

Tactile Graphics: Why, How and Who? Trish Bishop & Ruth Wedde



At the 2013 SPEVI conference, BLENNZ purchased Bog Marek's Hungry Fingers resource kit. This served as a starting point in our journey of inquiry into the teaching of tactile graphics. We were especially motivated after listening to Boguslaw Marek, as we felt this would fill a gap we knew existed in our programs. We did not realise then, how big the gap was, and the learning curve we were to embark on. For those who don't know his work, Bog developed a kit that supports the teaching of tactile graphics with resources designed specifically to accompany sequentially designed workbooks.

Over the past two years, Ruth and I have been exploring tactile graphics in 3 main areas:

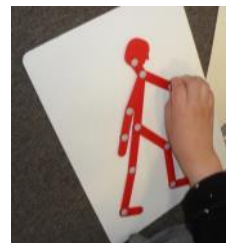
1. With Immersion courses and other RTV's, we have explored the development of tactile graphic skills with learners across all ages in compulsory education,
2. At local level, RTV's have continued to explore this development with their learners. For me, this has involved working with 5 braille learners in my area.
3. We have led an Inquiry into how and why we teach tactile graphics in NZ.

Throughout the above, the principals of, and resources from Hungry Fingers has under pinned this work

Tactile graphics has been an area of focus with our 3 main age groups of braille learners within compulsory schooling. One area of focus we engaged in with all three groups was on spatial awareness and positional language. Learners explored how they could move parts of their body in space using resources such as the artists' mannequin, fleximan and PIAF diagrams. With the artist's mannequin learners manipulated limbs on the mannequin to create different positions and then physically copied these shapes. They also practiced this in reverse by providing verbal instructions to their peers using positional language and discussing this with both peers and staff.



Once learners were secure in working with the mannequin they then manipulated fleximan to copy this shape and vice versa



The next step was to look at PIAF diagrams and manipulate 'fleximan' to create the same shape.



The older group had spent extra time exploring the positions of stick figures. A final exercise involved these students exploring a page and identifying a figure 'jumping'. where they had a series of 'stick' figures and were asked to find a particular shape. For example in this photo learners were asked to find the person who was jumping.



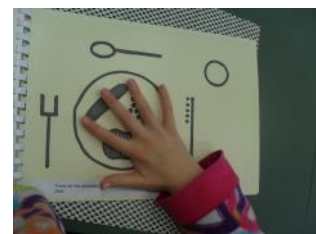
What we found across all these groups was that the artist mannequin was a powerful resource that allowed our learners to gain a much better understanding of how their bodies moved in space. Many learners commented that they could finally 'get' how they were able to move their bodies in space and understand how this looked. The progression to fleximan and

being able to relate this to the artist's mannequin was similarly powerful. The key observation across all groups was the value for learners in being able to manipulate the shapes and then check that all positions had been accurately copied.



Another focus area has been around mealtime and table settings. We used Bog's resource to develop the following sequence of meals over the 3 days of the course. Prior to using the PIAF diagrams learners manipulated utensils and plates to create a picture using a non slip mat. They were then able to transfer this knowledge to the PIAF diagram. Each meal builds up in its complexity over the 3 days.

We worked closely with DOM staff in the development of map reading skills. Once again our learners needed to have time to explore their space and create maps that had meaning for them.



We've explored many of Bog's resources. On the last course for the older group this year we focused on symmetry, rotation and the interpretation of graphs. In preparation for this course staff had collated a book of graphs and prepared resources to allow students to physically manipulate materials to support their learning and understanding. Both students and staff found this valuable for a number of reasons.

- Having the time to teach/learn a concept.
- Being able to share learning with other blind peers who understood and could 'speak the same language'.
- Being able to physically manipulate materials.



Following the above immersion courses RTV have continued to consolidate skills introduced and further develop tactile graphic skill development with their learner.

At local level, I have integrated the development of tactile graphic skills into our Dot Three Club, which comprises 4 braille learners who meet once a month, as well as within my weekly teaching program. Gaps identified in learner understanding has informed planning and implementation of programs, as well as supporting inclusion in curriculum tasks. We have followed 4 main principals.

- All activities have been based on real experiences and exploration, from 3D, progressing to 2D, and then a raised line diagram or representation.
 - The story, 'Grandpa's birthday' initiated so much learning. A raised line PIAF drawing of a candle would never have provided Holly with the learning that actually took place. She was able to explore the box of matches, the lit and unlit matches, the wick of the candle, as well as dip her fingertips into the warm wax after we had blown the candle out.



- Ana's play in the water trough initiated a number of sessions, providing the link from real experience to 3D toys, and to a representation, as well as many opportunities for concept development.



- This Dot 3 club session came about after playing with one of Bog's resources – a truck. I realised my students had little knowledge of the different parts of a vehicle.
- Real experiences progressed to 3D toys, and finally, PIAF graphics.



- The principal of sequentially building up knowledge and understanding of a diagram or graphic by sequentially adding detail has been used extensively.
 - My student understood the concept of time, but couldn't read a tactile clock face. By first using a 3D clock, I progressed to a sequentially made PIAF clock face, adding detail page by page, discussing the language of lines, i.e. vertical, horizontal, solid and dashed. By reducing the initial complexity, she built up understanding of the structure.



- At one of our Immersion courses we provided real objects, e.g. a flower, and made 2D puzzles that the students built sequentially, as well as PIAF sequential graphics, in the same way building up an understanding of the complex graphic of the final picture.



