fun away
 - games can succeed BECAUSE they use sound pedagogical approaches
- Need to align principles of games with educational theory and learning outcomes
 - possible to create effective blended game-based learning.

Games and learning: what's the case?

- Increase in IQ across all cultures with standardised testing
 - cannot easily be attributed to education, nutrition etc
 - cognitive complexity of mass entertainment such as video games?
 - games not schools are teaching children to think?
- Children are not the problem
 - 90% of children surveyed play computer/video games
 - 50% already see games as part of school learning process
- Widespread criticism of school education systems in many parts of Europe
 - If schools are failing and games are effective learning tools and students prefer games.....

Why are games good for learning?

- Successful games teach large amounts of content
- Games use established learning theories and principles
 - play is an effective learning paradigm: 'hard fun'
 - players resolve challenges and problems: learner autonomy
 - help is only hints, not the answer: constructivist rather than didactic model
 - scientific method: gather data, hypothesis, test, revise
- Not all games have the same learning outcomes
 - Card games - matching numbers, platforms
 - Jeopardy-style games - information, facts, concepts
 - Arcade style 'twitch' games – speed, visual processing
 - Adventure – hypothesis testing, problem solving

Motivational factors in game design

- Challenge, fantasy, curiosity
- Player able to affect outcome of the game
- An overriding goal/challenge+ sub-goals
- Positive and negative outcomes based on player actions
- Require mental or physical skill
- Outcome uncertain at the outset
- Develop strategies in order to succeed
- Multiple paths to success
- Players can ultimately overcome most obstacles

9 events in instructional design

- Game design already involves
 - Gain attention
 - Inform of objective
 - Stimulating recall
 - Present stimulus
 - Provide guidance
 - Elicit performance
 - Provide feedback
 - Assess performance
 - Enhance retention

Approaches to learning game design

- Students participate in game design
 - they take on designer role
- Commercial games are integrated into the curriculum
 - more cost-effective than building from scratch
 - quality maximised (game play or 'flow')
 - can match course content (history, geography, civil engineering, physics, maths, economics)
 - not designed to teach, limited topics, content incomplete/inaccurate
- Practical issues
 - aligning curriculum and game content
 - framework for new learning or assessment or both
 - creating and managing extension activities

Challenges

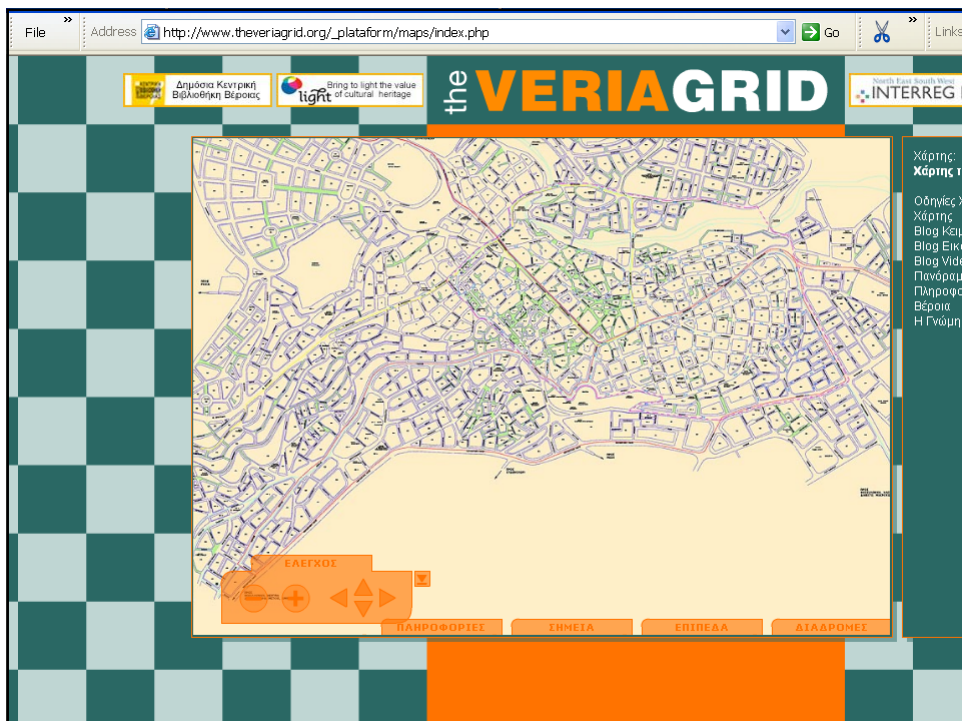
- Perceived mismatch
 - skills/knowledge from games v those recognised in education
 - dissemination of innovative results across Europe
 - wider understanding of potential impact on learning access and outcomes among policy makers
- Explain to parents and teachers
 - how games fit in schools
 - why games are effective
 - plan for integrating games and how it will work
- Is it worthwhile?
 - good games can easily take 30 to 50 hours
 - manageable through saved games, transitions but...
 - the decision: is the amount of potential learning justified by the work and time needed to implement the game?

Informal learning : possible definitions

- Happens outside formal education institutions
- Not about things which are learned in formal education institutions
- Happens in a different way
 - e.g. is 'casual' or 'accidental' rather than 'organised'
- Has a different purpose
 - e.g. participation in leisure
 - e.g. not related to passing examinations?

Gaming in libraries

- Public, school and academic libraries
 - integrate gaming into services and programs
 - case studies show gaming very popular with users
 - enhance development of learning and literacy skills
- USA is ahead
 - *Gaming and Libraries: Intersection of Services* by Jenny Levine
- EC projects such as AITMES and Il Greco
- Potential for museums



Challenges for libraries

- Building a learning culture into their policies
- Recognition as a key player in lifelong learning:
 - advocacy
- Accepting their new role and the use of technology
- Workforce competence of library staff
 - to support and mentor learners
 - develop and provide digital services
- Partnerships in learning provision
- Structured or accredited learning?
- Evidence: evaluation and impact measurement