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SOLSTICE Conference 2015

**What Constitutes Effective use of Technology
Enhanced Learning (TEL)?**

David Wooff, Edge Hill University

**Edge Hill
University**



4th June 2015

**Technology
Enhanced
Learning**

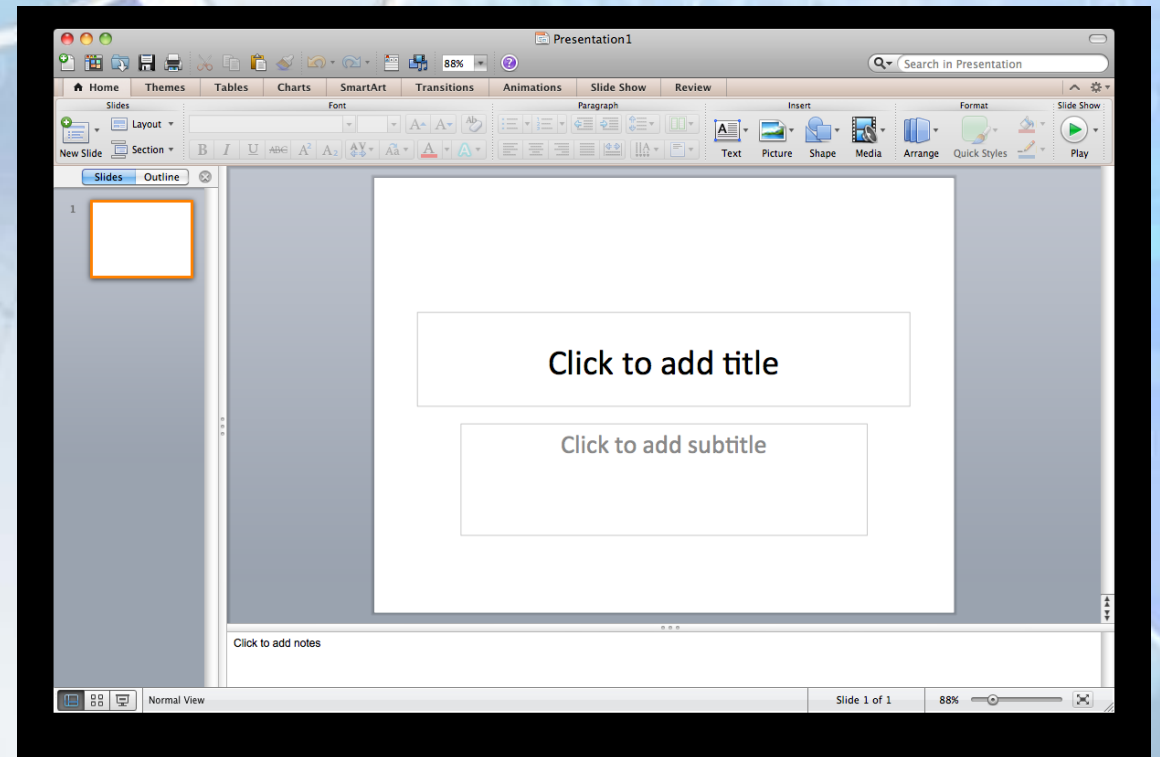


**Technology
Enhanced
Teaching**

Technology Enhanced Teaching

Using technology to deliver something to a group of learners that does not require them to engage technologically with the content, examples include:

- PowerPoint Presentations
- PREZi Presentations
- Watching a Youtube video clip
- Keynote
- Slideshare



Advantages

There are many advantages associated with technology enhanced teaching, some of these include:

- Work can be easily saved, modified and shared
- Can ensure uniformity between different groups of learners
- Lots of existing examples and exemplars which can be used as a starting point
- Studies have shown that it can increase learner engagement
([Darling-Hammond et al.. 2014](#), [Kirkwood and Price 2014](#), [Marples et al. 2014](#))

Limitations

There are a number of limitations and problems associated with Technology Enhanced Teaching:

- Hardware Problems – lack of access to rooms with projectors, or wifi access points for example.
- Software problems, including lack of compatibility and errors which occur switching from PC to Mac based presentations
- Issues with internet access (if it is a cloud based programme like Prezi)

Limitations

Over use - often called "*Death by PowerPoint*"

.....arguably now replaced by "*Death by Prezi*" – or the seasickness effect caused by excessive zooming in and out
Some presenters chose to Incorporate.



Technology Enhanced Learning

Learning that takes place when the learner is required to use technology to access original material that furthers (or reinforces) their understanding of something.



