Success in Numeracy
A workshop for guardians...

Empowering you with knowledge so you can help at home!
Introductions

• Jane Irvin – Head of Department (HOD) mathematics

• Casey Reibelt – Numeracy Coach, Mathematics teacher

• Sarah Johnson – Mathematics teacher
Purpose of today

• Increase your awareness of what you can do to assist in your child’s success in numeracy
• Inform you of our school practises
Outline

- Numeracy
- Jo Boaler - Growth vs. fixed mindset, attitude and confidence in Mathematics
- George Booker - Place value
- ICT – Mathletics
- Homework
Numeracy

What is numeracy and when do we use it?
What is numeracy?

• Being numerate is the ability to successfully use mathematics in real world applications
<table>
<thead>
<tr>
<th>Activity</th>
<th>Use numeracy? Yes or no?</th>
<th>How?/Example/Why not?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring length</td>
<td></td>
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<tr>
<td>Playing games</td>
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<td>Making patterns</td>
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<tr>
<td>Saving money</td>
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<td>Sharing with others</td>
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<tr>
<td>Shopping</td>
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<tr>
<td>Comparing things</td>
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</table>
When do we use numeracy?

- The list goes on!
Jo Boaler

Growth vs. fixed mindset, and attitude and confidence in Mathematics
Who is Jo Boaler?

• British Education author
• Professor of Mathematics Education at Stanford University
• Aims to change maths education and teach maths in a way that empowers students and allows them to see the benefits of being numerate
Growth vs. fixed mindset

• Brain plasticity – brain’s ability to change and rewire itself
• When learning happens, synapses fire and create connections
• Mistakes are good and grow synapses!

• The problem is the kinds of experiences these children have had in the past – the result is students have created a mindset - a fixed mindset versus a growth mindset

• [http://vimeo.com/76884123](http://vimeo.com/76884123)
<table>
<thead>
<tr>
<th>Students with a fixed mindset:</th>
<th>Students with a growth mindset:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• believe the brain is fixed and not changing</td>
<td>• outperform students with a fixed mindset</td>
</tr>
<tr>
<td>• hinder their brain’s growth and the growth of their intelligence</td>
<td>• demonstrate more persistence in challenging situations</td>
</tr>
<tr>
<td>• avoids challenges</td>
<td>• see difficult tasks as opportunities for growth</td>
</tr>
<tr>
<td></td>
<td>• believe that with effort they can learn</td>
</tr>
<tr>
<td></td>
<td>• may struggle to learn but in doing so their brain grows new neurons and new connections between them</td>
</tr>
</tbody>
</table>
How to encourage a growth mindset!

- See mistakes as something valuable for math learning
- Explain why mistakes are important – they encourage brain growth!
- Emphasise that maths is about learning and not quick answers
How do you formulate an answer you don’t know?

- Here are some strategies!
ACTIVITY😊

• Consider how you would feel given the situation and move to the corner that best describes how you think you would feel.
You have just moved into a new place and you want to put up your photo frames so they are centred on the wall. Your initial reaction is...

- Unsure
- Confident
- Anxious
- Call someone
You are at the mid year sales and it shows 20% all over the store! But unfortunately the store have not had a chance to alter their marked prices. You want to know how much something costs, your initial reaction is...

- Unsure
- Change your mind
- You figure it out
- Ask an employee
• Go without

• Confident

• Anxious

• Make more

You are hosting a party for one of your kids and planned everything out, however, one of the kids surprised you with their presence. When sharing out the food to ensure you have enough for everyone, your initial reaction is...
Confidence in Mathematics - the affects of maths anxiety

• Math stress causes inability to execute math problems successfully
• Stress impedes working memory – area of the brain where we hold math facts
• Students describe tests as making them feel “upset”, “unhappy”, and “I’m terrible at math”
• Need to encourage fluency in math – must develop number sense
• Math anxiety results in fear, worry, low achievement and math avoidance – impacts future career and life choices
George Booker

What is the importance of place value?
Who is George Booker?

