

# *Integrated Planning with STEM*

*17th July 2017*

*Jo Griffiths*



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Dianella**  
*Primary*

# What is STEM?

- STEM is a way of thinking
  - Each subject doesn't stand alone, they work in combination
  - The combination provides young children with an opportunity to think critically about real word problems
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# What does this mean?

- Identify a problem
  - Create possible solutions
  - Test solutions
  - Make changes after inquiry process has been followed
  - The solutions do not need to be fixed
  - Real world problems = 15 m radius of self!
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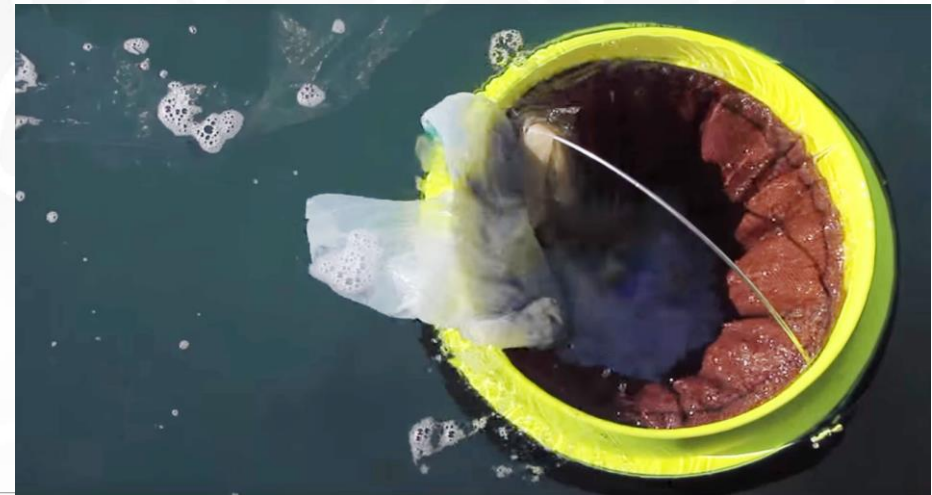
In a traditional classroom, students might be asked to research ways to stop litter going down the stormwater drains. They present a poster to the class, explaining what they consider to be the best solution.





- In a STEM classroom, students would be asked to design, build, test and re-design if necessary a solution to the problem of litter going down the stormwater drain.

What could be done as a preventative step before using a sea bin?



# So how do we do this in Early Childhood?

- Know your SCASA outcomes
  - Provide students with the foundations to think critically and independently.
  - Through structured play and inquiry
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# What I have noticed

- Lots of ECE are implementing STEM based play with and without the knowledge of this fact.
- <https://www.youtube.com/watch?v=HglYz0h2n2E>

# Feelings



- How do you currently feel about integrating STEM?
- What would you rate your confidence level out of 10?



# Review of my program

- Talk/ walk through
- FPD
- PMI – Initial Thoughts
- Evidence

**WALK &**



**TALK**

# Geography Diagnostic

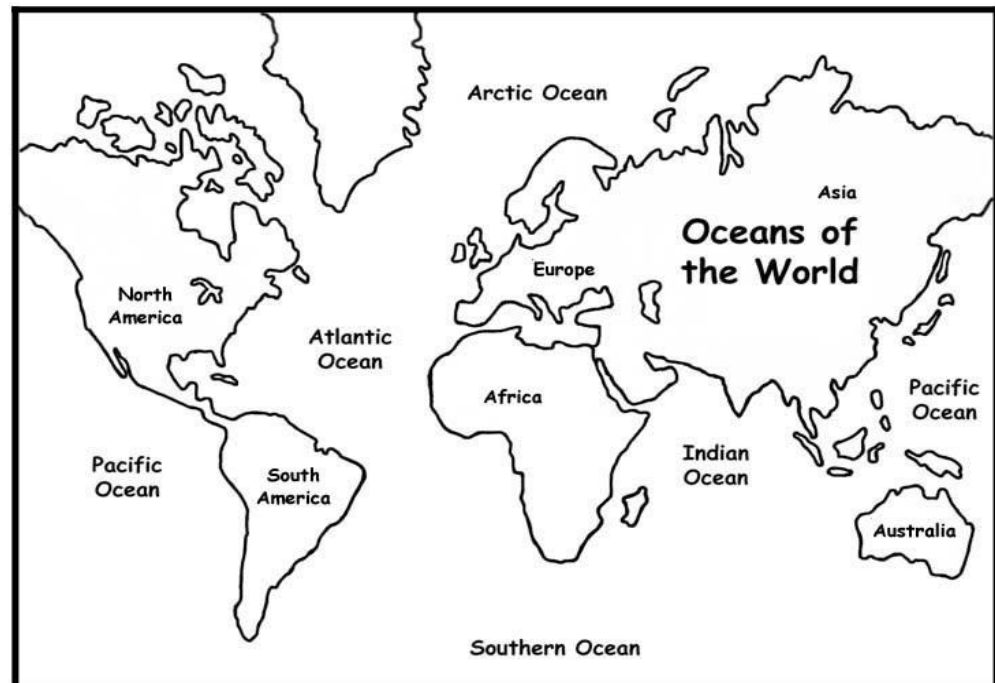


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# Diagnostic Task

- Look at the map. Point to Australia. Do you know the name of the ocean that we swim in?





- Students were surveyed to gather information on what they were interested in learning about.
  - I used this information to drive their interest further and highlighting when their ideas were visible in my teaching and learning program
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# WALT: find the Indian Ocean

As suggested by Lylah!

The beach is a familiar location to us  
and so we learn about it

# WALT: find the Indian Ocean

- TIB: when we go for a swim at the beach we are swimming in the Indian Ocean.
  - When we go to AQWA we will see the ocean and it will be the Indian Ocean!
  - I showed the students a video on sea animals that live in the Indian Ocean and books about the ocean. I had a real world ocean corner with shells and sea animals in it for the students to play with.
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# AQWA houses animals that live in the Indian Ocean



