ANZAGG 3D Meeting Minutes

Wednesday 21 March 2021  
11.30am AEST

# Roll call

Meeting chaired by Leona Holloway, Monash University

7 members in attendance from SASVI, NSW Department of Education, TSBVI, ACT Department of Education

# 2. Icebreaker - What have you been designing/printing in the last month?

Printed an animal cell and plant cell for a blind student. The models were from Thingiverse and the bases are quite thin but they are large in diameter. They will also provide an accompanying tactile graphic with a key.

Running a 3D printing club with the students at a school for the blind and other students attending via correspondence. Those students who are tactile learners are working 1:1 with someone else. They are too young to do coding so they are using Makers Empire.

Building a model of the school with separate buildings that the students can pull apart and put in the right position.

Working with the PE teacher to create a board to mark the position of the balls during a game of Bocci. They will use pegs in a pegboard designed to represent the Bocci playing field.

Received an order for a year 7 student requesting two of their more interactive 3D printed sets:

1. the arctic circle ice in different years, which can be stacked to show how the ice has changed over time
2. a tectonic plates puzzle, with the earth segmented into plates. The landmasses are raised. A frame is provided to place the pieces and with the braille key. It was easy to make by extruding from a 2D image.

Working on 3D printed street crossings, which are being used by O&M instructorsCreated a frame to keep the pieces together, but used wood and a magnetic backing so that extra pieces like cars can be stuck on and off. A member asked how O&M instructors can access the materials. They can be accessed by request right now, and will be put on Thingiverse – hopefully soon!

# 3. Draft Guidelines

Link: published guidelines at <http://printdisability.org/about-us/accessible-graphics/3d-printing/>

## 3.1 Finishing

<http://printdisability.org/about-us/accessible-graphics/3d-printing/finishing/>

PREVIOUS ACTION: Checking required prior to the guidelines being advertised.

STATUS: Not yet done.

## 3.2 Labelling

STATUS: Work on this section is still required.

## 3.3 3D printing by BLV

Advice was received from a blind maker who uses a Prusa printer with audio mode turned on so that it gives an audio signal for each menu item. They have memorised the order of the menu items.

One member has been using Cura scripts to pause the print at the right moment to insert a magnet. Another member realised that one of the things you can script is loading/unloading filament. This might be an easy way for BLV people to control the printer rather than using the LCD screen with wheel control on Ultimaker printers. They will try it out and report back.

# 4. SciAccess Working Group Meeting on 3D printing

The SciAccess Working Group had a special meeting on 3D printing with four guest speakers. The first was Ian Matty.

### 4.1 Union Astrofili Italiani

* Tried 3D printing planets but found that (a) they took a lot of work to clean up and then (2) they were not very tactually interesting. Instead, they ended up using familiar balls (golf ball, basketball, etc) to give an idea of relative sizes.
* They also have a solar system walk like the one that we have in Melbourne except that ours was not designed for accessibility - <https://stkildamelbourne.com.au/wp-content/uploads/2015/11/Solar_System_Self_Guided_Trail_web_friendly.pdf> . Because the planets are to scale, they are very small.

Very good 3D printable planets are available from Spain. They take 24 hours to print one hemisphere and are very detailed.

At the NASA space camp they use a strip of paper (adding machine tape) to demonstrate the relative positions of the planets. First, measure the height of the child. Place the sun at one end and Pluto at the other. Next, fold it in half and mark Uranus. Fold it in half again at the far end and mark Neptune. Then fold the half near the sun in half, half, half, half to mark the other planets. Mercury should be only 2cm from the sun.

### 4.2 Star Coins

<http://www.rovingbits.com/StarCoins/>

Disks with raised numbers and constellations, mostly of the Northern Hemisphere.

They recommend gluing magnetic sheet on the back and using on a whiteboard so that they don’t move when touched.

### [See3D](https://see3d.org/)

A network for teachers/parents to request models, and volunteers to produce and send out. They have produced over 1200 models and have a collection of recommended models on Thingiverse - <https://www.thingiverse.com/see3dprinting/collections>

# 6. Other Business

## 6.1 “Top Ten” 3D prints for BLV students

Published at <http://accessiblegraphics.org/2021/03/22/top10_3d/>.

## 6.2 Round Table Conference

17-19 May 2021 Virtual Conference <http://printdisability.org/conference/2021-round-table-conference/>

Kim Marriott to give ARC project update.

Nav Virdi to report on NSW Department of Ed 3D printing on the Tuesday afternoon. He will showcase some of the models they have produced, share some case studies and explain the ordering process.

Leona Holloway to present 3D printing workshop on Wednesday with overview of 3D printing guidelines (so far) and exploration of audio labelling to be led by Ruth.

Phia Damsma will give a presentation on sonification. It is a new format that can be used in association with others.

## 6.3 Plate adhesion

A member asked how to prevent lifting for flat prints?

* one member uses glue. They just need to wash the glass plate every week or so.
* Another member uses a brim for thin pieces.
* A third member does not have problems with adhesion as when using a polyjet 3D printer.

# 7. Next Meeting

Wednesday 26 May 2021.