ANZAGG 3D Meeting Minutes

Wednesday 17 March 2021
1. Roll call

## In attendance

Meeting chaired by Leona Holloway of Monash University

11 members in attendance from Monash University, RIDBC, NSW Department of Education, Victorian Department of Education, ACT Department of Education, Sonokids, Mountain Lakes Public Library

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

One member has created DNA pieces with braille labels using Leona’s OpenSCAD files. They have been printing in TPU (which is flexible) for the pieces with joins and PLA for the connectors to get a good fit that is not too tight (both PLA) or too loose (both TPU).

A State Department of Education been receiving a lot of requests for science and for HSIE (Humans in Society and the Environment). For example, the Kokoda trail, ANZAC trenches. In the past, students dropped HSIE because there are a lot of complex diagrams. There are a lot of good physical resources for STEM that can be adapted for blind students – even on sale at Aldi and Kmart - but not for subjects like history and geography. Teachers are still not proactive in asking for 3D models to be designed, so they are going through the curriculum and picking out good candidates then offering them on their catalogue. Another organisation has been printing on demand. Loans are for 5 weeks.

Working on sonification for accessible science. <https://tactileuniverse.org/models/> has 3D models for astronomy.

Refining tactile dice, experimenting with a “3D simbraille” where the unused cells are indented to assist with knowing which way to read the braille.

One organisation has just purchased a CNC router machine that can cut to a height of 10-12mm. They will use it for topographic maps and for bases, made from acrylic or timber. Another member advised that Fusion360 has a plugin slicer to output to CNC.

# 3. Draft Guidelines

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

## 3.1 Where to find 3D print models

Added [3D opal](http://sahyun.net/projects/3Dprint/objects.php) and [Image Share](https://imageshare.benetech.org/) to <http://printdisability.org/about-us/accessible-graphics/3d-printing/repositories/>.

## 3.2 Finishing

First (unpublished) draft of guidelines on finishing at <http://printdisability.org/about-us/accessible-graphics/3d-printing/finishing/>.

ACTIONS:

* add statement about the importance of checking for sharp edges before supplying a 3D print for touch readers
* add in the supplemental information on construction (not specific to touch readers) then others to decide whether it should stay. - DONE
* Group members to check the draft guidelines and provide feedback

## 3.3 Labelling

Next section will be on labelling. Two members will work on this section and a third has already contributed to the section on adding braille labels – thank you.

A school for the blind in the US adds sticky braille labels onto models.

Polyjet printers can print braille well on any angle.

It was pointed out that 3D models are not being used in isolation. The teacher will give an introduction to the 3D model.

# 4. “Top Ten” 3D prints for BLV students

A first draft of recommended models for teachers/students to try as a first introduction to 3D printing was given in the agenda.

Plant & animal cells –there are a lot of models available but some need adjustment, especially to be spaced out more. There is a good example on 3Daugenbit <https://medien.augenbit.de/tierische-zelle/> and work is proceeding on another good version, but both are very large and take a long time to print. Younger students could use a simplified version without all of the components.

General interest models –the Mars Rover is topical. The Perseverence is extremely complex with over 50 pieces, however one member has printed a 10-piece model from NASA that is simpler to print and can move. See [https://www.thingiverse.com/thing:1606181](https://www.thingiverse.com/thing%3A1606181)

A member suggested checking what was requested in the recent survey of NFB Members. The top requests for images of people were Louis Braille, Martin Luther King and Albert Einstein. The most wanted places were the White House, Grand Canyon, and the Statue of Liberty. And the events were the moon landing, the civil rights movement, and the September 11 terror attacks. It would be interesting to do a similar survey in Australia and New Zealand.

Tactile dice have been the most requested item at one organisation.

Protractor –the tactile protractor has been the most requested item at another organisation

Ruler – there have been a lot of requests for tactile rulers since they are no longer stocked by Vision Australia

Globe – the tactile globe has been their most popular item at a third organisation. They designed their own model. The elevation of land from the sea was exaggerated and two-cell braille labels were added. It is hand size.

ACTION: The next version of the “Top Ten” list has been published at <http://accessiblegraphics.org/2021/03/22/top10_3d/>. It will be adjusted as more items and information becomes available. There are already more than ten items on the list :D

# 5. Other Business

## 5.1 Modelling services available

Sean Tikkun from North Caroline Central University has 6 design students wanting ideas on accessible 3D models to create. You can send your ideas to stikkun@nccu.edu.

For simpler models, there is a teacher in Australia wanting to use accessibility projects to teach high school students. They would also be able to provide us with the completed prints. Please send your ideas via the ANZAGG group.

See3D is a non-profit organisation that manages crowd-sourced modelling, printing and distribution of 3D printed models for people who are blind. <https://see3d.org/>.

## 5.2 Splitting models for printing on a small bed

A member asked “has anyone had experience creating a model much larger than their printer by getting an existing model and chopping the design into printable segments? The reason why I ask is that we have a relatively small 3D printer.”

Some slicing software comes with an option to split models. It is also possible to import a model into TinkerCAD and remove half at a time.

### 5.3 Printer settings

A spreadsheet that is being used to track print settings was shared. Often, not enough information is given in Thingiverse. It would be good also to crowdsource, asking others to share their settings using different materials/printers.

Some designers give instructions on things like orientation in the comments section.

Whenever we print something from Thingiverse, we can also upload a “make” with comments on print settings.

### 5.4 Overseas updates

Ruben Brandsma from the Royal Dutch Visio shared a design for a 30cm ruler with holes to use it also as a compass. Measurements are in cm and mm. The file is available in Teams. They will order 5,000 rulers to be injection molded.
ACTION: Organisations in Australia have been contacted to let them know about the project in case they want to order some rulers for distribution in Australia.

DIAGRAM are winding down. They are looking for somewhere to host ImageShare. The DIAGRAM 3D working group will continue, with Zoom meetings hosted by TSBVI and Listserv + files hosted on Google.

APH are mainly using 3D printing for prototyping of new products.

# 6. Next Meeting

Wednesday 21 April 2021, 11.30am AEST