Australia & New Zealand Accessible Graphics Group (ANZAGG)   
3D Printing Meeting Minutes

20 September 2023

# 1. Roll call with self-introductions

Meeting chaired by Leona Holloway, Monash University

Five people in attendance from Monash University, NSW Department of Education, See3D and NNELS

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

The NSW Department of education changing the way they distribute materials. Until now, they have sent out individual models on a request basis. They are now looking at making kits targeting curriculum areas, e.g. stage 2 science. Students tend to borrow several models at once on the same topic. This will reduce administrative burden and provide the student with a more rounded understanding. Their first two kits relate to life cycles (3D printed frog life cycle, braille books about frogs) and an astronomy kit (various NASA models).

Five schools have joined up for the Blind 3D printing clubs support. The schools are located in Turkey, Kansas, Sierra Leone, Virginia and one other. Most want a zoom mentor to assist with skills for design and slicing. Zoom mentors are needed‼ Please contact Caroline Karbowski if you are able to help and help spread the word. Compensation is available.

Simplify 3D software will hopefully be supplied as part of the 3D printing clubs program. This is the most promising slicer for BLV accessibility! Two blind people who do their own 3D printed have offered to share their ideas on improvements needed.

A member is still working on a 3D accessible globe. They will take it to the NFB State Convention in October. They will get further feedback and then want to put it into production.

A member has been gathering together their notes on accessible 3D printing and will put some of it work into a public space (perhaps a new web page) shortly. It will cover things like setting up a printer, using Octoprint, etc.

# 3. Feature topic: 3D printing for art accessibility

The NSW Department of Education just supported their first student doing VCE art. She recently lost her vision so is not well practiced with tactile graphics. They provided her with a kit that included tactiles, puffy paint, descriptions, but no 3D prints. They worked with the Art Gallery of NSW and Vision Australia to use their UV printer so that they had the full colour print in the background. The student does not like swell paper diagrams but she did like the feel of the UV printing. The audio descriptions were the most helpful format for her.

3D printing is the beginning but not the ending of the process of providing accessible formats. You need to add to the 3d print to create texture, etc.

Terms like foreground, middle ground, background need to be explained. Concepts like lighting may also need to be explained, using tactile graphics with shading to show where the light falls. It depends on the artwork how much explanation is needed regarding the basics of art. You could integrate this information into a description, even if it makes it longer. But having the background would be helpful, e.g. creating a starter kit for teaching art concepts. This is why people like Chancey Fleet, Danielle Cuenoud and Ka Li have all been pushing workshops on accessible drawing and art.

Leona has been working on a project relating to 3D scanning of museum artefacts. One of the interesting observations was that texture patterns can interfere with understanding of a 3D model. Touch testers in Europe asked for the textures to be produced on a separate (flat) 3D printed surface so that they could more easily understand both the form and the texture, then bring them together in their mind. A maximum of 5 textures should be used on one tactile graphic to avoid confusion. This is likely to be a much smaller number (if any) on 3D prints.

# 4. Updates and Other Business

## 4.1 ANZAGG 3D printing guidelines update

The ANZAGG 3D printing guidelines now has an extensive section on design considerations added to the Round Table website. See <https://printdisability.org/about-us/accessible-graphics/3d-printing/design/>. Huge thanks to all of the ANZAGG 3D printing group members who contributed to the guidelines. They will continue to be a living document, so please let Leona know if you spot anything that needs updating or correcting.

A section on how to 3D print also needed. This has been drafted but needs some adjustment to reduce reference to hardware and software that is likely to change rapidly. Leona will send out a draft before publishing.

## 4.2 Uploading models to Tactiles.eu

Evert Raising has put out a call for members of our group to upload our 3D models to the Tactiles.eu website. The repository was designed for maximum accessibility, and includes fields for printing information, so it would be great if this could be built up to become the premier space for accessible 3D models. Evert wrote:

“The database is up and running now and fortunately the database is growing as well. I know it takes a long time to re-upload everything to a new database, but can you please consider it? We can also discuss different ways to upload. For example if we create an account, upload your materials and share credentials afterwards or something?”

Keep in mind also that grade 1 (uncontracted) braille is mainly used in Europe.

## 4.3 New discussion listserv group

Judy Dixon has created a new mailing list on [groups.io](https://l.facebook.com/l.php?u=http%3A%2F%2Fgroups.io%2F%3Ffbclid%3DIwAR2fGmT0uNRSnahK4i-zrlkFhkXtTFEL6Kv9PAzQ1f3iCgUDsOJeRd11ibg&h=AT3m4rhzMi9sbApNH8WoYGwEGzXznqsgQeYmCGL1gQ4zQg488FmRJ6zLHapFAe3BIqRocfuzF3wu9Eok45IOiFPy7MwtPkEsDOnJG45gwGmNbKsQijxkxEe6G-goT1S0fw&__tn__=-UK-R&c%5b0%5d=AT0myPefFmEbxHbNnxMN3Y4tl82qRvzwBBluCvXZp-kcPDlXDkpMDm-6XzjQwlSmTXcFEX-l6X-f7A7qm-3NmlKL9ruWhDJLqDCihWQnQBg5lQMFKUvLSuymGNGXo6EV7Rhw0A1SFAw8vh66b9kGw573jCjy749oGgI5lZGHMWOcJ_AOyaJAXfOY2xLfO6UfKtZfAB9_sJfedv4Lqy6AHFM) for the discussion of accessibility issues related to 3d printing by people who are blind. The list is called 3d-printing-access. Discussion topics include the selection and use of 3d printers, finding or creating models to 3d print, accessibility of slicing software, and other topics related to 3d printing accessibility by people who are blind. To join the list, send an email message to [3d-printing-access+subscribe@groups.io](mailto:3d-printing-access%2Bsubscribe@groups.io), or go to [https://groups.io/g/3d-Printing-Access](https://groups.io/g/3d-Printing-Access?fbclid=IwAR1p_VeTaRxdWc_q40gd6SCDut71CU-LuBbZTaiKqNymQJH30n3OJhXSTJI)

## 4.4 Shapr3D

A member has been trying [Shapr3D](https://www.shapr3d.com/) design software, which is available free using an educational license. It is much more lightweight than Fusion360, which is more complicated than needed and requires a lot of processing power. Shapr3D is a cross between shape building and moulding – using touch access on an iPad you can push and pull to mould more organic shapes.

## 4.5 Accessible Technology NYC Conference

Two members will be presenting at the 2-day AT NYC Conference in October. Two students from the Monash Inclusive Technologies group hope to be in attendance as they will be going to the ASSETS Conference in NYC. The Conference will take place 21-22 October 2023 at the Andrew-Heiskell Braille and Talking Book Library, New York Public Library.

# 5. Next Meeting

Next meeting is scheduled for Wednesday 18 October 2023.

Our guest speakers in October will be William Chen and Diana Kovaleva to talk about a Monash University student project with the State Library of Victoria. They produced a variety of 3D printed materials to help BLV visitors get a sense of the building layout and architecture.

For the November meeting, Dagmar Reinhardt from the University of Sydney and Jane Thorgesen from the Chau Chak Wing Museum will be guest speakers on their “Museum of Touch” project involving 3D scanning of natural history artefacts and modification of the 3D models for touch.