• Senior Lecturer in Mathematics
• Director of Mathematics Assistance Clinic
• Education author

• Has worked closely with the MSHS maths department
George Booker’s ideas

• Students who experience difficulties in mathematics require assistance to overcome misconceptions or inappropriate ways of thinking they have developed.

• Use materials to draw patterns of ideas - link to language to give meaning – use symbolic expressions to express what is happening.
ACTIVITY

• You will be given a card each
• Walk around the room and find your match!
• If you’re not sure, just ask!😊
### Place value

- Developing number sense can start by being able to rename numbers!

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>246</td>
<td></td>
<td></td>
</tr>
<tr>
<td>renamed as</td>
<td></td>
<td></td>
</tr>
<tr>
<td>246</td>
<td></td>
<td></td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>246</td>
<td></td>
<td></td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Example:

- 246
  - 2 hundreds
  - 4 tens
  - 6 ones

- 246
  - 24 tens
  - 6 ones

- 246
  - 246 ones
A poster like this can help students read numbers correctly – this is available at the bottom of each student’s diary!
ICT – Mathletics
What?

- [www.mathletics.com](http://www.mathletics.com)
- An online mathematics learning program
- Sign in cards to be handed out to students by classroom teachers in class
When?

• Assigned homework tasks
• Teachers can check students’ progress on these tasks in their own time – it shows each student’s percentage correct and the number of attempts made!
• Teachers can use results on Mathletics to go towards students’ mathematics report card!
Why?

• A recent independent academic study of more than 8,000 schools looking into the impact of Mathletics on NAPLAN results found a significant advantage to schools using Mathletics...
Students using Mathletics:

• have performed consistently higher in NAPLAN, across Years 3, 5, 7 & 9 since 2008 – by up to 6.7%
• with longer-term usage (> 2yrs) saw an even greater jump in NAPLAN results
• saw the greatest benefit when they complete on average, 3 Mathletics activities per week
• by completing only 3 activities per week, achieve an average NAPLAN score that is 8% higher
How?

- When completing assigned homework tasks... HELP is available!
It provides step by step instructions!

At the bottom you can choose easier or harder examples.

Look at the example. Click on 'next' to go through the steps.
Helping with homework

What can you do to help?
Why do HOMEWORK?

- Better retention of information
- Consolidates understanding
- Increased understanding
- Improved attitude toward learning
- Better study habits
- Greater self-discipline
- Greater self-direction
- More independent problem solving
What could maths homework consist of?

- Textbook questions
- Worksheets
- Revision
- Glossary lists
- Mathletics
- (Learning place activities)
How often?

• Follow homework due dates
• Continual revision

• Even though teachers may not check homework every lesson, homework must be completed on time!
• Students are encouraged to take responsibility and initiative for their own learning
But why?!

- Research suggests that if you re-visit something within the first 24 hours of first seeing it, you have an 80% better chance of remembering it a week later!
What you can do to help!

**Homework routines**
- Find a location in the house where homework will be done
- Set up a homework centre
- Establish a homework time
- Establish a daily homework schedule

**Incentive schemes**
- Simple incentive systems
- Elaborate incentive systems
- Building in breaks
- Building in choice

**Developing incentive systems**
- Describe the problem behaviours
- Set a goal
- Decide on possible rewards and penalties
- Write a homework contract
Concluding thoughts...

Is there anything we have missed?
Inspiration... Change is possible!

“If you always do what you’ve always done, you’ll always get what you’ve always got” – Henry Ford
Setting goals

- Set SMART goals together
- Celebrate successes!
It’s a process!

Class work + Homework + Positive attitude = Success AND you should celebrate this!
Homework help!

- Homework club = every afternoon from 3pm-4pm in the library – teachers from differently faculty’s are there to help!

- Private tutor = Jason Henderson (past student), ph: 0424423827
Helpful resources!

- [http://joboaler.com/](http://joboaler.com/) - Jo Boaler’s website
- [www.mathletics.com](http://www.mathletics.com)
- [http://www.nasponline.org/resources/home_school/homework.aspx](http://www.nasponline.org/resources/home_school/homework.aspx) - homework guide
Any Questions
Thank you