Advantages

There are many advantages associated with technology enhanced learning, some of these include:

- Information can be accessed in a unique way
- Due to the technological interaction some learners remember things better
- Possible to do, and experience, things that cannot be done in lessons by any other means

Limitations

There are a number of limitations and problems associated with Technology Enhanced Learning:

- Volume and cost of hardware and software – eg. have you got enough devices for each member of the group to have one?
- Bring Your Own Device (BYOD) approach – does everyone have access, and are they suitable?
- Reliability; problems with battery life and wifi connections
- Seen as a gimmick, and learners get distracted from learning by the interaction with something technological
- Staff / Tutor knowledge and understanding to enable them to make best use of the technology



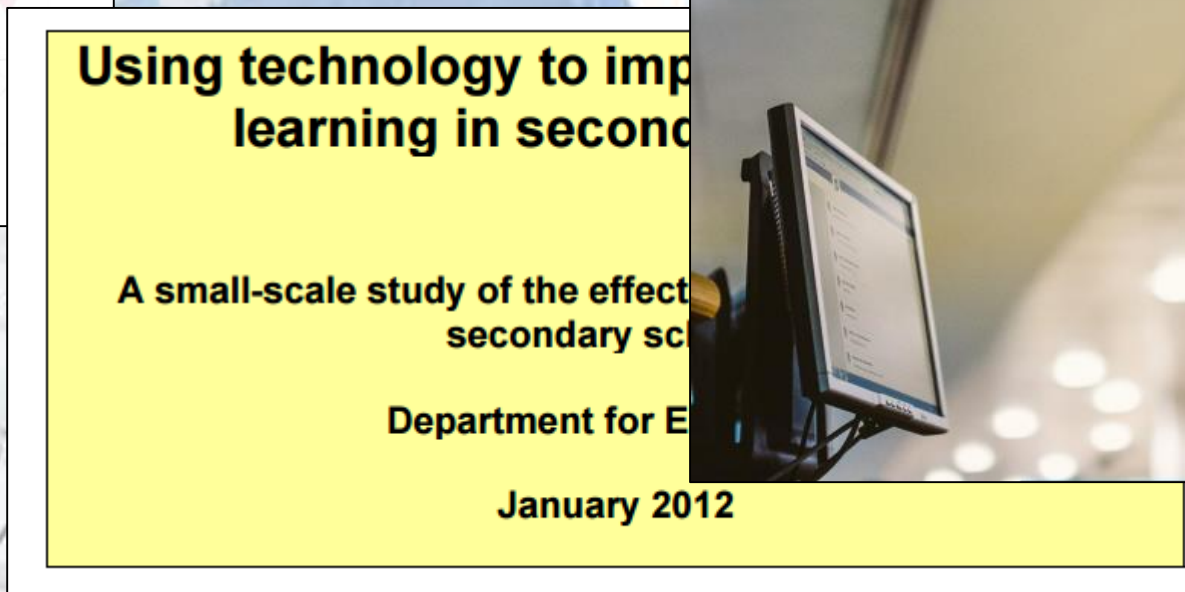
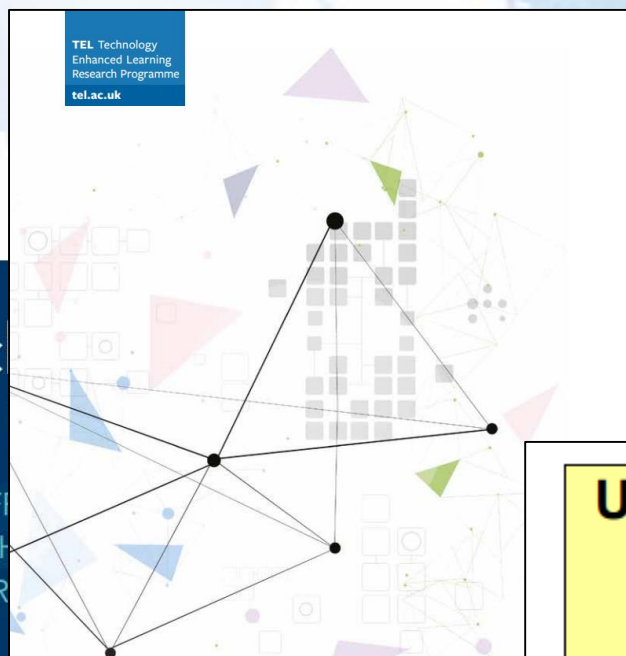
Sources of Information



Google Search

I'm Feeling Lucky

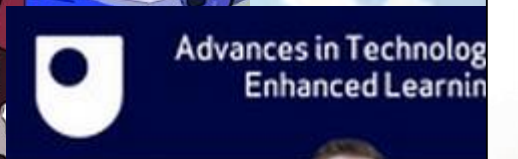
Reports into Technology Enhanced Learning