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# Beaches we may know





# Scarborough Beach



# This is Hillarys Boat Harbour





# AQWA is close to Hillarys Boat



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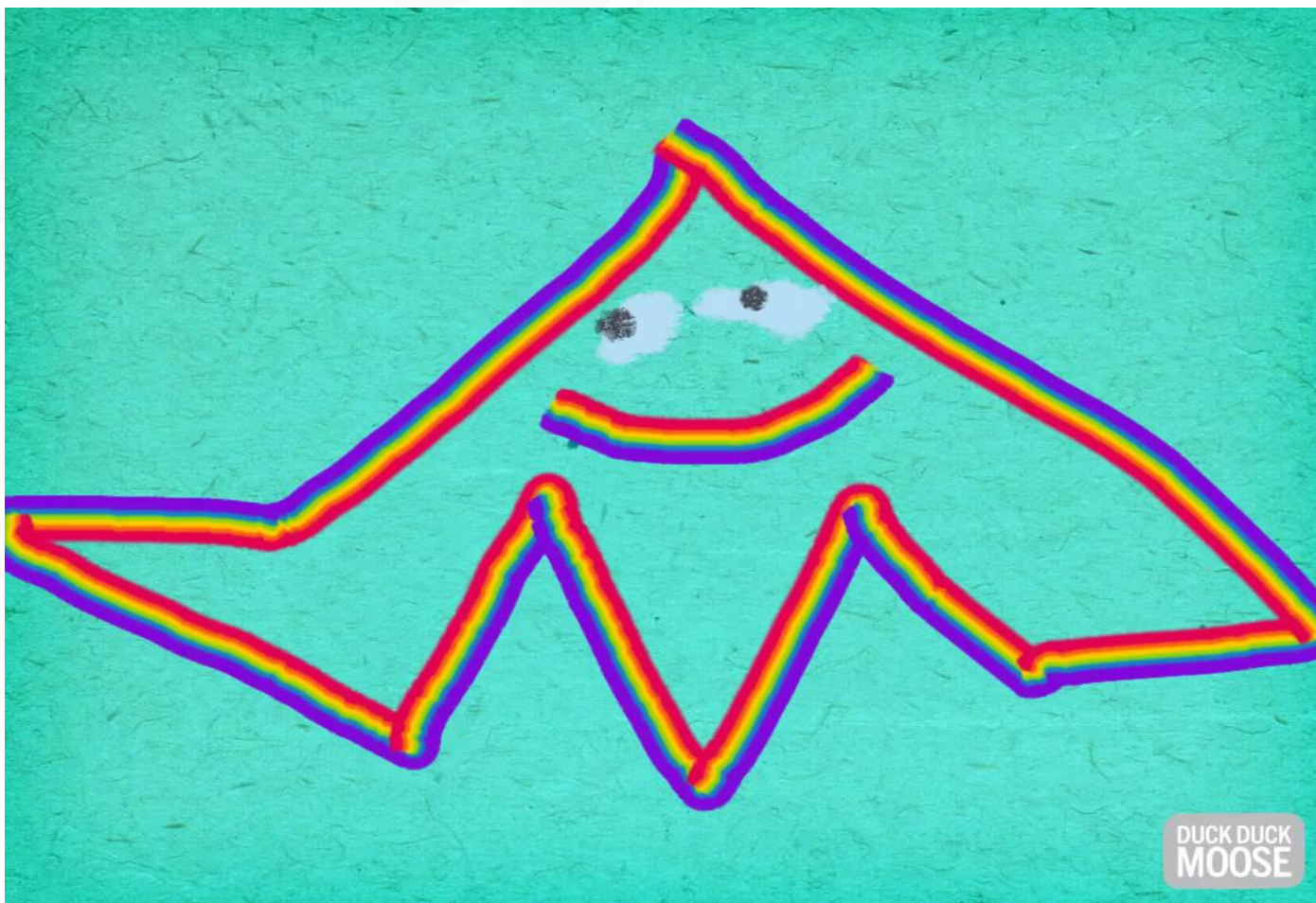
## Harbour



# AQWA is an underwater aquarium







# Checklist

Digital Technologies	NY	WT	D
Understands technology is used at school and at home			
Understands that the iPad is the hardware			
Understands that the app is the software			
General Capabilities			
Swipes left to open the iPad			
Locates the Draw and Tell App			
Creates a new page in the app			
Selects the correct tool for writing with finger			
Writes with finger			
Saves picture to camera roll			
Deletes page			

# What's next?

- Time to fill the students with lots of knowledge!



# WALT – Sort Data

## Sea creatures in the Indian Ocean

As suggested by Piper

Focus = Unplugged data

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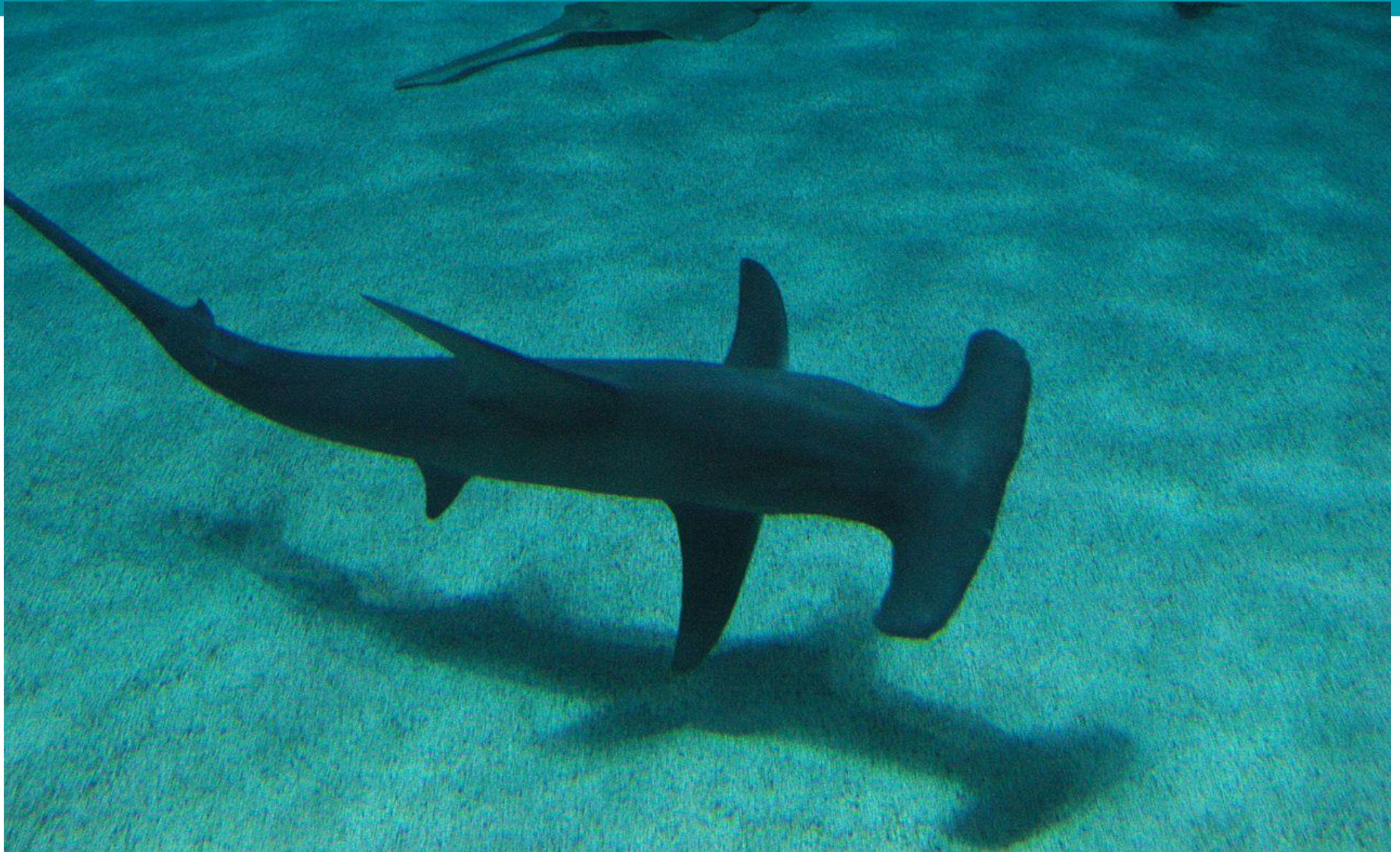


