

# Thinking skills for the 21st century

# fyi

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# So many realities: Augmented reality as a library resource

By Chelsea Wright

## What is 'augmented reality'?

Augmented reality (AR) is a technology which enables a digital layer to be viewed against the backdrop of the real world via the use of a viewing device. The effect is such that reality is augmented, and the viewer sees extra content in the world around them – content which doesn't exist in a tangible sense but which is nevertheless apparent and in some cases able to be interacted with. The viewing device is usually a tablet, smartphone, purpose-built headset, special glasses or some other similar portable device.

## Why get on board with AR?

Librarians should perhaps be alarmed that in the literature concerning AR so far, the field of library and information science has not been a prominent part of the conversation.<sup>[1]</sup> From an access and equity perspective this is concerning. If AR is not brought into the school library it may end up being defined by the discipline-specific contexts in which it appears. This means, for instance, students not taking Year 10 Chemistry, may not have easy access to or even know about an outstanding chemistry AR app that exists in the school. Popular media is scattered with accounts of young

people who were inspired towards their adult career path after a chance encounter with a particular book, film or other resource. Why not an AR app? When we bring AR into the school library, we therefore do so not only to hit curriculum benchmarks, but to facilitate students' natural curiosity about new things, and to provide opportunities for unplanned learning.

## Augmented reality as a library resource

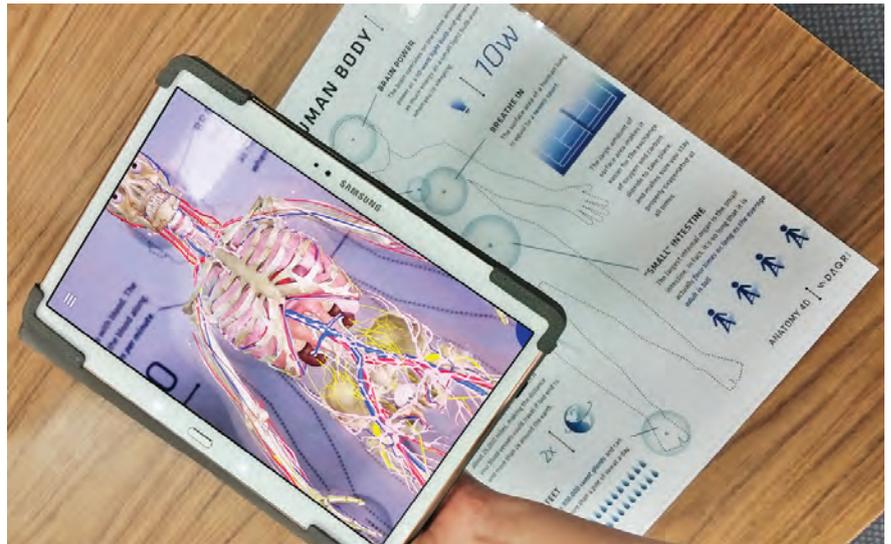
An AR app, like any other learning resource we bring into the library must pass the test. Important questions need to be asked, such as "for whom and to what end would this resource be of benefit". Some of the major teaching and learning benefits identified in the literature so far for AR apps are:

- Increased student motivation.<sup>[2] [3] [4]</sup>
- Increased levels of and more constructive collaboration.<sup>[5]</sup>
- Facilitation of deeper understandings of content.<sup>[6] [7]</sup>
- Useful for teaching topics that require students to mentally visualise difficult theoretical concepts or phenomenon, such as those found in disciplines like chemistry or physics.<sup>[6]</sup>



- When a tangible and malleable representation of a thing does not exist or cannot practically be brought into a classroom, AR may offer a solution.
- AR encourages natural face-to-face collaboration among students, as opposed to the segregation that is often caused by students working side by side on individual computers.<sup>[5]</sup>

**AR encourages natural face-to-face collaboration among students, as opposed to the segregation that is often caused by students working side by side on individual computers.**



A recently published meta-analysis summed up the findings of 26 authoritative publications that compared AR with non-AR resources in educational settings.<sup>[7]</sup> The major re-occurring observations can be seen in Table 1 below.

Comparing AR to non-AR resources can be both useful and dangerous. AR is a medium unlike any that schools have used before. It will take time to explore the best methods and contexts in which to use various AR apps. AR is a highly engaging resource which offers huge potential for collaboration and creative thinking. Therefore no matter how it stacks up against other resources right now, it is worth exploring and will only get better with time.

**Table 1**

Positive impacts	Negative impacts
Increased content understanding.	Attention tunnelling (less awareness of associated peripheral information).
Better spatial structure learning.	Usability problems/issues with technology.
Language associations.	Problems effectively integrating AR into the classroom setting.
Long-term memory retention.	Varied results due to learner differences.
Collaboration and motivation.	