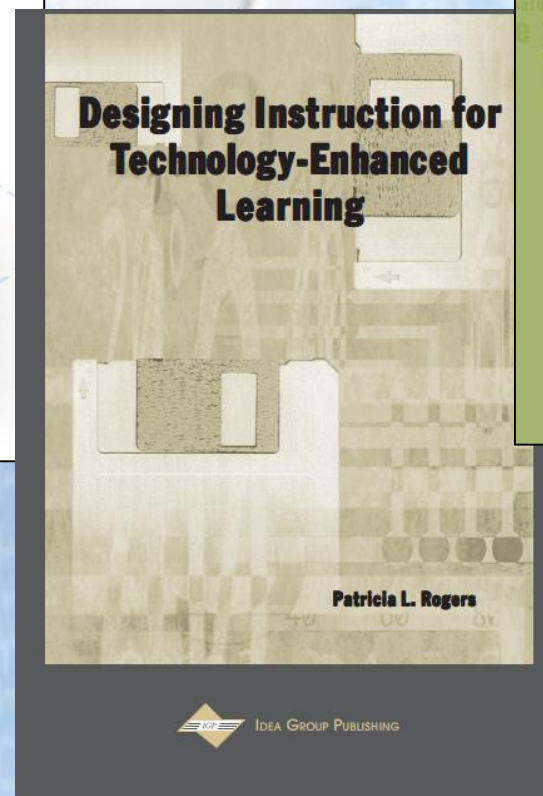
Books on Technology Enhanced Learning



iPads in t

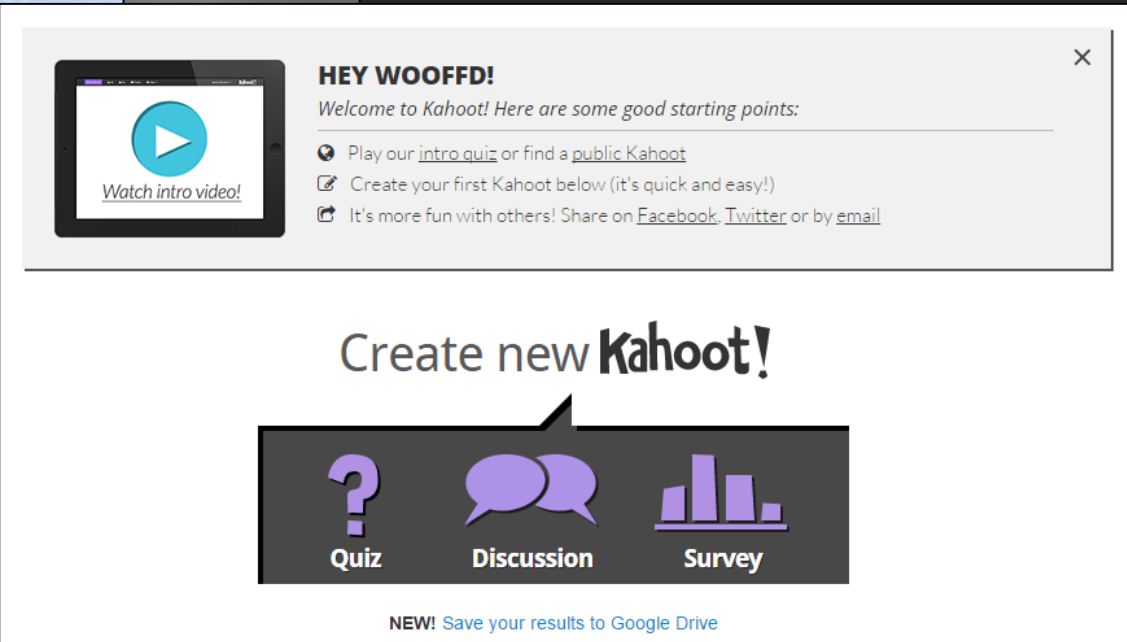
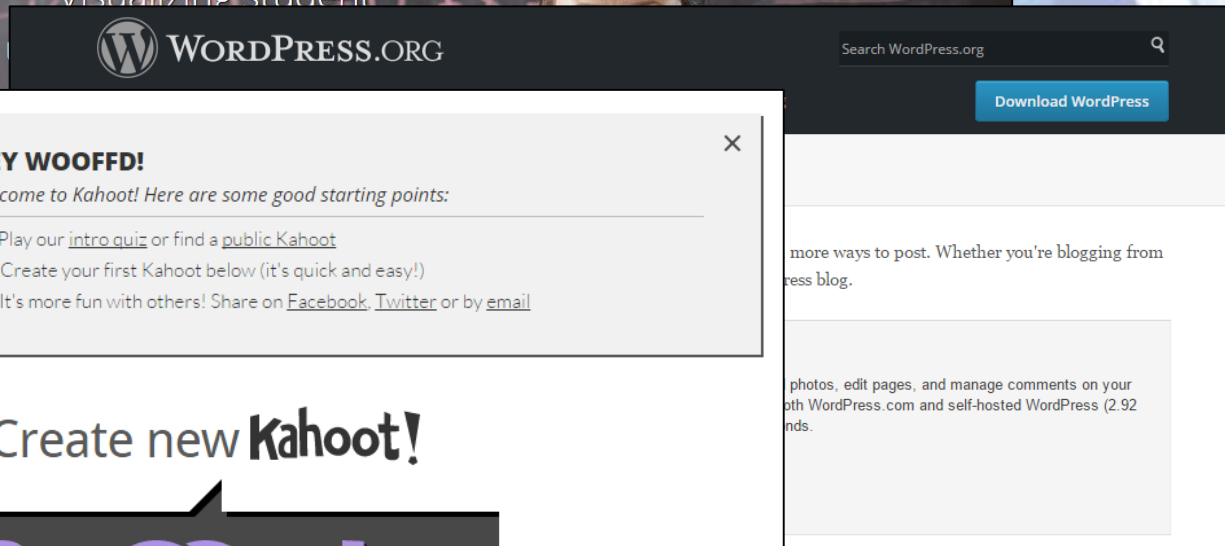
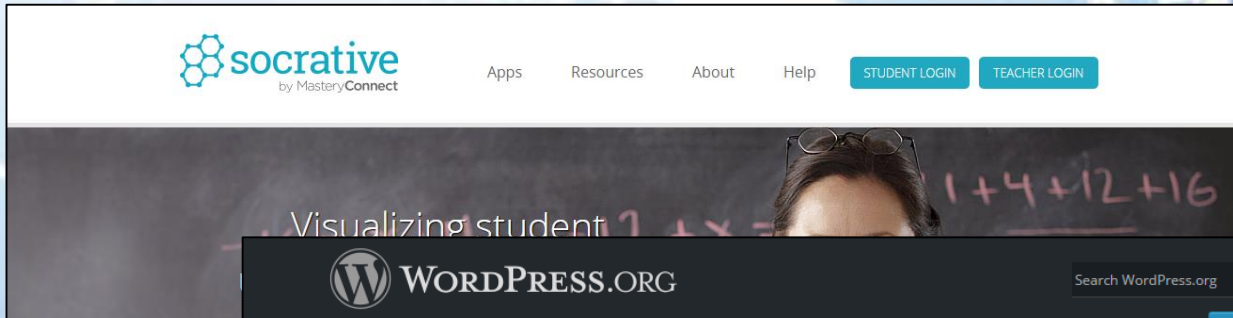