# There are many big sea creatures























# Checklist

Digital Technologies	NY	WT	D
Understands technology is used at school and at home			
Understands that the iPad is the hardware			
Understands that the app is the software			
Sorts data to categorise the sea animals			
Understands that data can have patterns that can be represented by symbols			
Represents the data using iMotion to show how they sorted it			
Model a sequence of steps to sort the data			

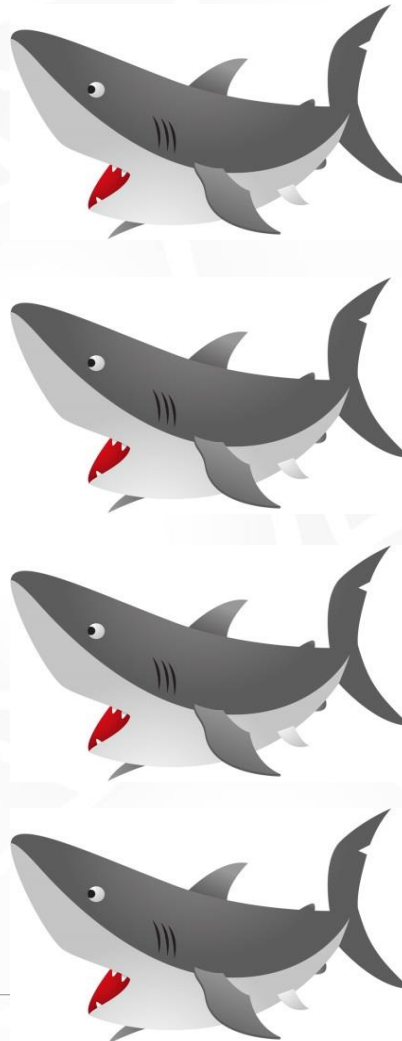
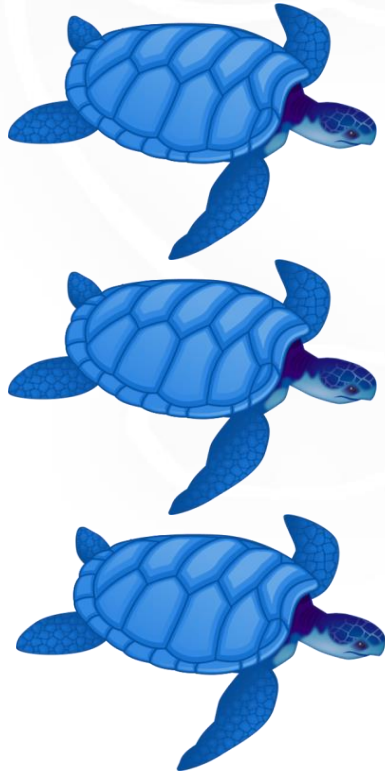
# STEM Challenge

- AQWA needs to count their big sea creatures in the aquarium. They need to collect data about how many of each animal is there.
- Create a pictograph to help them count the big sea creatures.



# Pictograph

Data = symbols/pictures



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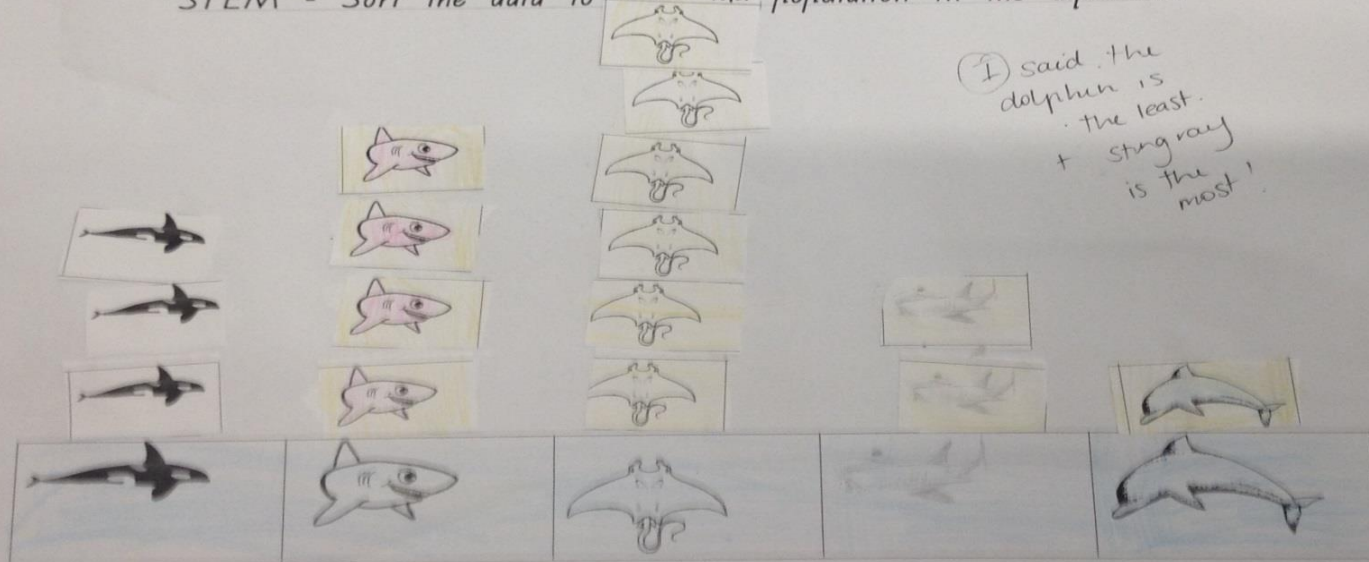
# What I assessed



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 WALT: use symbols to represent data	 WLP: pictograph	 HOM: Have a go
Level 1 Understands that data can have patterns and be represented as pictures and can use the data to complete a task	Level 2 Understands that data can have patterns and be represented as pictures	Level 3 With assistance can sort data

STEM - Sort the data to show the population in the aquarium





**WALT: use symbols to represent data**

**Level 1**

**Understands that data can have patterns and be represented as pictures and can use the data to complete a task**



**WILF: pictograph**

**Level 2**

Understands that data can have patterns and can be represented as pictures



**HOM: Have a go**

**Level 3**

With assistance can sort data



# Play tasks with student interest and

## STEM play embedded

1. Build an aquarium with the blocks to house the sea creatures (Filip loves blocks!) (STEM engineering play)
  2. Use the writing table to write about and draw an aquarium for sea creatures (Adele and Piper love to write and Georgie and Anika love to draw) (Designing during play)
  3. Use the boxes to make mini aquariums (Charlie loves to make). Making during play.
  4. Go fishing for sea creatures (Yessakore likes to move about)
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# Block corner in action

- Simple student reflection. What do you think of your aquarium. Thumbs up all round!



# Making mini aquariums



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# Work in action!



