Precision Teaching
Developing a model for implementation in Angus

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Angus EPS
Background

- Callum Urquart, EP, Western Isles had successfully implemented PT and shared information/resources
- Pilot project in Angus Primary – literacy (2013)
- Scale Up across Angus schools (2014 onwards)
  - EPs trained
  - Guidance developed for schools (readiness)
- Summary of Implementation (2016)
- Action Enquiry on numeracy (2017)
What is Precision Teaching

- Not teaching!
- A technique that helps to evidence the effectiveness of different types of teaching.
- It can be applied to any curricular area or skill.
- It is a simple and economical process to implement.
Precision teaching

Daily routine

Teach
Probe
Record & Praise
<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>these</td>
<td>what</td>
<td>their</td>
<td>where</td>
<td>what</td>
<td>5</td>
</tr>
<tr>
<td>their</td>
<td>these</td>
<td>where</td>
<td>these</td>
<td>where</td>
<td>10</td>
</tr>
<tr>
<td>what</td>
<td>their</td>
<td>these</td>
<td>where</td>
<td>what</td>
<td>15</td>
</tr>
<tr>
<td>their</td>
<td>where</td>
<td>their</td>
<td>what</td>
<td>these</td>
<td>20</td>
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<tr>
<td>these</td>
<td>their</td>
<td>what</td>
<td>where</td>
<td>their</td>
<td>25</td>
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<tr>
<td>what</td>
<td>where</td>
<td>these</td>
<td>what</td>
<td>their</td>
<td>30</td>
</tr>
<tr>
<td>where</td>
<td>their</td>
<td>what</td>
<td>these</td>
<td>where</td>
<td>35</td>
</tr>
<tr>
<td>what</td>
<td>where</td>
<td>their</td>
<td>these</td>
<td>what</td>
<td>40</td>
</tr>
</tbody>
</table>
Name: **Callum**
Learning Target: **these, what, their, where**

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Session 1</th>
<th>Session 2</th>
<th>Session 3</th>
<th>Session 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number correct in 1 minute</td>
<td>12</td>
<td>15</td>
<td>18</td>
<td>24</td>
<td>24</td>
</tr>
</tbody>
</table>

**Teaching Activities**
- Talking it over
- Phonics work
- Tracing
- Writing sentences
- Playing snap

**What works best**
- Playing snap
- Writing sentences
Callum – Run Chart

Callum – these, what, their where
Overview of Precision Teaching Process –
For additional information or any questions please contact
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Locating Precision Teaching in the literature

- Developed originally by Ogden Lindsley (1971, 1972).
  - To support teachers to monitor the effectiveness of their interventions.
  - To allow different types of skill to be compared meaningfully (Standard Celeration Chart)
Locating Precision Teaching in the literature

Has demonstrated effectiveness in
- Literacy development (i.e. White 1986)
- Mathematical development (i.e. Gallagher, 2006)
- Behavioural Interventions (Kubina et al, 2002)

Although prominent in America, PT has been shown to be effective by Educational Psychologists in the UK, i.e.:
- Maths (Chiesa & Robertson, 2000)
- Sight recognition of words (Downer 2007; Sundhu and Kittles 2016)
Why Precision Teaching in Angus?

- A strong evidence-base in the literature
- Reduced budgets
- Time pressure
- A focus on techniques that can be used in a variety of settings by a variety of staff
- Relatively easy to evaluate within and across settings.
- In line with EYC/RAFA principles, aims and methodology
Tier 1: Universal Level
~ 80% of Students

Tier 2: Targeted Level
~ 15% of Students

Tier 3: Intensive Level
~ 5% of Students
Psychological influences on progress and attainment.

- Vygotsky - Zone of Proximal Development
- Haring and Eaton’s - Hierarchy of Learning
- Bandura – Self-efficacy
Zone of Proximal Development

Skills too difficult for a child to master on his/her own, but that can be done with guidance and encouragement from a knowledgeable person.

What is Known

What is not Known

Learning
## Hierarchy of Learning

### The Learning Hierarchy (Haring & Easton, 1978)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Emphasis</th>
<th>Teaching Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquisition</td>
<td>Pupil performs skills with accuracy.</td>
<td>1. Demonstration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Modelling</td>
</tr>
<tr>
<td>Fluency</td>
<td>Pupil performs with both accuracy and fluency.</td>
<td>3. Cues and prompts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Routines and drills.</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Proficiency level reached and maintained in accuracy and fluency.</td>
<td>1. Repeated novel drills</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Reinforcement.</td>
</tr>
<tr>
<td>Generalisation</td>
<td>With instruction, pupil applies skill with novel materials or under different conditions.</td>
<td>Adequate opportunities for skill use.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adaptation</td>
<td>Without specific instruction pupil applies skills with novel material or under different conditions.</td>
<td>1. Discrimination training</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Differentiation training.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Problem-solving</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Simulation exercises.</td>
</tr>
</tbody>
</table>
Self-efficacy

Performance Accomplishments (i.e., past experience)

Vicarious Experience (i.e., modelling by others)

Social Persuasion (i.e., coaching and evaluative feedback)

Physiological and Emotional States

Sources of Self-efficacy Information
Identifying those who would benefit from Precision Teaching

- Children who seem able enough to complete the task but are reluctant to try (low self-efficacy).
- Children who appear to know something one day but not the next (stuck on accuracy – need fluency).
- Children who appear to know something in one area but not in another (stuck on maintenance – need to generalise).
- Children who are very slow in the production of work (stuck on accuracy – need fluency).
- Children who ‘don’t have the basics’ or have gaps in learning
Hayshead PS Pilot project 2013