Fridolin Wild, Paul Lefrere, Peter Scott



Online Tools

- Quizzes
- Puzzles
- Presentation Software
- Repositories
- Blogs
- Survey Tools
- Drawing Packages
- Modelling Packages



Before we look at some specific examples:

- **Not all Technology Enhanced Teaching or Learning tools will be of use to you – technology in this case is supposed to ‘enhance’ learning so if it does not – do not use it.**
- **Technology Enhanced Teaching and Learning applications introduced today will be superseded in around two years time, sometimes sooner!**

QR Codes:

- Quick Response (QR) Codes; originated from an industrial application developed by Toyota to enhance, and ultimately replace, barcodes,
- Well established and reliable,
- Multiple free QR Code generators for different platforms (iOS, Android, PC),
- Multiple QR Code Readers available free,
- Can work on printed or digital media

The screenshot displays the QR Stuff.com website interface. At the top, the logo "QR Stuff.com" is accompanied by the tagline "Get your QR codes out there!". Navigation links include HOME, ABOUT THIS SITE, QR CODES, PHONE SOFTWARE, EXAMPLES, FAQs, and AFFILIATES. Social media icons for Twitter, Facebook, and LinkedIn are visible, along with a "BLOG" link. A "SIGN UP NOW" button is prominently displayed. Below the navigation, a section titled "SUBSCRIBERS GET MORE QR STUFF" features icons for various services: MANAGEMENT DASHBOARD, PROJECT FOLDERS, ANALYTICS, VECTOR OUTPUT, DYNAMIC QR CODES, BATCH PROCESSING, UNLIMITED QR CODES, PDF REPORTS, and PASSWORD QR CODES. The main content area is the "QR CODE GENERATOR" tool, which is divided into four steps: 1. DATA TYPE (with a list of options like Website URL, YouTube Video, etc.), 2. CONTENT (with a text input field containing "Hello lovely PGCE Trainees!!!"), 3. FOREGROUND COLOUR (with a color picker and a hex code input field), and 4. OUTPUT TYPE (with options for DOWNLOAD, PRINT, EMAIL, and BATCH FILE UPLOAD). A "QR CODE PREVIEW" section shows a generated QR code and a "DOWNLOAD QR CODE" button. At the bottom, there are promotional banners for "PUT YOUR CODE ON OTHER STUFF" and "CREATE A VISUAL QR CODE".