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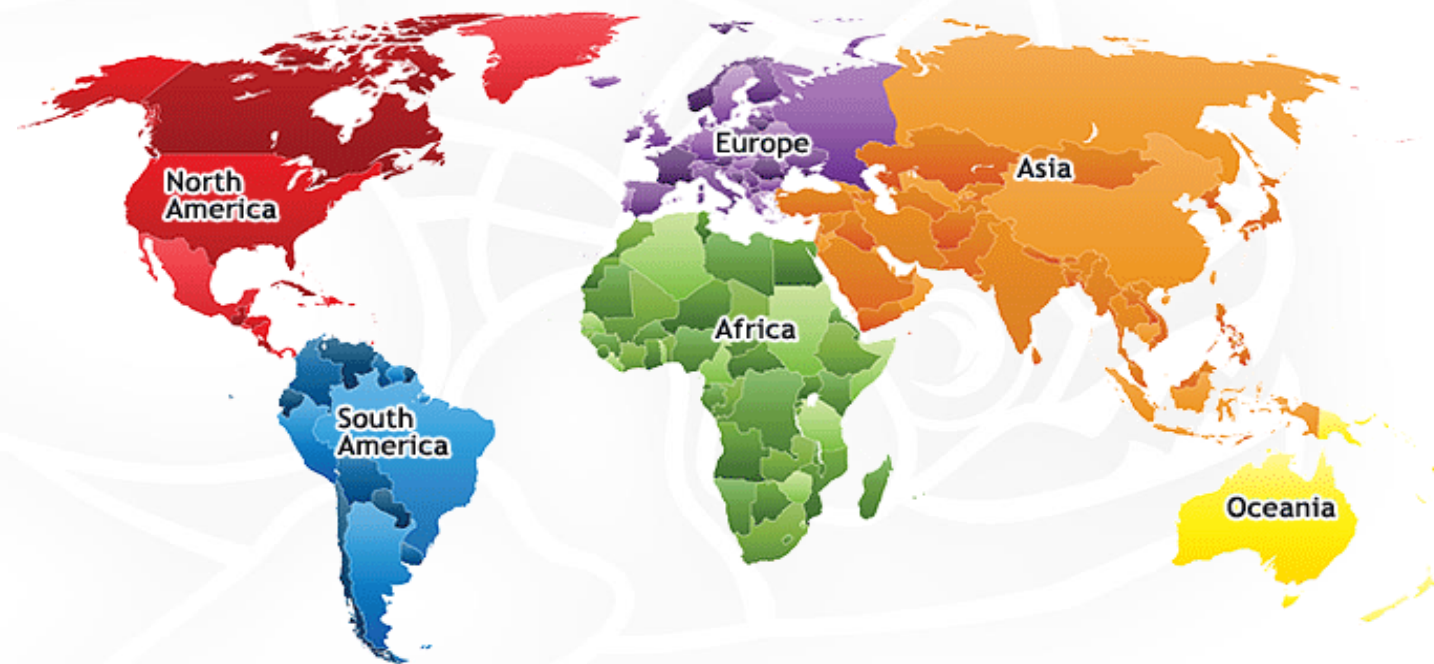
# Play time –

## combining unplugged data and digital technologies

- The zoo animals have escaped. Collect them all and sort them so they can be returned to the right enclosure.
- How did you sort them?
- Is there another way to sort them?
- Why might we need to sort the animals?
- Who might need to know this information? Why?
- Math – Number, Stats and Probability
- Science – Classifying and investigating
- HOTS – Justifying your choices

# The Continents

- North America
- South America
- Europe
- Asia
- Africa
- Australia
- Antarctica



