Shape and Space

Day Two:
2-D shape, Symmetry, Co-ordinates
Overview

Day One: Shape and Space
- Instructional framework
- PDST manual
- CPA approach
- Spatial Awareness
- 3-D Shapes
- Lines and Angles
- Reasoning

Day Two: Shape and Space
- 2-D Shape
- Symmetry
- Co-ordinates
- Assessment
Workshop 2 Objectives

- to promote a child-centered approach to the teaching and learning of 2-D shapes, Symmetry and Co-ordinates

- to support teachers in exploring a range of assessment opportunities for shape and space
Key Messages

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

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

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

Every square is a rectangle

Every rectangle is a square
Developing Mathematical Skills

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

(PSMC:1999: 68)
Shape and Space Trajectory

Developmental

Based on PSC

Concrete Pictorial Abstract

Spatial Awareness
3-D Shapes
2-D Shapes
Lines and Angles
Symmetry

4 levels

p.19
Suggested teacher language

To be aware of

Geog. Shape Space

Differentiation

Shape & Space: Teacher’s Handbook
A GUIDE TO TEACHING & LEARNING IN IRISH PRIMARY SCHOOLS

www.pdst.ie

Primary Resource Handbook

Assessment Pack

ICT

Consolidation Activities
Instructional Framework for supporting and developing mathematical thinking

- Child-centred
- Language-based
- Strategy-sharing
- Pupil self-reflection
- Extending
- Eliciting
- Supporting
- Teacher as Facilitator
- Higher-order skills
- Revoicing
- Teacher not sole validator of mathematical knowledge
Introduction to Carousel Activities

- Sorting Regular and Irregular 2D shapes, using Sorting Diagrams
- Lollipop Stick Shapes Level A.3: pg 48)
- Co-Ordinate Challenge, (Level D8, pg: 161-163)
- Explore, describe Compare and Classify the properties of 2-D shapes (MDL),(Level C2, pg: 101, 110).
- Exploring Line Symmetry using Pegboards
Sorting 2-D Shapes

• Sorting Activity p.41

Take time to look through the sorting activities from page 41 to 43.

• Carroll & Venn Diagram p.43

progression in sorting

Level A:3
Instructional Framework Task

- Lollipop Stick Shapes p.48 - Level A.3
- Teacher elicits a variety of responses from the pupils in their approaches to this task
- Differentiation opportunities
- Low threshold – high ceiling task
- Concrete, pictorial abstract
Level C2: Explore, Describe, Compare and Classify the Properties of 2-D Shapes
Level B: 6 C.6: D: 4 Identify, draw and recognise line symmetry in the environment and in shapes

- Pattern Block Symmetry (p.121)
- Pegboard Games (p.123)
Level D.8: Plot Simple Co-ordinates and apply where appropriate

Chairs Co-ordinates (p.161)

Who is sitting in first row, third seat?
Name the co-ordinates of John’s seat.
Name the co-ordinates of someone with blonde hair.
Add another row and another column – how many new questions can you generate?

Co-ordinate Challenge (p.162)
Shape & Space Activities

p. 118-123

p. 161-163

p. 42-45

p. 98, 101, 108
The Role of Assessment in Monitoring at Classroom Level

Assessment in the Primary School Curriculum: Guidelines for Schools (2007)

Child leads the assessment

- concept mapping
- questioning
- teacher observation
- teacher-designed tasks and tests
- standardised testing

Teacher leads the assessment

- portfolio assessment
- conferencing
- self-assessment
Concept Maps
Concept Maps

2D figures

Shapes with curves
- Only curved
  - Inside and outside curves
  - Only outside curves

- Curved and straight sides

Shapes with only straight sides
- Three-sided shapes
- Four-sided shapes
- Five-sided shapes
- Six-sided shapes
  - Two sides parallel
    - Two pairs of parallel sides
      - Angles not all equal
      - All angles equal
The Purpose of Journal Writing

- to provide a vehicle for writing about thinking as a way of learning
- to provide a record of students’ thinking
- identify challenges students are facing in their learning which may help direct future instruction
- to increase student’s awareness of how they learn and remember
- to provide a context for recalling previous learning and summarising present learning
Using Journals in Mathematics

- open-ended questions
- talk and discussion N.B prior to writing
- writing should be in pupils’ own words but incorporate appropriate maths vocabulary
- pupils need to know their audience
- allow for a variation of responses
- writing prompts
- model the process
- feedback from the teacher.
Assessment Activity

Using the activity at your station, decide on an assessment approach which would

• inform teaching and learning

• give your pupils an opportunity to reflect on their learning in shape and space
Reflection

How will your experiences from this workshop impact on your teaching of Shape and Space?

• In relation to assessment
• In the development of pupils’ higher order skills