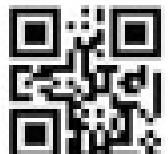

BEAUTIFUL QR CODES

Text:

Loss tolerance:

Style: *New styles every week!*

Name: _____ Date: _____

Read Each Problem Carefully	Show Your Work	Scan To Check Your Answer
27 dolphins were swimming in the ocean. 16 more dolphins joined them. Now, how many dolphins are swimming together?		
16 skiers were skiing down the mountain. 48 snowboarders were going down the mountain. How many skiers and snowboarders were on the mountain?		
57 musicians are in the orchestra. Some more musicians joined their rehearsal. Now, 93 musicians are practicing. How many musicians joined the rehearsal?		
Some ducks were floating on the lake. 13 new ducks landed and started floating. There were 51 ducks floating in all. How many ducks were floating in the beginning?		
42 children tested for their green belt. 21 children tested for their black belt. How many children tested in all?		

PERIODIC TABLE OF THE ELEMENTS

PERIOD	GROUP																		18																	
	1	IA											13	14	15	16	17	VIIIA																		
1	1	H 1.00794 Hydrogen											2	He 4.002602 Helium																						
2	3	Li 6.941 Lithium	4	Be 9.012182 Beryllium											5	B 10.811 Boron	6	C 12.0107 Carbon	7	N 14.0067 Nitrogen	8	O 15.9994 Oxygen	9	F 18.9984032 Fluorine	10	Ne 20.1797 Neon										
3	11	Na 22.989769 Sodium	12	Mg 24.3050 Magnesium	3	III B	4	IV B	5	VB	6	VIB	7	VII B	8	VIII B	9		10		11	IB	12	II B	13	Al 26.9815386 Aluminum	14	Si 28.0855 Silicon	15	P 30.973762 Phosphorus	16	S 32.065 Sulfur	17	Cl 35.453 Chlorine	18	Ar 39.948 Argon
4	19	K 39.0983 Potassium	20	Ca 40.078 Calcium	21	Sc 44.955912 Scandium	22	Ti 47.867 Titanium	23	V 50.9415 Vanadium	24	Cr 51.9961 Chromium	25	Mn 54.938045 Manganese	26	Fe 55.845 Iron	27	Co 58.933195 Cobalt	28	Ni 58.6934 Nickel	29	Cu 63.546 Copper	30	Zn 65.38 Zinc	31	Ga 69.723 Gallium	32	Ge 72.64 Germanium	33	As 74.92160 Arsenic	34	Se 78.96 Selenium	35	Br 79.904 Bromine	36	Kr 83.798 Krypton
5	37	Rb 85.4678 Rubidium	38	Sr 87.62 Strontium	39	Y 88.90585 Yttrium	40	Zr 91.224 Zirconium	41	Nb 92.90638 Niobium	42	Mo 95.96 Molybdenum	43	Tc [98] Technetium	44	Ru 101.07 Ruthenium	45	Rh 102.90550 Rhodium	46	Pd 106.42 Palladium	47	Ag 107.8682 Silver	48	Cd 112.411 Cadmium	49	In 114.818 Indium	50	Sn 118.710 Tin	51	Sb 121.760 Antimony	52	Te 127.60 Tellurium	53	I 126.90447 Iodine	54	Xe 131.294 Xenon
6	55	Cs 132.9054519 Cesium	56	Ba 137.327 Barium	57-71	Lanthanides	72	Hf 178.49 Hafnium	73	Ta 180.94788 Tantalum	74	W 183.84 Tungsten	75	Re 186.207 Rhenium	76	Os 190.23 Osmium	77	Ir 192.217 Iridium	78	Pt 195.084 Platinum	79	Au 196.966569 Gold	80	Hg 200.59 Mercury	81	Tl 204.3833 Thallium	82	Pb 207.2 Lead	83	Bi 208.98040 Bismuth	84	Po [209] Polonium	85	At [210] Astatine	86	Rn [222] Radon
7	87	Fr [223] Francium	88	Ra [226] Radium	89-103	Actinides	104	Rf [261] Rutherfordium	105	Db [268] Dubnium	106	Sg [271] Seaborgium	107	Bh [272] Bohrium	108	Hs [270] Hassium	109	Mt [278] Meitnerium	110	Ds [281] Darmstadtium	111	Rg [280] Roentgenium	112	Cn [285] Copernicium	113	Uut [284] Ununtrium	114	Fl [289] Flerovium	115	Uup [288] Ununpentium	116	Lv [293] Livermorium	117	Uus [294] Ununseptium	118	Uuo [294] Ununoctium
							57	La 138.90547 Lanthanum	58	Ce 140.116 Cerium	59	Pr 140.90765 Praseodymium	60	Nd 144.242 Neodymium	61	Pm [145] Promethium	62	Sm 150.36 Samarium	63	Eu 151.964 Europium	64	Gd 157.25 Gadolinium	65	Tb 158.92535 Terbium	66	Dy 162.500 Dysprosium	67	Ho 164.93032 Holmium	68	Er 167.259 Erbium	69	Tm 168.93421 Thulium	70	Yb 173.054 Ytterbium	71	Lu 174.9668 Lutetium
							89	Ac [227] Actinium	90	Th 232.03806 Thorium	91	Pa 231.03688 Protactinium	92	U 238.02891 Uranium	93	Np [237] Neptunium	94	Pu [244] Plutonium	95	Am [243] Americium	96	Cm [247] Curium	97	Bk [247] Berkelium	98	Cf [251] Californium	99	Es [252] Einsteinium	100	Fm [257] Fermium	101	Md [258] Mendelevium	102	No [259] Nobelium	103	Lr [262] Lawrencium