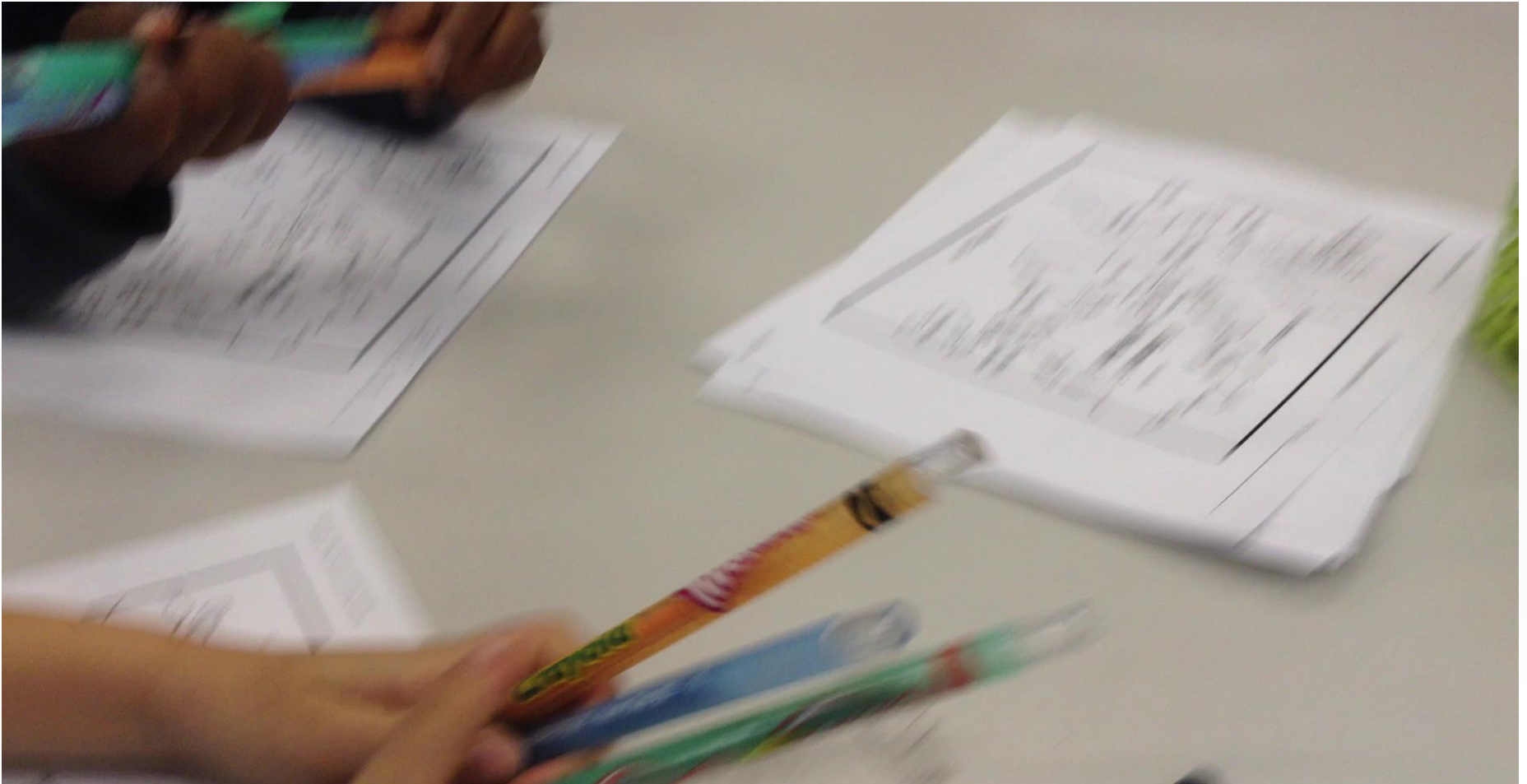


# The 5 Oceans

- Atlantic
- Pacific
- Artic
- Southern
- Indian



# Evidence of student work



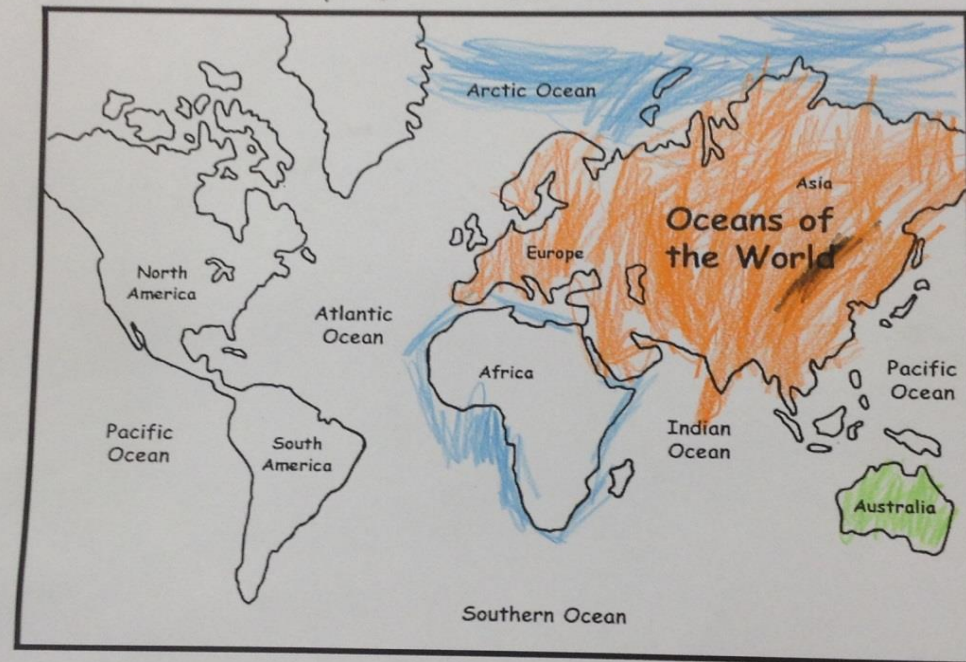
# Can identify Australia on a map

WALA: The

Water