- ASN staff and SMT trained
- Sample group identified (6 pupils) for test of change – word reading
- ASN staff gathered data on individual pupils (range of ages, interventions)
- Precision teaching implemented over a term (Jan-Apr)
Graph of Data

- Red = PT Group
- Blue = Control Group

- Child A
- Child B
- Child C
- Child D
- Child E
- Child F

Word Reading

Percentile

Dec 2013

May 2014
### Hayshead Pupils – One Year On

<table>
<thead>
<tr>
<th>Pupil</th>
<th>DEC 13</th>
<th>MAY 14</th>
<th>MAY 15</th>
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<tbody>
<tr>
<td>A</td>
<td>BASELINE 5</td>
<td>AFTER 1 TERM PT</td>
<td>NO FURTHER INPUT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>13</td>
<td>5</td>
</tr>
<tr>
<td>B</td>
<td>BASELINE 2</td>
<td>AFTER 1 TERM PT</td>
<td>AFTER 3 TERMS PT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>13</td>
<td>21</td>
</tr>
<tr>
<td>C</td>
<td>BASELINE 8</td>
<td>AFTER 1 TERM PT</td>
<td>NO FURTHER INPUT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td>D</td>
<td>BASELINE 9</td>
<td>NO INPUT</td>
<td>AFTER 2 TERMS PT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>E</td>
<td>BASELINE 4</td>
<td>NO INPUT</td>
<td>LEFT HAYSHEAD PS</td>
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<tr>
<td></td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>BASELINE 6</td>
<td>NO INPUT</td>
<td>AFTER 3 TERMS PT</td>
</tr>
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<td></td>
<td></td>
<td>5</td>
<td>19</td>
</tr>
</tbody>
</table>
Qualitative feedback - Staff

The chart makes me focus on my teaching. It is easy to see when things are working!

Because you work with the child on a specific task each day it becomes clear what it is that is holding them back.

Children who were really struggling can now read and spell age-appropriate words for P3.

The biggest change is in her confidence...she is now willing to have a go in class.
Qualitative feedback - Pupils

I liked being timed to see if I can beat my last score

It helped me remember my clock

I can read books on my own now

It gets you to be good at your words and you get nice stickers if you are good at it
Scale Up

- Two EPs trained staff in a second primary school
- Local resources developed
- EPs trained – paired with experienced EPs (Coastal/Landward)
- Cluster EPs now co-ordinate training and ongoing support
An overview of shared resources

- Training session 1 (Presentation, Workbook, Guide to Precision Teaching)
- Training Session 2 (Presentation, Workbook, Fidelity Monitoring sheet)
- Probes (johnandgwyn.co.uk)
- Run charts (richard@scoville.net)
- Paper-based recording
Implementation in a School

- Commitment from SMT in school
- Implementer Training
  Session 1- Theory and Practice
  Session 2- Using data, sharing good practice and issues
- Class Teacher Twilight
- On-going support from EP
- Refreshers and on-going training in schools
PDSA Model

“Did it work?”
- Analyze data
- Compare to predictions
- Summarize

“Let’s try it!”
- Carry out plan
- Document problems
- Spot new ideas

“Plan”
- Objective
- Questions & predictions
- Plan to carry out: Who? When? How? Where?

“What will happen if we try something different?”

“What’s next?”
- Ready to implement?
- Next cycle
PDSA Model

- For PT it is recommended that PT implementers;
  - **Plan** – consult with class teachers to identify pupils who would benefit from Precision Teaching.
  - **Do** – deliver regular PT sessions throughout the week (at least three times a week) over a period of time. Use a range of teaching strategies and encourage the pupil to verbalise their own learning strategies. Test at the end of each session using a probe. Help pupils to record their scores graphically on a run chart to see progress. Praise and encourage the child.
  - **Study** – gather data on progress by comparing pupil performance with baseline measures on set tasks. Discuss what strategies benefitted the pupil and record teaching approaches used.
  - **Act** – build on successful strategies for the individual learner. Share progress with other staff and parents as appropriate. Reflect with colleagues about findings and next steps.
Summary of Implementation 2016

What areas of the curriculum have you implemented Precision Teaching in? Please tick all that apply.

- Literacy - initial sounds/blends
- Literacy - first 100 common words
- Literacy - first 200 common words
- Numeracy - numerical identification/number bonds
- Numeracy - addition/subtraction/multiplication
- Time
- Science
- Other (please specify)
Action Enquiry 2017

Over two terms of implementation of a clearly defined model of Precision Teaching:

- Will participating children demonstrate increased self-belief and attainment in numeracy, and a more positive attitude to maths?
- Will implementers, parents and class teachers be more confident to support children to develop numeracy skills as a result of Precision Teaching methodology?
- Can this model of Precision Teaching be used to inform a future scale up of numeracy development in Angus schools?
Results

- Quantitative data inconclusive (for a number of reasons)

- Qualitative data
  - Classroom assistants developed confidence in numeracy implementation
  - Teachers noted that the pupils were more secure in basic numeracy concepts, demonstrated increases in confidence (in curricular and social areas) and more willingness to self challenge
  - Limited involvement from parents, despite opportunities
Next Steps

- Add examples of numeracy to Angus Guide for Implementation and clarify readiness criteria
- Classroom assistants to join training sessions to share good practice/ support training
- Consider parental involvement
- Bank of resources (example probes, websites for maths games etc) to be made available for sharing
- Focus on schools who are implementing well
Further information

Questions?

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