Color Of The Atomic Shows State Of Matter
as standard conditions = 0°C and 1 atm.

Black = Solid
Red = Liquid
Blue = Gas
Grey = Unknown

Group IUPAC → 13 IIIA ← Group CAS

Atomic Number → 1
Atomic Symbol → B
Relative Atomic Mass → 10.811
Element Name → Boron

Scan the QR code to learn more

Border Shows Natural Occurrence

Primordial From Decay Synthetic

Some Element Categories In The Periodic Table



Example from Student Module Submission Work

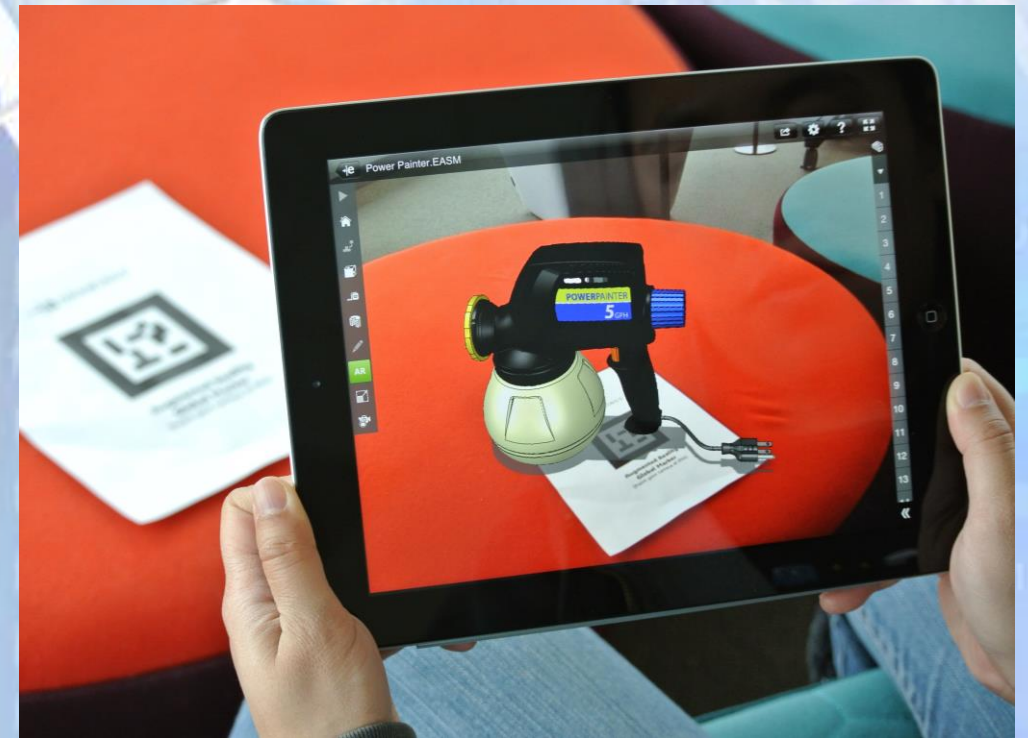


Augmented Reality

Geographical Trigger (a landmark or place)



Trigger Image





EXPLORING AUGMENTED REALITY

Dawne Bell and Rob Jones, Edge Hill University



In September's edition of D&T Practice (Issue 3.2012) David Wooff and I wrote about how staff were working with trainees on the Design and Technology BSc Initial Teacher Training course, using the notion of 'Design Fiction' as a catalyst for their design work, to explore the effective employment of Technology Enhanced Learning (TEL) such as the use of QR Codes, Prezi and Blogs. The outcomes had a series of positive impacts, not only on the trainee teacher's attainment, motivation and engagement but where trainees had engaged in aspects of the TEL whilst on their teaching placements in schools the impact upon the student's attainment and progress.



