Augmented Reality in Education

Presenter: Morgan Nickolai
Sidney High School – Library Media Specialist
What is augmented reality?
Explore various AR apps
How AR is being used in educational settings
How to create your own AR experiences
Augmented Reality is...

- a technology that superimposes a computer-generated image on a user’s view of the real world.
Augmented Reality Apps

ColAR – Print, color and see your artwork come to life!

Google Translate – This app instantly translates words by using your mobile device’s built-in camera. No Internet connection is required. This app is great for foreign language teachers.


Anatomy 4D – Through this free app and a simple printed image, Anatomy 4D transports students, teachers, medical professionals and anyone who wants to learn about the body into an interactive 4D experience of human anatomy. http://daqri.com/project/anatomy-4d/#.VD_v63jD_Gg

Spacecraft 3D – NASA’s Spacecraft 3D is an application that lets you learn about and interact with a variety of spacecraft that are used to explore our solar system, study Earth and observe the universe. Using a printed AR Target and the camera on your mobile device, you can get up close with these robotic explorers, see how they move and learn about engineering feats used to expand our knowledge and understanding of space.

Star & Planet Finder – This app guides you to see stars, planets, constellations and satellites in the sky. Simply choose a planet from the list and move your device according to the pointer display, the pointer represents the planet.

Guinness World Records 2014 – See records leap off the pages of your Guinness Book of World Records 2014 in 3D!

Aurasma – Aurasma is the industry-leading augmented reality app that’s changing the way millions of people see and interact with the world. It’s the only mobile app that lets you create and share your own augmented reality experiences.

123D Catch – Use your camera to capture the people, places and things around you as amazingly realistic 3D experiences. Capture friends, sculptures, buildings or anything else you can photograph. Automatically transform them into interactive 3D models that can be shared with friends, family, and an ever growing community of 3D photographers. http://www.123dapp.com/catch
Mirror your devices to any computer.

Now with Large-Deployment Assistance
Learn about Mirroring Assist »
How it works:

To activate the 3D animations, look out for the SEE IT 3D logo in the pages of the GUINNESS WORLD RECORDS 2014 book. When you see the logo, launch the app, point your device's camera at the book page and watch as the records comes to life.
Largest Hissing Cobra
World’s Shortest Woman
Students at Sidney High School posing with the world’s shortest woman.
Horrible Hauntings

An Augmented Reality Collection of Ghosts and Ghouls

Horrible Hauntings

By Shirin Yim Bridges
Illustrated by William Maughan

Download our free app to see ghosts!
Available on the App Store and Android Market
Horrible Hauntings

The Princes in the Tower

With a hollow sound, the shovel that had been slicing through the dirt struck wood. It was an old chest. Excitement sparked between the men, who were making repairs in the Tower of London. The Crown jewels were housed only a few hundred feet away. What treasure might they have stumbled upon? Holding their breath, they lifted what remained of the lid. Here and there lay scattered shreds of fabric. Then, awakened by their lanterns, they saw a cold and ghastly ghos. It was not the ghost of gold, but of a garments and bones.

On April 13, 1483, a twelve-year-old boy was proclaimed Edward V, King of England. Although recognized to have a 'type understanding for passing the name of his youth', the new king was still too young to rule. Luckily, there was no need to worry about his safety, as he had an uncle to protect him - Richard, Duke of Gloucester.

In May, Edward moved into the Tower of London to await his coronation. Although known as the wife of gentle manners, the Tower was not a kind place. Edward was given ahostname range of rooms. But within weeks, he would experience the Tower in its true nature.

On June 12, Edward had one of Edward's most powerful supporters killed and all the king's enemies removed. The 'type understanding' of the young king did not fail him. His uncle reported that Edward, 'like a true king, prepared for war'...

Edward's younger brother was forced to share his fate. According to their uncle, Edward's two younger brothers were also murdered in the Tower.

Richard II

Richard II
Horrible Hauntings
Through this free app and a simple printed image, Anatomy 4D transports students, teachers, medical professionals, and anyone who wants to learn about the body into an interactive 4D experience of human anatomy. Visually stunning and completely interactive, Anatomy 4D uses augmented reality and other cutting edge technologies to create the perfect vehicle for 21st century education.

So much more than an app, the Anatomy 4D experience takes viewers on a journey inside the human body and heart, revealing the spatial relationships of our organs, skeleton, muscles, and body systems. This simple-to-use 3-dimensional learning environment is great for use in the classroom, or anytime.
Human Body
Human Body
Heart

ELECTRICALLY CHARGED
Because the heart has its own electrical impulse, it can continue to beat even when separated from the body, as long as it has an adequate supply of oxygen.

HOSE VS. HAIR
The aorta, the largest artery in the body, is almost the diameter of a garden hose. Capillaries, on the other hand, are so small that it takes ten of them to equal the thickness of a human hair.

PASS THE TISSUE
Blood is actually a tissue.

HEART POWER
The volume of blood pumped by the heart can vary over a wide range, from five to 30 liters per minute.

ENTRANCE HALL & LITTLE BELLY
“Atrium” is Latin for “entrance hall” and “ventricle” is Latin for “little belly.”

HEART SPRINTS
Even at rest, the muscles of the heart work hard—twice as hard as the leg muscles of a person sprinting.

