5 Habits of a Highly Effective Numeracy Teacher

Meredith Longfield & Lynelle Campbell
Learning Intentions

1. Review the *5 Attitudes & Beliefs of Expert Teachers* (Hattie 2013) as a framework to develop teaching capacity in mathematics education.

2. Recognise the importance of *Classroom Climate* to develop students’ numeracy.

3. Consider the variety of assessments that are necessary to provide effective numeracy instruction within an RTI framework.

4. Examine a tier 3 numeracy (intensive) intervention in action.
Maximizing Impact on Learning...

The main ideas of the book are:

~ The big idea is – know they impact! Expert teachers are not wedded to specific teaching strategies – rather, they regularly focus on evaluating the effects they have on students, and adjust teaching methods accordingly.

~ When teaching and learning are “visible” – that is, when it is clear what teachers are teaching and what students are learning, student achievement increases.

Hattie 2013
5 Habits of a Highly Effective Numeracy Teacher

1. Expert teachers identify the most important ways to represent the subjects they teach.

2. Expert teachers create an optimal classroom climate for learning.

3. Expert teachers monitor learning and provide feedback.

4. Expert teachers believe all students can reach the success criteria.

5. Expert teachers influence a wide range of student outcomes not solely limited to test scores.
1. Expert teachers identify the most important ways to represent the subjects they teach.

A teacher’s subject knowledge does NOT improve student achievement!

HOWEVER, how they organize, introduce and use this knowledge does impact on student achievement when they consider:

1. What is the student’s prior knowledge?
2. How does this knowledge relate to other subjects?
3. How can this be adapted to students’ needs?
4. What strategies will help?
5. Where might the students ‘trip up’ and how to respond?
6. Student progress & adapt accordingly.
2. Expert teachers create an optimal classroom climate for learning.
3. Expert teachers monitor learning and provide feedback

Expert teachers believe: – If they’re not learning I’m not teaching.....

Expert teachers are excellent seekers AND users of feedback about their teaching.
4. Expert teachers believe all students can reach the success criteria

- In a study of 3000 teachers in *The Measures of Effective Teaching Project* sponsored by the Gates Foundation, teachers who exhibit the 7 C’s make the most gains in student achievement.
  - Care
  - Control
  - Clarify
  - Challenge
  - Captivate
  - Confer &
  - Consolidate
5. Expert teachers influence a wide range of student outcomes not solely limited to test scores

I am waiting for my turn.

I like school.

I can learn by watching.

This is interesting!
Responsive Approach to Assessment and Intervention

Tier 1 [80%] Universal
Evidence-based Curriculum and Universal Screening [3 times/year]

Tier 2 [15%] Targeted
Small group Intervention with Progress Monitoring

Tier 3 [5%] Intensive
Individualised Intervention with Frequent Progress Monitoring

[Riley-Tillman & Burn, 2009, p. 9]
Response to Intervention (RTI) (The Three Tier Model)

- **Tier 1**: Benchmark or Core Program
  - SEAK Assessment
  - NKT Interview
  - Classroom Observations
  - Unit/Topic Assessments
- **Tier 2**: Strategic Support
  - Work samples
  - Checklisting
- **Tier 3**: Intensive Support
  - Classroom Observations
  - Work samples
  - Checklisting
The purpose of assessment is to inform teaching and improve learning.

My most used assessment tools include but are not limited to:

- Documenting Observations in the Classroom
- Photographs and videos
- Checklists
- Work samples and portfolios
- Assessment Data
- Assessment book for record keeping
Observations, assumptions and determining causes

“Observations are the principal tool teachers use to guide their everyday actions and ongoing programs…” Booker, 2011, p. 57
Kindergarten Assessment
Data - Term 2

Reading and telling about picture graphs

<table>
<thead>
<tr>
<th>Heart</th>
<th>Heart</th>
<th>Heart</th>
<th>Heart</th>
<th>How many hearts?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Triangle</th>
<th>How many triangles?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Happy Face</th>
<th>How many happy faces?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Tier 3 – intensive intervention