Jennifer, a first year Primary Trainee PGCE trainee teacher (also at Edge Hill), is currently on her initial teaching placement and building upon work undertaken by her secondary peers has been exploring how she can use this emergent technology to enhance learning in her classroom to great effect. As Jennifer explains "The class have been exploring the Great Fire of London where we engaged the children through a design and make activity where they created individual models which we combined together to form the City of London. Having seen the work which is currently being undertaken by students in Secondary Education, using a picture of Samuel Johnson as the trigger image I was able to link this to a short video. So when the children view the display through a smart phone or tablet device the image comes alive and talks to them about the topic which helps consolidate their learning."

The next stage of development for the trainees is to complete their work for this module and prepare for our first augmented reality edition, but also to prepare and explore further how TEL can be used successfully to positively impact and enhance the work they undertake in the classroom, whilst on their final teaching placements in the New Year.

Idea: our trainees are already working on are supporting the development of resources for differentiation, particularly SEN, and subject specific: phonics, instructional videos, homework aids and Health and Safety. ■

Example of Aurasma trigger image

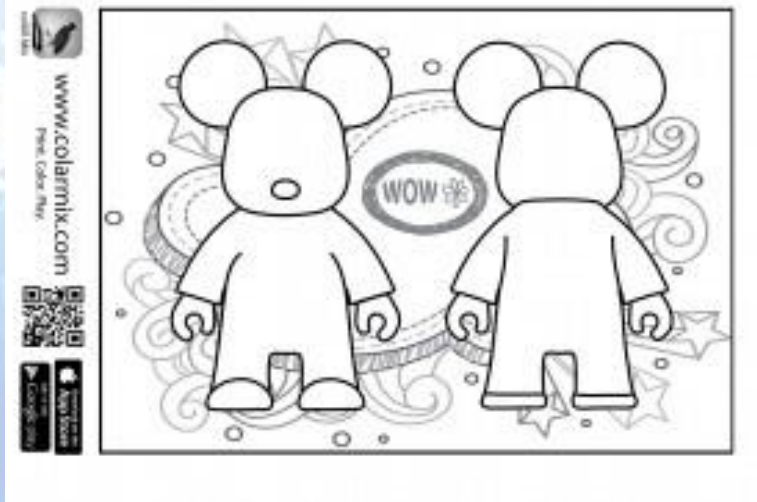


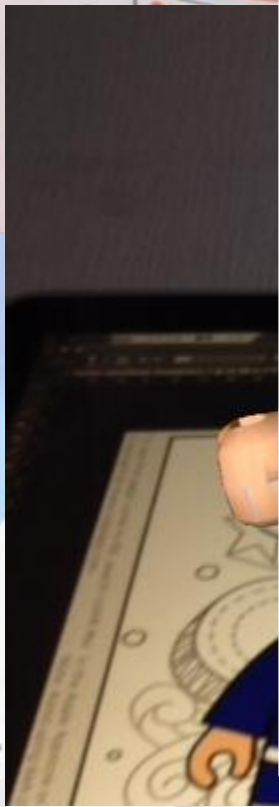
Augmented Reality – Generate Your Own !

1. Down load Software
2. Determine Trigger (Place or Image)
3. Record or Obtain Video or Audio Item to link to trigger
4. Link Video or Audio Item to link to trigger
5. Upload Video or Audio Item to your own “channel”



Augmented Reality – Predefined





Augmented Reality

Setting up your own channel: more time consuming, more practice and more learning required on the part of the teacher – but potentially more flexible, more focused and more relevant to exactly what you want

Using predefined Augmented Reality: quick and very easy to use, reliable and repeatable – often have to find a way on incorporating existing outcomes into your learning environment.

Technology Enhanced Teaching (Presenting)

The screenshot shows the Haiku Deck website homepage. At the top, there is a navigation bar with the Prezi logo, links for Pricing and Log in, and a blue 'GET STARTED' button. Below this is a dark navigation bar with the emaze logo, 'amazing presentations' text, a language dropdown set to 'English', and a 'login' link. The main header features the Haiku Deck logo, a 'NEW DECK' button, and a menu with links for GALLERY, ZURU, BLOG, REVIEWS, OUR STORY, HELP, and SIGN IN. A central banner reads 'Instant Presentations, Powered by Artificial Intelligence' and 'INTRODUCING HAIKU DECK ZURU' with a 'LEARN MORE' button. The main content area is titled 'PRESENTATIONS THAT INSPIRE' and includes a sub-headline: 'Meet Haiku Deck, a completely new kind of presentation software. We make telling your story simple, beautiful, and fun.' Below this is a large image of a tablet displaying a presentation slide titled 'PRESENTING (IN A NUTSHELL)' with a pattern of acorns and leaves. To the right, a 'GET HAIKU DECK:' section offers options for 'FOR IPAD' and 'FOR WEB'.

