Assessing the educational potential of AR

From 'Wow' to 'a-Learning'

ASSERTED KNOWLEDGE

'WOW' Factor

- Optimal first impression
- Immediately capture audiences
- Visualisation allows to engage learners
- Stimulate social and decision making skills
- Superimposing visual aids enhances vocational studies
- Learning material comes to life

AR in education and learning

Will Augmented Reality be a "game changer" and result in a-Learning by adding an additional training capability like e-Learning did years ago?

Horizon Report

The 2011 Horizon Report, a joint report by The New Media Consortium and Educause predicts that the use of augmented reality in education will be widespread within two to three year

Today?

- AR is used by educators to enhance the learning experience
- Plenty of tools:
    - Layar creator
    - Aurasma
    - Hoppala
    - String
    - BuildAR
    - AugmenteDev

Enhancing learning experience: Books

Books: Ad rich media and social media to bring books to "life"

Through AR connect books to video, 3D, images, Audio, youtube, vimeo, twitter, more (used as a "glue")

Enhancing learning experience: Posters

Bring topics to life (e.g. natural disasters, meteorology, astronomy, chemistry)

View a poster with augmented reality content and it comes to life on the screen (popcode)

Enhancing learning experience: Homework

Create engaging digital homework made accessible via posters, book covers, photos, places, "hijacked" public posters

Embed homework assignments into places where young people hang out before and after school (e.g. cafeteria, bus stop)

Aurasma

Teachers can make lessons and learning more fun by setting video content to emerge from text books, posters or displays in school corridors.

They can create a channel on the Aurasma platform and then have students join this channel on their own handsets to unlock secret extra learning materials.

Students can also use the Aurasma Studio to bring a piece of coursework to life with multimedia content, to experiment with 3D animations or to build an Aurasma-enabled app for a research project.

Conclusions

- AR is a powerful tool to enhance learning experience.

- Educators are willing to use AR to deliver a teaching experience that lasts.

- Learners engage in the things they are doing, be it learning or training or reading a book.

- There are plenty of AR tools that are easy to use.

What about AR curricula?

Authentic Learning

The ability to add to reality by superimposing visual aids enhances instruction and learning for those disciplines where **<u>specific</u>** elements must be learned and remembered will enhance vocational studies for those wishing to enter the trades of auto mechanics, aviation mechanics, electricians, plumbers, carpenters, etc.

Specific application areas

- The following specific application areas have recently benefited from the AR technology:
  - Collaboration Support
  - Robotics
  - Industry / Industrial Design
  - Medicine
  - Entertainment

Teaching children to read: Letters Alive

- According to the 2010 Horizon Report, this unique way to teach children how to read is expected to become main-stream within the next four to five years.

- Allows for a "two-way interaction" between students and seemingly-real virtual characters. Unlike simple animated characters, Logical virtual animals can respond to the actions of the student

AR Chemistry

- AR Chemistry allows you to learn the interaction of the different elements of the periodic table
- Students feel how elements are attracted to form new molecules, observe the change of electrons and interact with the result to visualise it in its natural state.

Medical Training using Augmented Reality

The key to augmented reality is to add content to a real world physical object and in this case the real world object is your body.

See how medication or surgery works where it will be working on your body.

AR for maintenance and repair

Explores the use of augmented reality to aid in the execution of procedural tasks in the maintenance and repair domain.

Reliving history in the classroom

Medieval structures: [Identify architectural styles and make the right combinations](#)

LearnAR – eLearning with Augmented Reality

- LearnAR is a new learning tool that brings investigative, interactive and independent learning to life using Augmented Reality. It is a pack of ten curriculum resources for teachers and students to explore by combining the real world with virtual content using a web cam. The resource pack consists of interactive learning activities across English, maths, science, RE, physical education and languages that bring a wow-factor to the curriculum.

- http://www.youtube.com/watch?v=7G3H3ImCWl E&feature=related

Summary

Augmented Reality is an environment that takes real-time reality as its basis and includes virtual augmented elements. The augmentation can be triggered by a marker or by a PoI.

AR is typically experienced on a smart phone, a tablet or a game console, but this is not a stable environment. Although this will probably change in the future, currently computer-based AR has a bigger potential.

Conclusions

- Most Augmented Reality applications are currently being created for marketing, geo-location based services, amusement and social (media) purposes. Art and culture are rapidly catching up.

- The use of Augmented reality for emancipation or in education on the other hand is rather limited.

Conclusions

- Mobile AR is currently not delivering according to expectations. It is currently more interesting to turn to computer-based stand-alone or Internet-based AR. However, mobile AR has a great potential for the future to become a disruptive technology but this will not happen anytime soon. It will take years to scale.

- AR in itself is nothing more than a tool. It can be used with everything but it relies on the quality of that "everything" to actually achieve anything. It is a middleware that needs "killer" applications to prove worthy.