Name: \_\_\_\_\_

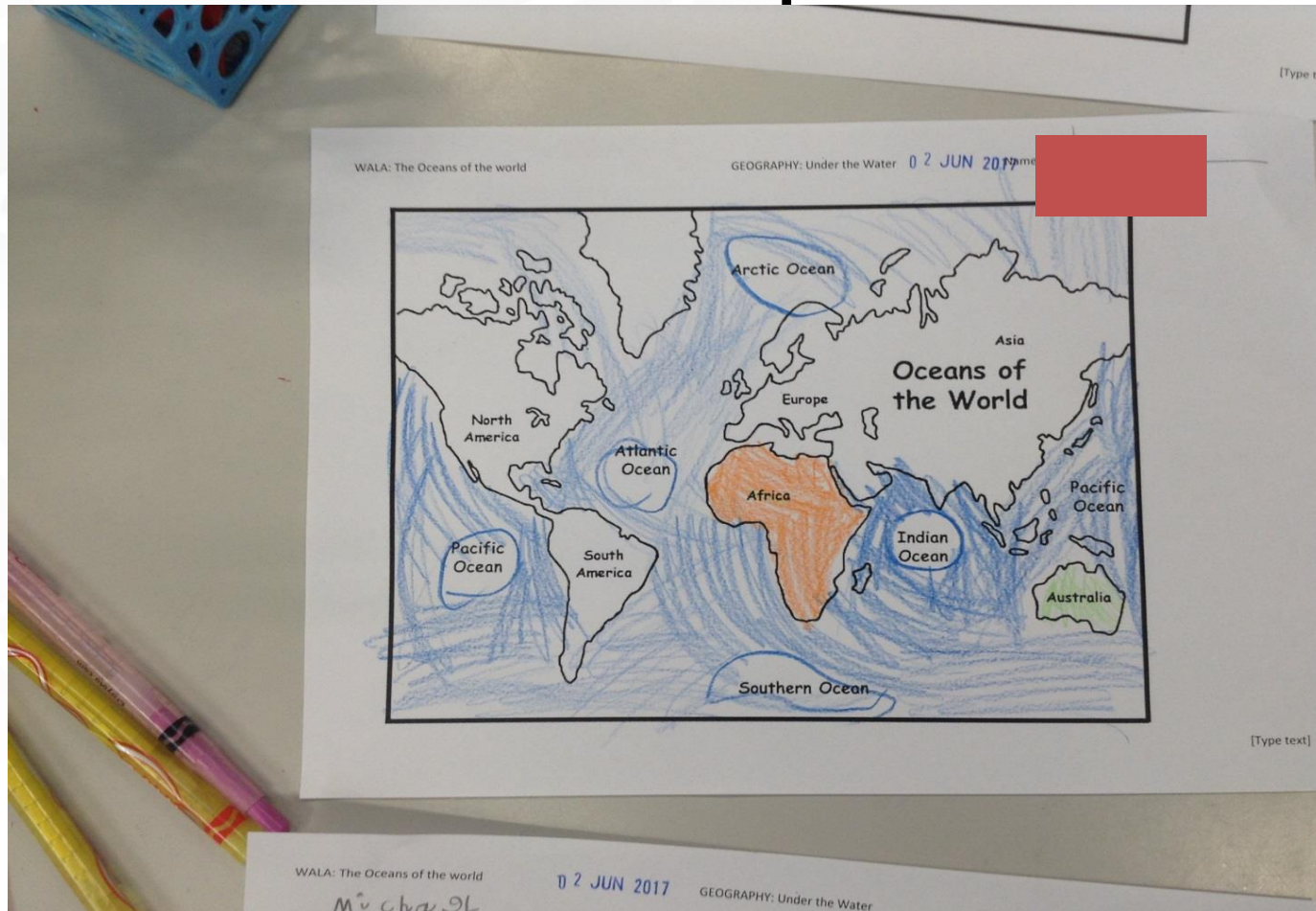
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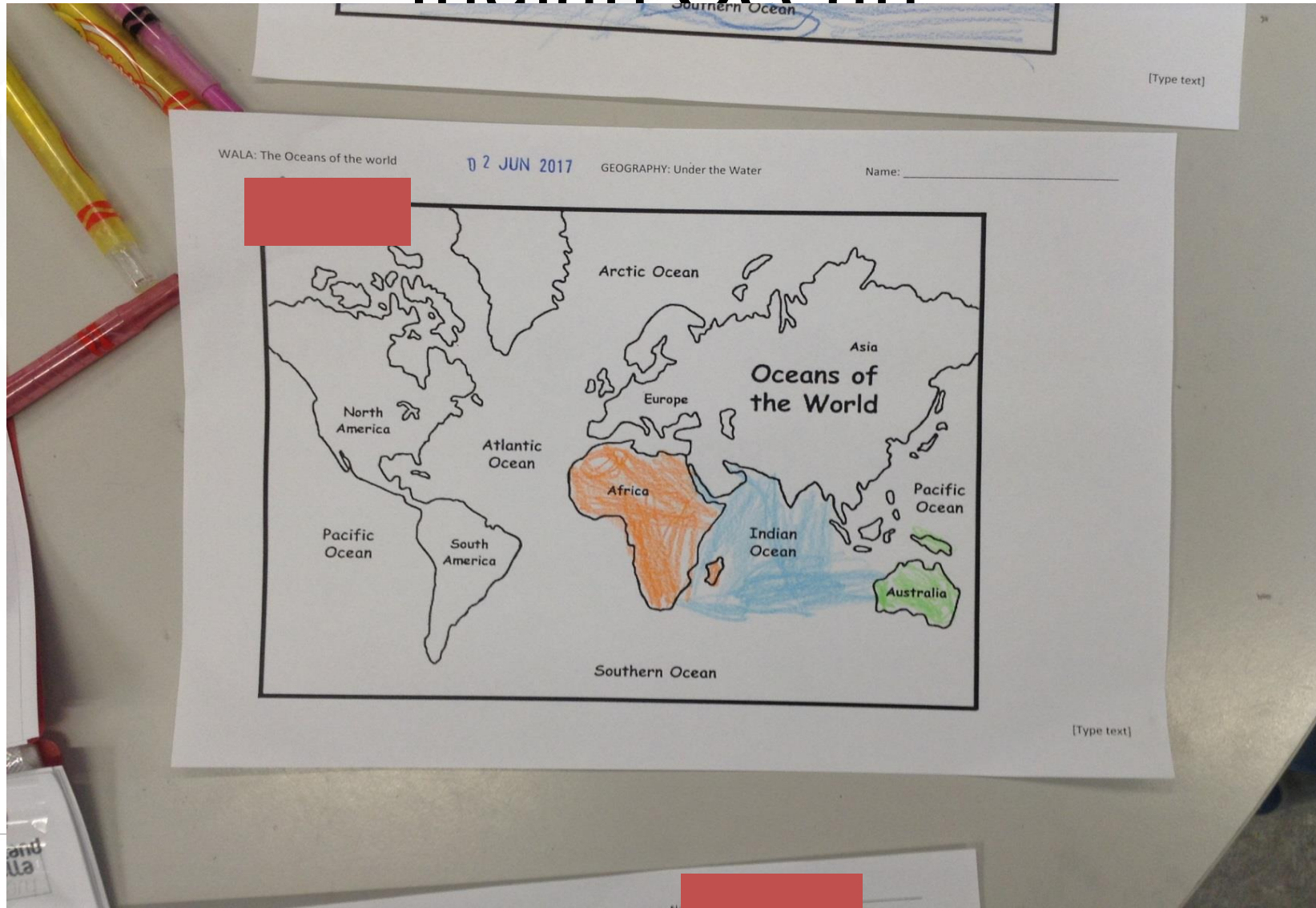
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# Can identify Australia and Africa on a map