<table>
<thead>
<tr>
<th>TERM: Week: TUTOR:</th>
<th>NAME: Learning Outcome: Recognise and name all numbers in the range 1 – 10 correctly and consistently</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date / /</td>
<td>Retrieve number cards 1-10</td>
</tr>
<tr>
<td></td>
<td>Can label number cards 1-10</td>
</tr>
<tr>
<td></td>
<td>Order numbers lowest to highest</td>
</tr>
<tr>
<td></td>
<td>Count out 10 objects</td>
</tr>
<tr>
<td></td>
<td>Counts collection of objects in the range 1 - 10</td>
</tr>
<tr>
<td></td>
<td>Writes numbers 1 - 10</td>
</tr>
<tr>
<td>Date / /</td>
<td>Retrieve number cards 1-10</td>
</tr>
<tr>
<td></td>
<td>Can label number cards 1-10</td>
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<td>Writes numbers 1 - 10</td>
</tr>
</tbody>
</table>

Notes:
What teachers should consider when planning for effective learning and assessment?

- Classroom and assessment activities should be clearly related to the syllabus outcome.
- Students should be provided with opportunities to demonstrate what they know & can do.
- A variety of assessment approaches may be used so that students have the opportunity to show what they know and can do in different ways.
- A single activity can often provide information about more than one syllabus outcome; for example, an assessment activity may show a student’s knowledge, problem-solving and evaluation skills.

Taking students from Assessment to Success…. A daily Numeracy Block

- Quiet Time
- Numeracy Warm-up
- Daily Data Question
- Whole Class Teaching/Learning
- Group/Pair Investigations
- Whole Class Reflection/Review
Variety in a PATTERNS & ALGEBRA UNIT: -
in whole group activities

- Care
- Control
- Clarify
- Challenge
- Captivate
- Confer &
- Consolidate
Patterns & Algebra Unit – Variety in pair work activities & resources
Patterns & Algebra Unit –
Variety in individual work activities
Patterns activities integrated across KLAs
Allowing for multiple opportunities to “Work Mathematically”


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Daily Data Question
We found out that Berenstain Bears have the least and Corduroy has the most votes Sophie.

We found out that Bear and Chook just needed one more vote to catch up to Paddington Jonathan.

We found out that The Berenstain Bears have less votes than all the others Sophia.

We found out that Paddington needed 3 more votes to tie with Corduroy Alexis.

Our Favourite Bear

We found out that Corduroy has more votes than the others Heidi.

We found out that Thank you bear and Winnie the Pooh too Rachel.
Daily Data Question

Grace has 4 robots and Lara has 9. Sophia: "Lara has the most and Grace has the least." Heads: If Grace had 8 robots, she would have the same amount as Lara. Sophia: If Lara had 8 robots, we could haveGrace would have all of them and Lara would have none." Eliza: "Lara has the greatest amount and Grace has the least." 

Sophia has 3 and Breanna has 6. Breanna has the most and Sophia has the least. Chloe: Sophia has 3 less and Breanna has 3 more. Lara: If Breanna gave her cards away to Sophia, she would have 5. Jonathan: Sophia has fewer, and Breanna has greater.

Simon has 10 robots and Benjamin has 1. Lara: Simon has the greater, and Benjamin has the least. Eliza: If Benjamin gave his robots to Simon, he would have 11. Lachlan: If Simon and Benjamin swapped cards, Benjamin would have the most and Simon the least. Jonathan: Simon has fewer, and Benjamin has greater.

Jonathan has 7 robots and Joshua has 5. Eliza: Jonathan has more, and Joshua has less. Asha: If Joshua had 2 more, he would have the same as Jonathan. Alice: Jonathan has the greater number of robots and Joshua has the least amount. Madeline: Joshua has fewer. Benjamin: Joshua has the least, and Jonathan has the most.

Mrs Longfield - Kindergarten - May, 2016
References

- “Improving Student Achievement – A Practical Guide to Assessment for Learning” by Toni Glasson
- “Using Data to Improve Learning – A practical guide to busy teachers” by Anthony Shaddock
- “Building Numeracy – Moving from Diagnosis to Intervention” by George Booker
- “Explicit Direct Instruction” by Sylvia Ybarra & John Hollingsworth
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“To teach effectively a teacher must develop a feeling for his subject; he cannot make his students sense its vitality if he does not sense it himself. He cannot share his enthusiasm when he has no enthusiasm to share. How he makes his point may be as important as the point he makes; he must personally feel it to be important.”

George Polya