### Bringing augmented reality into your library

In order to successfully bring AR into your school as a library resource, library staff and library services need to be aligned with the goal:

#### Library staff

- **Be on board:** All library staff need to be on board with the new resource. Discourage negative talk and encourage open, constructive critical discussion.
- **Have a definition:** Be armed with a clear and simple definition of what AR is, for those teachers or students who have no idea and want to know.
- **Have a professional opinion:** In your

opinion, which apps outperform the others?

- **Educational context:** Acquire a basic knowledge of the main educational applications for AR, and what the research says about AR as teaching and learning tool. Try a weekly 20 minute focus group, where staff take turns at contributing knowledge to each week.
- **Stay up-to-date:** Staying in touch with current innovations is critical for many reasons, if not simply to ensure that your professional opinions carry weight. Subscribe to a few quality Twitter feeds, blogs or newsletters that offer concise AR news updates, in plain English.
- **Talk about it:** Bring AR into the conversation around you, be that newsletters, emails, general chit-chat or even scribbles on the staffroom notice-board/whiteboard.

#### Library services

- **Stock up:** Have plenty of working examples of AR ready to whip out at a minute's notice, (teacher/student interest is often impromptu).
- **Findability:** Add records for AR apps to your catalogue so they appear in the

search results. If you use SCIS, you will find several AR apps available to import via z39.50.

- **Invitations to play:** Hold open-house interactive AR pop-up displays and events. Invite students to visit during lunch, and invite teachers to bring classes through.
- **Build interest:** Build excitement and knowledge around AR technology through short, one-off workshops, focusing on specific AR apps (for students or teachers or both).

## Choosing AR apps

The internet is littered with real life examples and case studies demonstrating effective and ineffective implementations

of various AR apps as teaching and learning tools within a school setting. It may be useful to create a template such as the one below, to assist in defining the features and potential value of a particular app.

The technical ability required to engage with AR varies depending on the individual app. For a library-centric conversation on AR, read *Keeping up with Augmented Reality* by Carli Spina [http://www.ala.org/acrl/publications/keeping\\_up\\_with/ar](http://www.ala.org/acrl/publications/keeping_up_with/ar).

## Some AR suggestions

*Guinness Book of World Records (2013, 2014, and 2015)*

Particular pages come alive when viewed through the free app. I made a short instructional video on this which you can

access here: <http://ithappenedinthelibrary.com/2015/08/06/augmented-reality/>.

**Anatomy 4D – by DAQRI**

<http://daqri.com/project/anatomy-4d/>

Add and remove layers and systems of the human body or heart. This is a wonderful app. We have laminated a class set of the target images, and our IT team has pushed the app to all our Year 10 Science students' iPads.

**Elements – by DAQRI**

<http://elements4d.daqri.com/>

See what each chemical element looks like (appears as though it is in a glass cube). Watch as they combine to make a compound. Downloadable lesson plans are available.

**Aurasma**

<https://studio.aurasma.com/register>

Name of AR app (Title):	Anatomy 4D
Creator:	DAQRI
Cost:	Free
Description/use case:	Target image of a human body must be printed.  The app enables all major systems and associated organs of the human body to be viewed together or in isolation. Differences between male and female are available for each system. Areas may be zoomed in on.
Specific relevance to The Australian Curriculum:	Health and Physical Education/Year 10/Movement and physical activity Science/Year 9/Science Understanding/Biological sciences/ACSSU175
Access:	Multiple A3 print-outs have been laminated and catalogued as a class set for teachers to borrow. The app is available via the school's software suite or freely downloadable from Apple and Googleplay stores, by searching for Anatomy4D. Students must use their own tablet devices to view the AR.  Very direct light reflections on the laminated page can obscure the image and cause occasional interruptions to the AR.
Specific relevance: <i>Collection Development Policy</i>  <i>Library Vision Statement</i>  <i>Service Delivery Model</i>	Encourage students and teachers to explore and interact with the latest relevant emerging educational technologies.  Provide resources that are both informative and engaging.  Inspire learning through the provision of information in novel and creative ways or formats. Assist teachers by providing relevant and interesting class resources.
Comments:	This app is also used to view the Human Heart AR target image (also by DAQRI). See details for the Human Heart app here.

Create an AR project by overlaying your own video or pictorial content to a target image. YouTube tutorials can assist with using this app.

#### Enchantium Fisticuffs boxing game and Enchantium Musical Strings – by DAQRI

A game and a musical instrument. Target images are downloadable from within the app itself.

#### Crayola Colour Alive - by DAQRI <http://crayola.daqri.com/coloralive>

Colour in the image and watch it come to life! Find the target images via Google Images.

#### Animal4D+ - by Octagon Studio <http://4d.octagon-studio.com/>

View and feed the animals! This one is particularly good for primary schools.

#### Build your own Augmented Reality Sandbox - <http://doc-ok.org/?p=164>

For those who enjoy a challenge, a sandbox which enables interactive exploration of how landforms manifest. You literally build the landscape with your hands, and discover topographic information along the way. This makes a magnificent collaborative project to work on with tech-enthusiast high school students.

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