- Understanding and developing language to accurately describe shapes, their position and directionality to support accurate interpretation of diagrams and ultimately being able to work with an amanuensis.



- Karen Poppe's book, *Setting the Stage for Tactile Understanding* provided the idea of creating a frame, and matching real objects to each other, and then to a PIAF graphic. The principal is to match objects and copy their orientation, first using the real object, then matching their objects was orientated.

- This book is one of Bog's resources. It provides an excellent starting point to initiate the language of lines. This page, for example, asks Holly to find a dotted line, and to describe where on the page the curved line is.

Natalie is learning about vertical and horizontal lines. I used a strip of cardboard which she had to hold as she stood vertically, lay horizontally. She then had to hold a page up and place the strip vertically, then by lying the page down, developed understanding of the meaning of it sitting vertically on a page. With the mats and velcro shapes, I made a shape combination, and my student had to copy it, and then describe their position and orientation to their peers.



- Introducing learners to the concept of diagrams being presented by different views, a birds eye versus a side view.

- A map is always presented by a birds eye view. Following exploration of a room, students progressed to building it with 3D toys, and then with 2D velcro shapes.



- We then introduced the PIAF map with a key which the students had to label.
- Bog's truck was a perfect introduction to the differences between a birds eye view and a side view.



- The mugs are all presented as a side view, so this activity extended their learning by recognising and matching the PIAF graphic to the mug, depending on its orientation.
- A transfograph, another of Bog's resources, comes with a 3D set of furniture, and a matching lid into which the piece fits. It is an excellent way of demonstrating and for students to develop understanding of the concept of 3D to 2D, and to a raised line graphic.



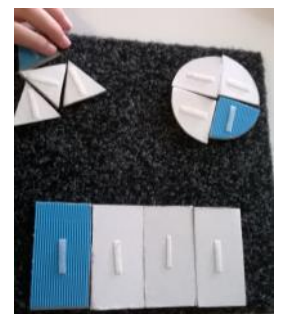
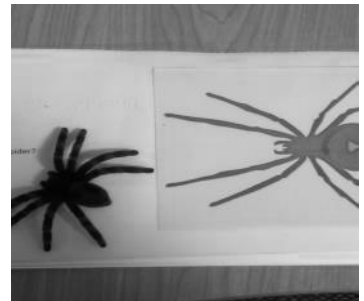
Our inquiry began with Trish and I researching resources that existed both within New Zealand and internationally and collating a list of relevant readings and articles we had found.

RTV's working with braille learners were then asked to complete a questionnaire. A summary of the above readings and articles was included for staff to comment on and add to. They then recorded their thoughts to the questions around the purpose of tactile graphics, how and why it is taught and whether guidelines for teaching tactile graphics in New Zealand needed to be developed.

With existing resources we found there were many good resources such as Mangold, One if Fun, Fingerprints, and more recently, Ozzie Dots but these were primarily braille reading/literacy programs. However we also found some very useful teaching resources for teaching tactile graphics both from within New Zealand and internationally. In NZ we have resources such as Jane Wells 'Tactile Training Programme' and the 'Supplement to the Maths Curriculum' developed by RTV's in 1995 and then updated to UEB in 2009. Internationally we also have valuable resources. The 'Hungry Fingers' resource has been fantastic as has a program called 'Setting the Stage for Tactile Understanding' by Karen J Poppe produced by APH.

The results of the inquiry over the last 2 years suggests:

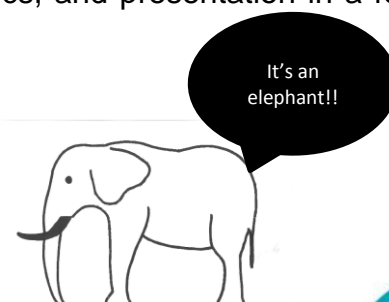
- Teaching from 3D to 2D supports learning and understanding. This supports concept development.
- Learners need opportunities to manipulate and engage with materials to give meaning to their learning
- TIME. All staff acknowledged the challenge of having enough time to develop the necessary skills in the expanded core curriculum in a mainstream environment.
- BLENNZ staff support the need to develop a pedagogy for teaching tactile graphics.
- There is a need for quality resources to be developed and gathered for all staff to access as required.
- BLENNZ staff will require professional development
- The production of Collage books and tactile readers needs to be reviewed.



Tactile graphics has been identified in the BLENNZ Annual Professional Development plan for 2015.

Comments in a blog post written by a group of blind adults, titled, "A Touchy Subject: How Useful are Tactile pictorials?" was interesting as feelings were varied, with some people saying they found tactile maps very confusing, and some they really helped orientate them to a new place. What we found most interesting in this blog, was that some people didn't like tactile maps because they didn't understand them and many of our high school students have commented similarly.

Perhaps if they had been taught from an early age to interpret them, the outcome would be different. Early education in reading tactile graphics, and presentation in a format that is systematic and consistent is the key.



It is therefore, clear why and how we need to teach Tactile Graphics.

And now for the 'WHO? We believe the **'who'** is everyone.

It begins in early childhood, and involves families as first teachers, with the support of Resource Teachers Vision (RTV's) and O&M's. As learners explore their world and develop concept knowledge, and spatial awareness, the transfer of this to a simple tactile representation that is understood is essential.

As the learners progress through compulsory education, the RTV's and O&M's role is to provide meaningful learning opportunities with quality resources supported by clear guidelines.

This will support our learners in accessing mainstream curriculum, and meaningful inclusion.