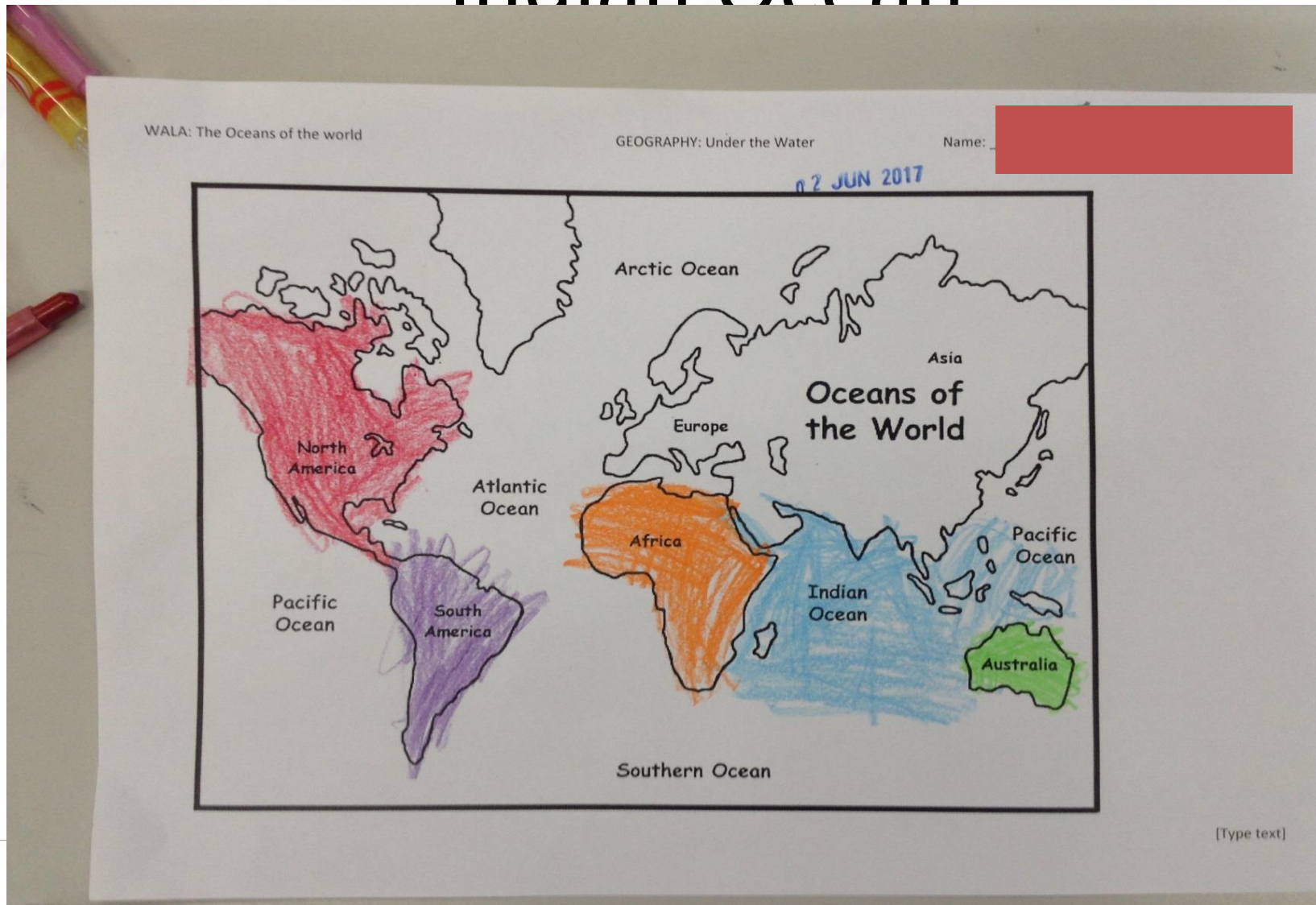


# Can identify Australia, Africa and the Indian Ocean



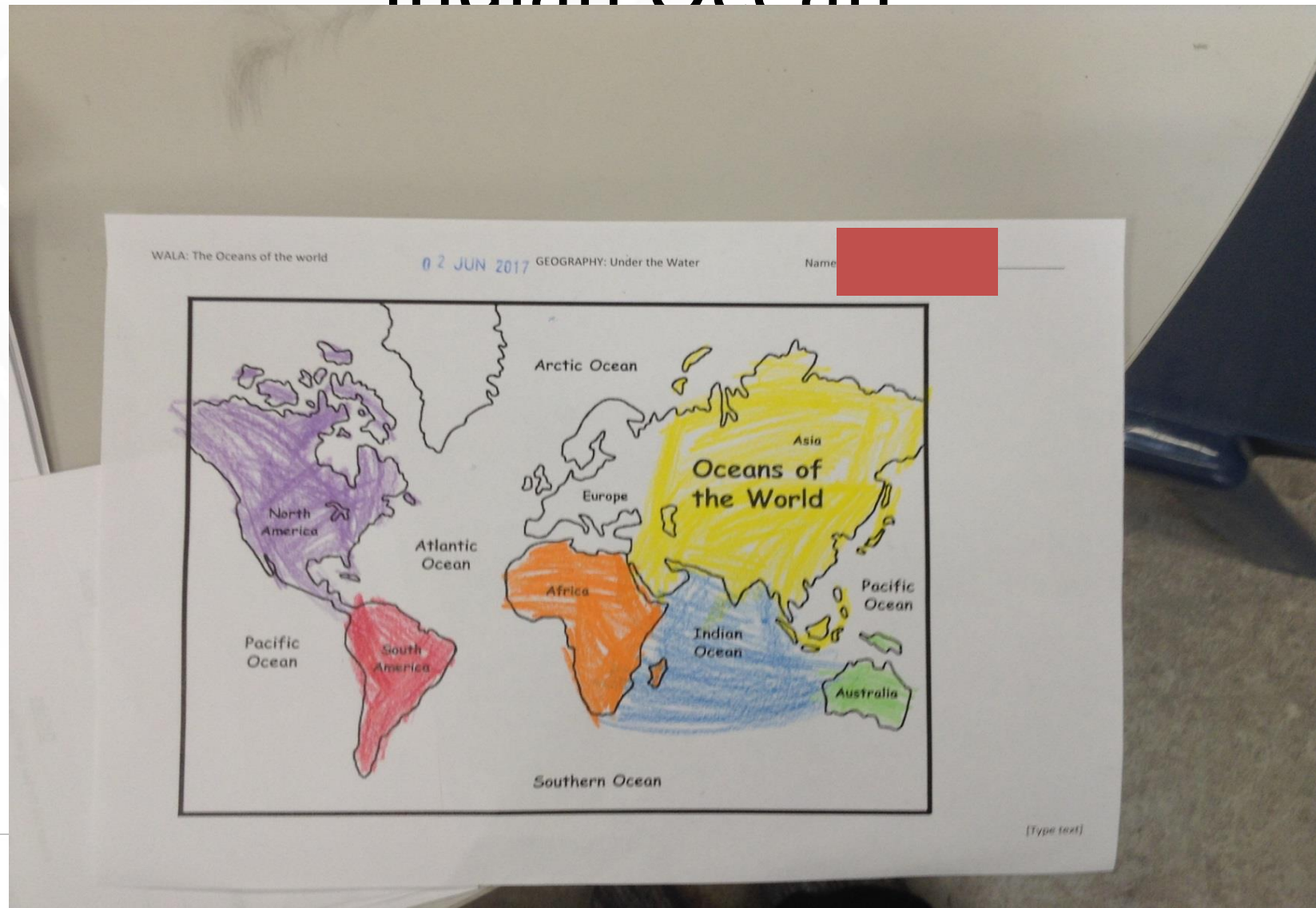


# Can identify 4 continents and the Indian Ocean





# Can identify 5 continents and the Indian Ocean



# Unplugged data sort combined with protecting our ocean

WALT: use symbols to represent data

WILF: ~~use a t-chart~~ use a t-chart

HOM: Have a go

Level 1  
Independently sorts the data to show what belongs in the ocean and what does not

Level 2  
With little assistance sorts data to show what belongs in the ocean and what does not

Level 3  
With 1 to 1 assistance can sort data to show what belongs and does not belong in the ocean

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Use a T-Chart to sort data into what belongs and what does not belong

✓	X

Are fantastic job at sorting the data on the T-Chart ✓



# Links to Noongar people and their connection with the ocean



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## In my English program

- Students read Pirate Polly for shared reading and decided we should use pirate symbols to create a map for the Beebot to follow to find the treasure.
  - Designing – students were able to model a sequence of steps through pressing/using symbols to program a Beebot.
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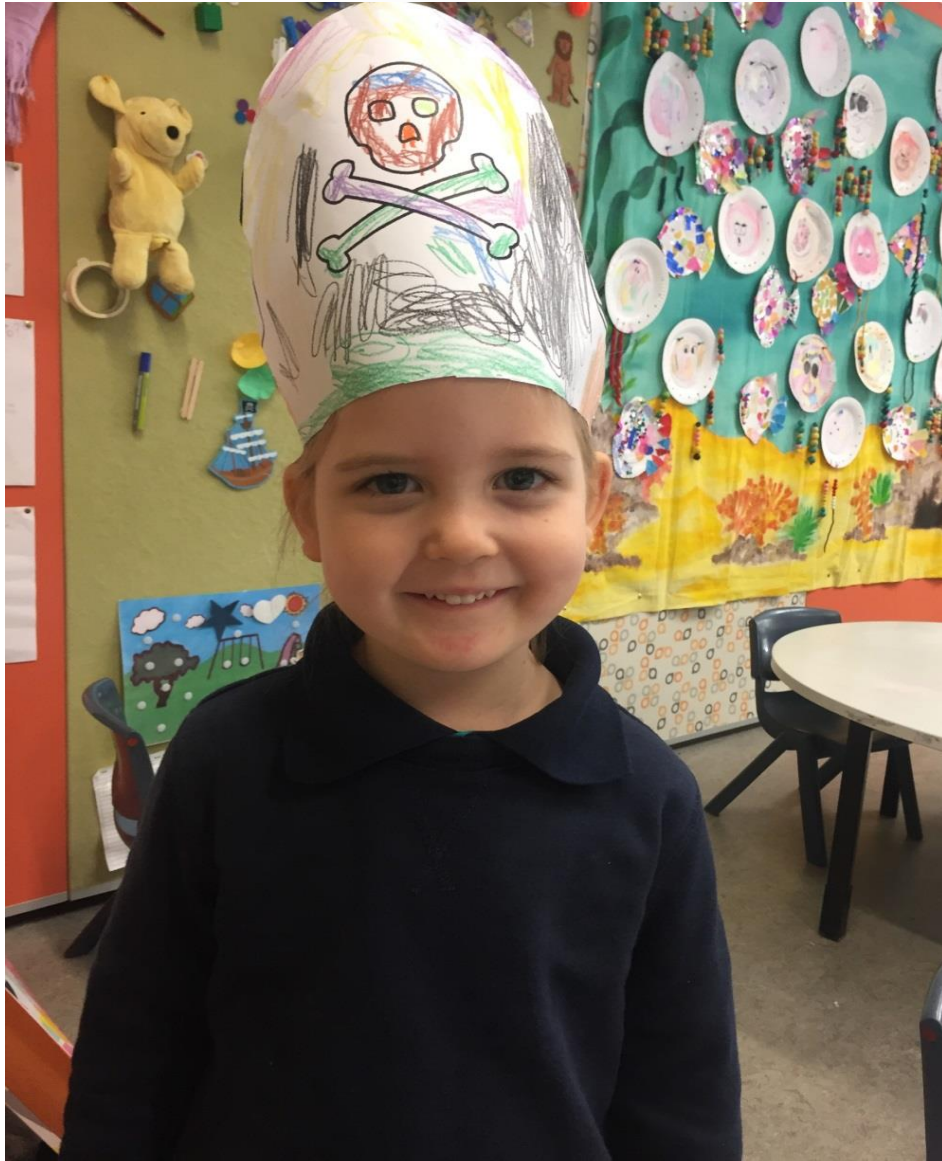