- Why not use PowerPoint?
- What advantages are there in using a cloud based piece of software?
- Can all learners access the content?
- Is this the “bulk” of the teaching resource, or does it need to be supplemented with a handout ?
- How can learners access this information after the lesson /session?

Final Observations

- **Practice – make sure you know how to use it yourself, what the advantages are and what the limitations are**
- **Rehearse in the same venue under the same conditions**
- **Check the hardware and software to make sure it works; batteries are charged, internet access is available and wifi connections work**
- **Ask yourself – does this enhance what I’m doing for the whole class and all learners within it?**
- **Have a contingency; what if it doesn’t work?**

Thanks for Listening



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Twitter: @Destech2013

References

- Background image sourced from: <https://commorgiland.files.wordpress.com/2012/11/technology1.jpg> (Last Accessed 13.05.2015)
- Slide 1: Image taken from <http://edudemic.com/wp-content/uploads/2012/07/intel-bridge-the-gap.png> (Last Accessed 13.05.2015)
- Slide 2: Image 1 taken from <http://static.guim.co.uk/sys-images/Guardian/Pix/pictures/2013/3/4/1362400449209/Spring-Cottage-Primary-Sc-010.jpg> (Last Accessed 19.05.2015)
- Slide 2: Image 2 taken from <http://3.bp.blogspot.com/-gqc95ik0ozE/U6IH1PCxfMI/AAAAAAAAAnyM/6fyIqFmiWXw/s1600/1.png> (Last Accessed 19.05.2015)
- Slide 3: Image taken from http://upload.wikimedia.org/wikipedia/en/d/d6/Microsoft_PowerPoint_for_Mac_2011.png (Last Accessed 16.05.2015)
- Slide 6: Image taken from <http://betanews.com/wp-content/uploads/2014/02/bored-students-600x400.png> (Last Accessed 16.05.2015)
- Slide 7: Image taken from http://static.dezeen.com/uploads/2014/02/Inition-augmented-reality-architecture-installation-for-Zaha-Hadid_dezeen_01_644.jpg (Last Accessed 16.05.2015)
- Slide 10: Image taken from <https://www.google.co.uk/webhp?hl=en> (Last Accessed 16.05.2015)
- Slide 11: Image 1 (and report) from: <http://www.tlrp.org/docs/enhance.pdf> (Last Accessed 16.05.2015)
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- Slide 12: Image 1 (free eBook) from: <http://l3t.eu/itug/images/band2.pdf> (Last Accessed 16.05.2015)
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- Slide 13: Image 2 (and blog host) from : <https://wordpress.org/mobile/> (Last Accessed 16.05.2015)
- Slide 13: Image 3 (online quiz tool) from: <https://create.kahoot.it/#> (Last Accessed 16.05.2015)
- Slide 14: Image taken from: <http://searchenginewatch.com/IMG/390/232390/lost-confused-unsure-unclear-perplexed-disoriented-bewildered-signs.jpg?1346806203> (Last Accessed 16.05.2015)
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- Slide 18: Image 1 from: <http://www.scramboo.com/wp-content/uploads/2013/02/AR-Article-Pic2.png> (Last Accessed 16.05.2015)
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- Slide 19: Image 1 from: <http://a4.mzstatic.com/eu/r30/Purple4/v4/19/96/c4/1996c4cb-3f65-4880-9772-e1a2f4d81ddb/screen568x568.jpeg> (Last Accessed 16.05.2015)
- Slide 19: Images 2 and 3 from Magazine Available at: <https://www.data.org.uk/resource-shop/magazines/?o=#pager> (Last Accessed 16.05.2015)
- Slide 19: Click the TED logo: Matt Mills Video: http://www.ted.com/talks/matt_mills_image_recognition_that_triggers_augmented_reality (Last Accessed 16.05.2015)
- Slide 20: Images from Youtube clip: https://www.youtube.com/watch?v=eUEpyNaCJ_o (Last Accessed 16.05.2015)
- Slide 21: Image taken from colAR website: <http://colarapp.com/> (Last Accessed 16.05.2015)
- Slide 22: Image taken from: <http://media-cache-ec4.pinimg.com/550x/c2/11/51/c2115172d180919b4fff978f76d248cc.jpg> (Last Accessed 16.05.2015)
- Slide 22: Image taken from: <http://alicia.mobile9.com/download/as/android/co/mp/com.puteko.colarmix/screen1.jpg> (Last Accessed 16.05.2015)
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