TRAVEL PRO
When the body is at rest, it takes only six seconds for the blood to go from the heart to the lungs and back, only eight seconds for it to go to the brain and back, and only 16 seconds for it to reach the toes and travel all the way back to the heart.
Paired with either paper or wood blocks that are inscribed with the symbols of 36 elements from the periodic table, this app will instantly transform a simple, inanimate object into dynamic, dimensional, 4D representations of each element.

- Interact with 36 amazing, naturally-occurring elements and learn their names, what they look like, and their atomic weights
- Learn unique, fun facts about each element
- Combine two elements together and see how they react, including the catalyst, resulting compound and chemical equation

http://elements4d.daqri.com/ (visit website for lesson plans and materials)
Elements 4D

Sodium

Chlorine

Sodium Chloride

$2Na + Cl_2 \rightarrow 2NaCl$
This app instantly translates words by using your mobile device’s built-in camera. No Internet connection is required.
非常感谢。
Thank you very much.

Hello
你好

Thank you.
Спасибо.

Добро пожаловать!
Chào mừng bạn!

tạm biệt
ลา biệt
Print, color and see your artwork come to life!
CoIAR
Aurasma is the industry-leading augmented reality app that’s changing the way millions of people see and interact with the world. In fact, it’s the only mobile app that lets you create and share your own augmented reality experiences!

- Use the simple step-by-step creation wizard within the app to make your own Auras and share them with friends and other Aurasma users.

- Build Auras using your own photos and videos, or alternatively, select from thousands of digital animations available on the platform. Most popular user-generated Auras include adding 3D dinosaurs to your street, sending a video message on a greetings card, leaving hidden clues in a treasure hunt, or adding information to classroom materials.
Aurasma in the Library

THE 5 WAVE
F. YANCEY

THE 5 WAVE
RICK YANCEY
Book trailer
Speed-dating with Books

Directions:
1. After selecting your book, open up the Aurasma app on the iPad.
2. Hold the iPad camera directly over the front cover of the book.
3. Wait a few seconds and a video should start playing.
Using Aurasma to Explain Artwork
Aurasma and Athletics
Create Interactive Advertisements with Aurasma
Selected Foreign-Born Populations in Florida, 1900

<table>
<thead>
<tr>
<th>Country of Birth</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>118</td>
</tr>
<tr>
<td>Cuba</td>
<td>6,744</td>
</tr>
<tr>
<td>Denmark</td>
<td>204</td>
</tr>
<tr>
<td>Canada</td>
<td>1,199</td>
</tr>
<tr>
<td>Total Foreign-Born in Florida</td>
<td>23,832</td>
</tr>
</tbody>
</table>

This table supports the conclusion that in 1900 —

F people moved to areas with religious protections similar to those in their native country

G geographic proximity to native countries influenced immigration patterns

H economic incentives offered by native countries encouraged emigration

J people moved to areas with government regulations similar to those in their native country
Educational/Recreational Scavenger Hunts
Interactive Bulletin Boards

Aurasma: Teaching with Augmented Reality

Understand, MacGyver, Narcolepsy, Concept

Knowledge, Apply, Analyse, Evaluate, Create
Create Your Own Auras

1. Create an aura using the Aurasma app on a mobile device

2. Create an aura using the Aurasma Studio website on a computer
   https://studio.aurasma.com
Additional Apps and Free Software

123D Catch – Use your camera to capture the people, places and things around you as amazingly realistic 3D experiences. Capture friends, sculptures, buildings or anything else you can photograph. Automatically transform them into interactive 3D models that can be shared with friends, family, and an ever growing community of 3D photographers.

Educreations – is a unique interactive whiteboard and screen casting app that is simple, powerful, and fun to use. Annotate, animate, and narrate nearly any type of content as you explain any concept. Teachers can create short instructional videos and share them instantly with students, or ask students to show what they know and help friends learn something new.

Website: https://www.educreations.com/
**Additional Apps and Free Software**

- **Daqri 4D Studio (Education Version)** – is a software that allows you to create and publish 4D experiences through an easy and intuitive user interface. No coding skills necessary and it is free for educators!

http://daqri.com/daqri-4d-studio/#.VMfUqK10zGh
Additional Apps and Free Software

**blender** – is a free and open source software. Some of it’s capabilities include photorealistic rendering, fast modeling, realistic materials, fast rigging, animation toolset, sculpting, fast UV unwrapping, full compositor, simulations, game creation, camera and object tracking, video editing, 3D printing toolbox and more!


**blender tutorials** – Find detailed tutorials and FREE lesson plans by visiting:

[http://www.blender.org/support/tutorials/](http://www.blender.org/support/tutorials/)
Ideas for Using AR in the Classroom

- Embed supplemental content by creating targets from images in textbooks
- Video tutorials – flipped classroom
- Interactive word wall/vocab activities
- Foreign language vocab
- Interactive posters and bulletin boards
- Tag equipment in tech lab with virtual manuals or directions
- Create digital stories

- Montage of athletic pictures linked to an athletic logo or school image
- Interactive learning stations
- Have students create an interactive periodic table of elements
- Interactive musical programs – students give short bio of themselves and give a preview of what they will be singing/performing
- Review game
- Create interactive advertisements using propaganda techniques
AR Code:
- Multiple layers of information
- Interactive experiences
- 3D objects
- Website
- Image
- Video
- Contact info
- Any object can be a target image
- Multiple apps to unlock various information

QR Code:
- One layer of information
- Website
- Image
- Contact info
- Need QR reader to unlock information
Questions

morgan.nickolai@sidneycityschools.org