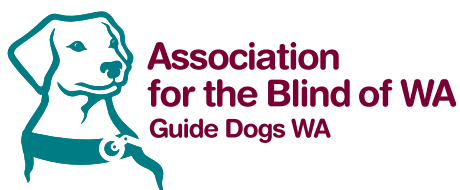


Kit 5:

Braille

Guide Dog Discovery Centre Curriculum Worksheets



Teachers Guide to Kit 5: The Braille Trail

This kit focuses on Braille.

It offers direct relevance for the English and Society and Enterprise Learning Areas as well as indirect relevance to Science, LOTE and Mathematics.

In this guide:

- Key Messages & Learnings for This Kit
- Quick Overview of the Provided Activities
- Other Suggested Learning Activities
- Background Reference Information
- Useful Websites
- Resources for Provided Activities
- Curriculum and Outcomes Information

Key Messages & Learnings for this module

1. Braille is a code designed for people who are blind to read and write using a system that can be read by touch with their fingertips. There are additional Braille codes for mathematics and music.
2. The Braille code was invented 200 years ago by a young blind man, Louis Braille, who based his innovation on a more complicated “night writing” code created by one of Napoleon’s soldiers to allow messages to be transmitted without speech in the dark.
3. Braille has assisted millions of people who are blind to learn to read and write, gain an education, work, lead fulfilled lives and make valuable contributions to their families and communities.

Food for Thought: The What and Why of Braille

Braille is a tactile coding system using a grid of 6 possible raised dots; 3 dots high and 2 dots wide. It was developed in 1821 by a young Frenchman, Louis Braille, who had himself been blind since childhood. Although not the first tactile reading system to be developed, it has been by far the most successful. The real innovation of Braille is considered to be that it is designed for touch, not adapted from visual symbols (such as the raised letter-symbols of other systems like Moon). Braille also had the advantage of being able to be written, not just read, by people who were blind themselves.

Exploring Braille is a valuable exercise, raising important cognitive concepts and the of symbols in communication. Studying Braille is highly interdisciplinary and can be used for anything from the focus of a single lesson to a theme carrying through an entire term’s work.

Quick Overview of the Provided Activities

5.1 Tactile Terrific

This activity can be used as a stand alone, as part of another theme of activities or in conjunction with other activities related to Braille. This worksheet sets two tasks, each designed to reinforce the importance that tactile signals can have for people who are blind or vision impaired, and to introduce the concept of a design and technology response.

5.2 Touch Tester

This experiment-style activity is designed to introduce the biological basis for touch as a major sensory input. It involves students in testing the touch sensitivity of various areas of skin. There are many ways to do this experiment: for convenience this worksheet describes a method using common pencils. Strict supervision is advisable to avoid injuries from the sharpened ends.

5.3 Touch Points

This activity can be set during class time, as a backup for extension purposes or as homework. It engages students in developing their own system of tactile labels and as such it forms a good basis to then appreciate the effectiveness and flexibility of Braille as a coding system. Students can simply draw their labels onto the worksheet or you can provide them with textured materials, scissors and glue. You could then invite blindfolded students to test out each other's designs. How easy are they to 'read'?

5.4 Braille Code

This activity introduces students to the Braille code for English and challenges them to use the code to design a game that can be played by children regardless of their vision level.

5.5 Braille is Brilliant

Designed to be used with the Braille Code and/or the Braille Sleuth activity, this worksheet provides a straightforward but enjoyable decoding exercise. It is designed to be used however best suits your own lesson program.

5.6 Braille Sleuth

This worksheet is a Word Sleuth activity with a twist or two. It is designed to be used very flexibly, whenever and however best suits your own lesson program.

Extra Activity

This activity develops students' appreciation of the Braille system both at the conceptual level of the actual coding system, and at the practical level of developing a high level of acuity in detecting symbols through touch. This hands-on activity requires a small amount of teacher preparation time (although with older students there is scope for this to be incorporated into the activity itself). To prepare for this activity, make cards with raised dots. There are several ways to do this such as using embossing pens from paper craft stores, making reverse indentations with metal punches or just using dots of PVA glue and leaving them to dry. Make enough for your whole class to have several examples per group. Using high quality card and perhaps covering the back with a self-adhesive backing will give you the opportunity to re-use the cards in subsequent school years.