# Art elements



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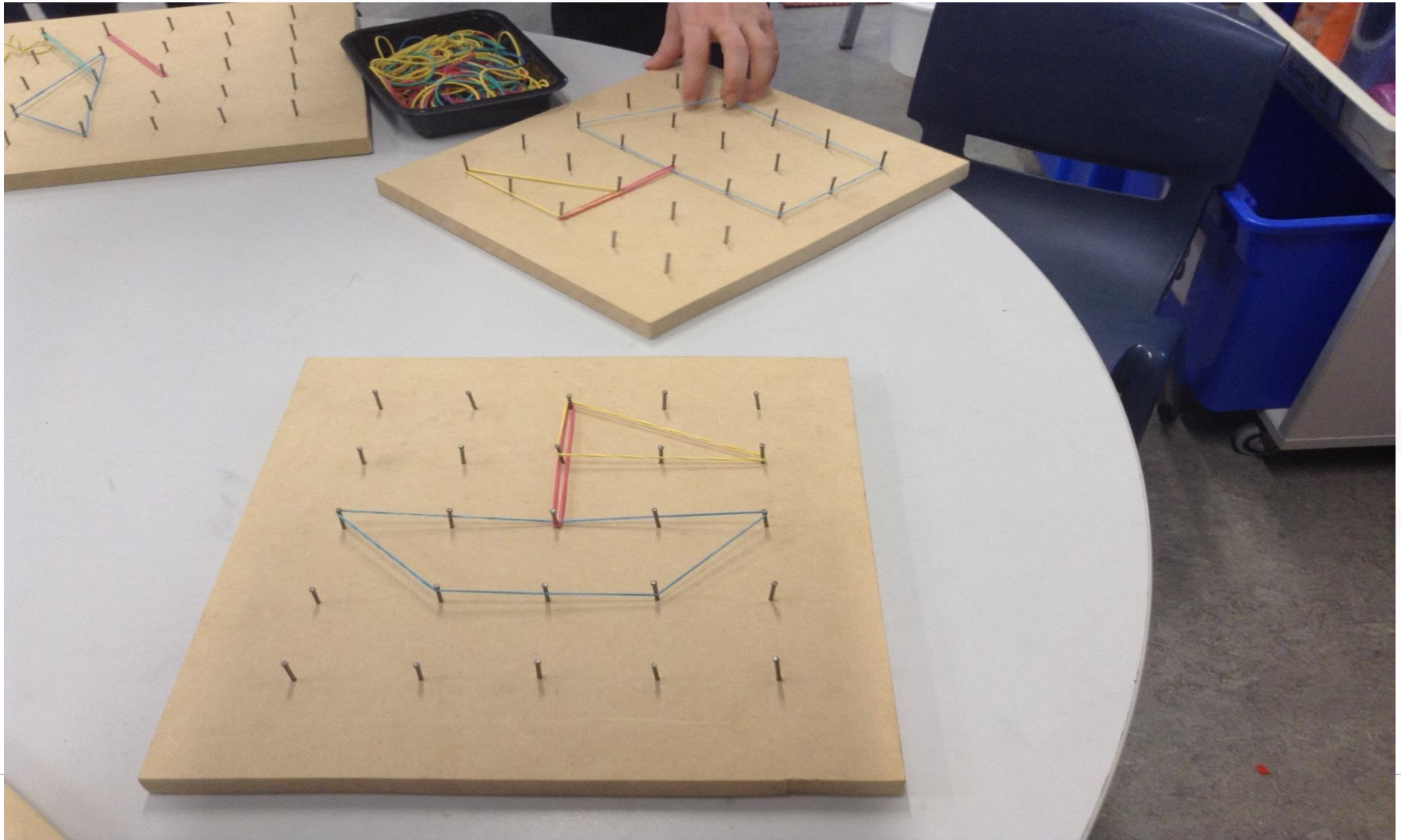








# STEM in my maths program

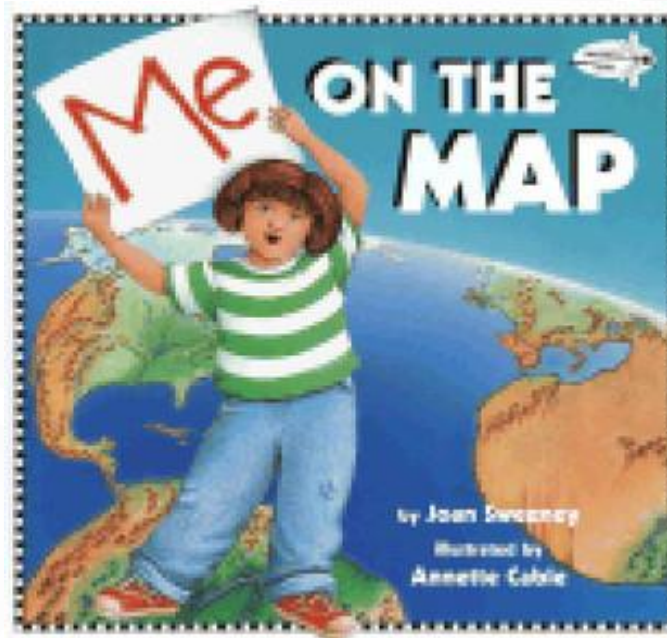






# Great addition

- Story book – Me on the map  
<https://www.youtube.com/watch?v=b0cjSXC2rHE>





# Reflection

- How are you feeling now about integrating STEM into your programming?
- Would you change your score out of 10?

- Please complete the PMI in a different colour to show any changes in your opinion of the integrated program?
  - Any other feedback you have would be greatly appreciated. Please record on the sheet
-

# Final PMI reflections

- Extra time??? Let's discuss what you plan to integrate this term!

