Measures

Day One:
Length, Area, Weight

Advisor Name:
Venue:
Date

www.pdst.ie/measures
Overview of Workshops

Day 1
- Instructional Framework
- Skills through Content
- Learning Trajectories
- Hands-on Activities
- Cross-curricular Links

Day 2
- Capacity
- Money
- Time
- Instructional Framework
- Learning Trajectories
- Cross-curricular Links
- Hands-on Activities
- Assessment
Through engagement with the workshop you will

• Enhance your background knowledge, identify pupil misconceptions and developmental stages of measurement

• Explore a variety of child-centered teaching and learning approaches

• Experience opportunities for developing genuine cross-curricular integration
The concepts developed in the Measures Strand of the Curriculum are an intricate part of human life. Parents can play a fundamental role in supporting development of their child’s measurement concepts.

1. Promote an ‘ask-before-telling’ approach
   What have you tried so far? What is the problem about?
   Is there more than one answer? Does your answer make sense?
   What do you wonder? (De Waal, 2007)

2. National Council for Curriculum Assessment Resources- Tip Sheets (high emphasis on Measures) & Videos Archive

3. National Adult Literacy Agency ‘Help my Kid Learn’ Site
Home-School Links for Measurement

Measures at Home

- Time
  - Journeys
    - Family Calendar for events
  - Receipt Investigation
    - Pocket Money
- Money
  - Help with shopping
- Capacity
  - Bathtime
  - Filling the shopping bags
- Length
  - Height Chart
- Area
  - Wrapping Presents
- Weight
  - Help with cooking
  - Dressing the bed
  - Sweeping the floor
Key Messages

By constructing ideas and communicating them to others, pupils develop mathematical concepts.

Mathematical thinking is developed by eliciting, supporting and extending children’s mathematical ideas.

A variety of learning experiences enhances the understanding of mathematical concepts/skills and allows for differing abilities and learning styles.
Developing Mathematical Skills

- Applying & Problem-Solving
- Communicating & Expressing
- Integrating & Connecting
- Reasoning
- Implementing
- Understanding & Recalling

Booklet pg. 2 & 3

(PSMC:1999: 68)
Poor Performance In Measures

“..... Likely a function of how the subject is taught – too much reliance on pictures and worksheets rather than hands-on experiences and a focus on skills......

(Van de Walle, 2013)
Background Knowledge & Pupil Misconceptions

To be aware of

Science & Weight

Differentiation

Suggested teacher language

Consolidation Activities

ICT

Mathematics

Assessment

Glossary
Dublin Zoo has just received two new sheep for the family farm. The zoo keeper wants to build an enclosure for the sheep. She decides that the enclosure must have an area of 60 square metres. Could you design an enclosure for the sheep?
Supporting & Developing Mathematical Thinking

**Eliciting**

- Child centred
- Language Based

**Supporting**

- Strategy Sharing
- Revoicing
- Teacher as facilitator of the knowledge, not the sole validator
- Values many contributions

**Extending**

- Develops higher-order thinking
- Opportunities for assessment and self-reflection

Booklet pg.5
Concrete – Pictorial - Abstract

Concrete

Pictorial

Abstract

Differentiation

Learning Trajectory
Learning Trajectory & Development of Measurement Concepts

Stage 1: Pre-measuring Stage
- Comparison of unequal and equal objects
- Ordering of objects
- Equivalence of objects
- Conservation Experiences

Stage 2: Non-standard Units
- Use of non-standard units

Stage 3: Standard Units
- Use of standard Units
Background Knowledge and Pupil Misconceptions for Length

- Conservation of length
- Benchmarks
- Using a ruler effectively
- The bit left over
- Real life maths terminology
- Developmental stages
- Decametre, hectometre and Kilometre
Background Knowledge and Pupil Misconceptions for Area

- Conservation of area
- Area versus perimeter – don’t teach together
- Fields and fences
- Over-reliance on formulas

The formula ‘area = length x width’ only applies to rectangles and is considered incorrect or ‘sloppy and wrong’!

(Haylock, 2014:348)
Background Knowledge and Pupil Misconceptions for Weight

• Definition of weight
• Conservation of Weight
• Variety of Scales
• Estimation and Developing Benchmarks
• Dominant Hand and Helper Hand
Meaningful Integration - Measures

Level A.1

Using Stories, *Who Sank the Boat* – consider integration

What opportunities do you see for meaningful integration?
Measures Activities

**Length**
- A. Trains
- B. Any Three Items
- C. Length Scavenger Hunt
- D. Perimeter Construction

**Area**
- A. Wallpaper
- B. Gummy Worms
- C. Geoboard Investigation
- D. Surface Area of Cuboid
- D. Area of a Rectangle

**Weight**
- A. Mystery Parcels
- B. Bungee
- C. Investigating Food Packaging
- D. Weight Cards
- B. Mostly Postie

Follow up Integration Activity
Booklet pg. 6
Integration Activity

Choose a task from the carousel

Consider the opportunities for integration with other areas of the curriculum

Record and share your ideas on the concept map in your booklet.

Booklet pg. 6
Task for Day 2

Try the instructional framework with your class. Perhaps one of the tasks you tried today could be used?

What questions will you use to advance pupils’ mathematical thinking?

Please bring booklet to Workshop 2

Booklet pg. 4
Focus for Day 2

Sharing of Classroom Experience → Capacity → Time → Money → Assessment Opportunities

*Please bring booklet to Workshop 2*
Further Questions

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