Depending on the class, you can choose to only do letters or you could include numbers as well. Either way, it is a good idea to hold a class discussion introducing the basic principles of the Braille coding system (see Background Reference Material). An easier alternative is to provide pairs or groups of students with small pins (sewing or map pins are ideal) and pads of soft wadding. This way, you can either pre-arrange dots into Braille symbols or you can engage the students in preparing symbols for each other.

However you structure this activity, the exercise of trying to detect a pattern by touch alone and then recreate it visually is a valuable challenge.

Other Suggested Learning Activities

Discussions & Projects

- Braille did not start being used very widely until about 50 years after Louis Braille's death. Ask your students to write a letter to Louis Braille, telling him what they think of his invention.
- Hold a discussion about what it would have been like to be the parent of a child who was blind back in Louis Braille's time (the early 1800s). Challenge older students to write a fictional diary entry from such a parent at the time that Braille was just starting to be used as a way for people who were blind to learn to read.
- Set a homework task of listing places where Braille could be used in everyday life, such as public toilets or restaurant menus. Share the lists to develop a collective class list of ideas. For older students, you could expand the discussion to consider the costs of making Braille labels relative to the benefits.
- Discuss other non-verbal communication systems e.g. AUSLAN (a form of sign language) or semaphore? What about Morse Code?

High Energy Hands-On Ideas

- An easy, cheap and very hands-on way to introduce the topic of Braille is to fill a plastic container (a 2L ice cream tub is ideal) with 2 or 3 different small pasta shapes. Ask your students to, blindfolded, try to sort the shapes from each other. For younger students you may prefer to do this with one type of pasta shape mixed with dried peas or small beans.

A useful variation is to see how long it takes to correctly identify a certain number of shapes, or how many accurate sortings were made in a given time period. Then repeat a few times and see if success rates improve.

- Hold a Braille Treasure Hunt. Code into Braille the names of several items which you have hidden or which can easily be found on the school grounds and set a group challenge of seeing which group can decode the names and find the items first.
- Invite a parent with an interest in papercrafts (such as scrapbooking or card making) into the class to demonstrate embossing methods. Engage your students in a craft project suitable as a homemade tactile gift for someone who is blind.

- Supply your students with various textured materials and challenge them to build a tactile alphabet (e.g. a book or poster) for a child who is blind.
- As a mathematics exercise for older or extension students, you might like to ask them to create the Braille alphabet from scratch themselves by exploring as many different possible dot combinations.

Useful Websites

www.nationalbrailleweek.org

www.afb.org

www.worldblindunion.org

en.wikipedia.org/wiki/Braille

www.disapedia.com/index.php?title=Braille

Background Reference Material

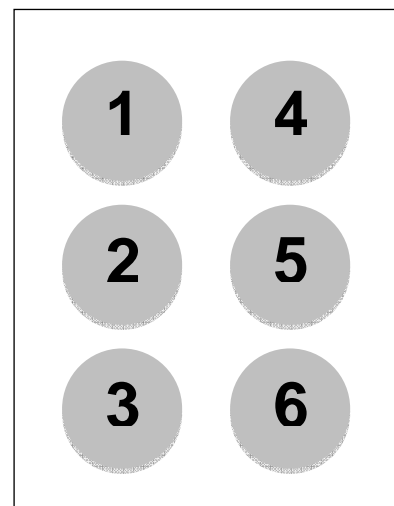
How does Braille work?

Each Braille 'cell' has more than 60 possible combinations for which dots within the cell can be raised. The six dot places are numbered as shown in the diagram on the right.

The letters A – J are represented using different combinations of the top four dots. Letters K – T are represented by adding a dot in the 3 position to these combinations.

The letter *w* is not coded in order because at the time that Louis Braille developed the system, there was no *w* in French.

Numbers 1 – 9 and 0 are made by putting a 'number sign' - a cell with dots in places 3, 4, 5 and 6 - in front of letters A - J. Various punctuation signs are indicated by dots in certain positions in Braille cells. For example, a comma is simply a single dot in place 2.



How is Braille made?

Traditionally, Braille can be 'embossed' with a stylus, a slate and paper or 'typed' on a 'Perkins Braille' machine (which has 6 keys representing the 6 places in the cell instead of the 50 on a typewriter or QWERTY keyboard).

Braille can also be 'written' and 'embossed' using portable electronic Braille note takers and Braille printers. There are also Braille gadgets, such as labelling devices.

The Story

Louis Braille was born in 1809 as the son of a harness maker. One day around the age of four, he was playing with his father's tools and poked himself in the eye. The eye became infected, the infection spread and although Louis survived, he was left totally and permanently blind.

The local priest took an interest in Louis and, noticing that he was a quick learner with a strong memory, he persuaded the local schoolmaster to allow Louis to attend classes. At the age of 10 he won a scholarship and became the youngest ever student at the National Institute for the Blind in Paris which was the world's first school for blind boys. There, he soon performed very well at maths and science and learnt to play music. At the age of 15 he started working on developing a reading and writing system for people who were blind.

Louis stayed at the Institute until his death in 1852. He had spent the rest of his life teaching his reading and writing system to generations of other students. Nonetheless, Braille was not widely known until it was exhibited at the World Exhibition in Germany, a year before Louis Braille's death. It was not widely used until more than 50 years later, but then it went on to be adapted and used in hundreds of countries, languages and communities.

Classroom Guru Material

When every letter of every word is spelt out fully in Braille, it is referred to as Grade 1 Braille. Grade 1 can be useful but it takes up a lot of space and is slow to read so Grade 2 Braille has been developed to make Braille more concise and quicker to read.

In Grade 2 Braille, some dot patterns are used to represent whole words. In fact, Grade 2 Braille in English has more than 180 contractions and more than 70 short form words.

There is even a 'shorthand' version of Braille and an 8-dot system.

Relevant Extracts from the Western Australian Curriculum Framework
Learning Areas and Outcomes information for this kit

English	WRITING	<ul style="list-style-type: none"> • Students write for a range of purposes and in a range of forms using conventions appropriate to audience, purpose and context. • Students write to communicate ideas and information; share experiences; express their thoughts, feelings and ideas in a variety of ways; using techniques for producing texts, such as handwriting, keyboarding and word processing. Style and structure associated with different forms of writing such as reports, letters, stories, essays. They take into account purpose, audience and context when planning, shaping and presenting their work and adapt their language for different purposes, audiences and contexts.
English	READING	<ul style="list-style-type: none"> • Students read a wide range of texts with purpose, understanding and critical awareness. • Students read a wide range of materials, including signs, billboards, notes, messages, memos, instructions, reports, newspapers, magazines, CD-ROMs, Web pages, essays, text books, fairy stories, picture books, myths, legends, fables, biographies, autobiographies, novels, stories, poetry and drama. • Students read to obtain information, to develop knowledge, for enjoyment and as a means of reflecting on experience. They use a range of different reading strategies, varying these strategies according to their purpose for reading and the nature of the text. • Students may, for example ...make meaning from familiar signs and notices; read and follow a set of instructions in order to complete a task; collect appropriate information from an encyclopaedia for use in a project; read an article in a newspaper and explain it to classmates.
Technology & Enterprise	TECHNOLOGY IN SOCIETY	<ul style="list-style-type: none"> • Students understand how cultural beliefs, values, abilities and ethical positions are interconnected in the development and use of Technology and Enterprise. • Students evaluate the appropriateness of technologies on ethical and moral grounds, as well as considering economic advantage and the suitability of products, processes, systems, services and environments for individuals and groups at local, national and international levels.
Society & Environment	TIME, CONTINUITY & CHANGE	<ul style="list-style-type: none"> • Students understand that people's actions and values are shaped by their understanding and interpretation of the past. • Students recognise that by studying people and events of the past, they can better understand the present and make informed judgments about the future. They realize that people's ideas and values are influenced by the actions and values of those who have come before. • Students can, for example, identify significant activities and events in their personal and family life or in their local community over recent generations; trace the impact and contribution of a group or individual on a community or society; and explore the impact of technological and economic developments.

Tactile & Terrific

We all use other people's inventions to make our every day lives easier. Even cooking our food is an invention! There are already some good inventions helping people who are blind or vision impaired to live normal, happy, healthy lives.

What to do – The First Part

Working in pairs, take turns wearing a blindfold and trying to identify different materials by the way they feel.

How many did you identify correctly the first time?

How many did you identify correctly the second time?

People who are blind or vision impaired learn to get very good at noticing things by touch.

What to do – The Next Part

Again working in pairs, take turns wearing a blindfold while your partner leads you around the school grounds. Pay close attention to what the ground feels like beneath your feet and when it changes. Each time you a surface feels different, try to guess what the new surface is made of. Is it carpet, tiles, grass, sand, brick paving, concrete or something else?



When designers use different floor surfaces at places like corners or intersections, people who are blind or vision impaired can find their way around more easily. A good example is the 'bumpy' area used on public paths just before any road crossings.

Try This

Tomorrow at school, try eating your morning tea or lunch with your eyes shut. Use your sense of touch to guess each item.

The Touch Test

What to do

1. Build a set of touch testers with sticky tape and pencils:
 Tester A: Two sharp pencils with two other pencils in between
 Tester B: Two sharp pencils with one other pencil in between
 Tester C: Two sharp pencils with no other pencils in between
2. Work in pairs with one partner blindfolded. Starting with Tester 1, the sighted partner holds the tester gently against the blindfolded partner's forearm, making sure that both pencil points touch the skin at the same time. The blindfolded partner reports whether he/she feels one or two points.
3. Repeat with Tester 2 and 3 then repeat on other parts of the body.
4. How many points are felt in each place? Record your results below.

Location	Tester A	Tester B	Tester C	Comments
Outer Forearm				
Inner Forearm				
Upper Arm				
Shin				
Calf				
Back of hand				
Palm of hand				
Fingertips				

Some parts of our body have many more touch sensors than others, making them more sensitive. The more touch sensors an area has, the more accurately we can use the sense of touch with that part of our body.

Touch Points



Tactile clues are like indicator signals for people who are blind or vision impaired.

For example, raised dots can be stuck on various things to help people who are blind know what (and where) things are.

What to do

Imagine that a relative who is blind is coming to stay with your family for a few months. Your parents have given you a set of sticker dots and some sticky felt and asked you to label all your kitchen containers so that your relative can find everything easily.

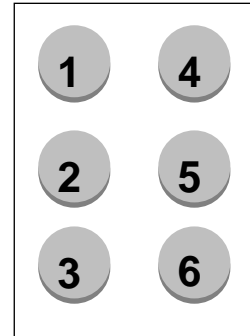
Design symbols for the following kitchen supplies (plus some of your own):

Flour	Oats	Sugar
Coffee	Coconut	Pasta
Tea	Beans	Rice
Cocoa	Nuts	Breadcrumbs

The Braille Code



Braille is based on a simple pattern which can be used to code any language – even mathematics and music! Braille can be used in countless situations.



What to do

Here is the Braille code for English. Use it to design and make a game that can be played by children, regardless of whether they are sighted, blind or vision impaired.

Letters A-J

A	B	C	D	E	F	G	H	I	J

Letters K-T

K	L	M	N	O	P	Q	R	S	T

Letters U-Z & W

U	V	X	Y	Z		W

Numbers

A Braille symbol with dots in positions 3, 4, 5 & 6 means that the symbol immediately afterwards should be read as a number, not a letter.

0	1	2	3	4	5	6	7	8	9

Braille is Brilliant



200 years ago, a young man called Louis Braille realised that people who were blind could learn to read with their fingers. He invented a code using raised dots in different combination with each pattern of 1-6 dots corresponding to a letter of the alphabet.

His code has been named after him and used ever since. By enabling millions of people to read and learn, Braille really did change the lives of generations of people living with blindness.

What to do

- Using the Braille Alphabet provided, decode the following joke.
- Then with a partner, use Braille to write and then decode your own message to each other.

What did one eye say to the other eye?

B	E	T	W	E	E	N		U	S								
S	O	M	E	T	H	I	N	G		S	M	E	L	L	S		

Now write your own message using the Braille code here:

Ask your partner to decode your message here:

Big Braille Sleuth

In this puzzle are three two-word phrases and eleven other words related to vision and blindness.

1. Use your Braille alphabet to decode and find the words (there are hints below if you need them).
2. Then decode and unscramble the leftover letters to spell out a 3-word message for all of us.

S	U	N	G	L	A	S	S	E	S
I	T	D	V	Y	🐾	R	P	T	P
G	G	N	I	N	I	A	R	T	O
N	R	U	S	B	R	B	A	O	L
A	G	O	I	R	E	I	C	U	L
L	N	S	O	A	A	L	T	C	E
S	I	O	N	I	D	I	I	H	W
T	O	D	E	L	I	T	C	A	T
E	G	C	U	L	E	Y	E	S	A
G	U	I	D	E	D	O	G	S	E



Unscramble the leftover letters to discover my health message:

P _ _ _ _ _ Y _ _ _ _ S

Ability, Going, Braille, Practice, Training, Read
Guide Dogs, Eat Well, Tactile Dot, Sunglasses, Touch, Sound, Vision, Signals