

Lesson Plan for Teaching

Shape: 2D & 3D

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Lesson Summary:

The children will confidently recognise and name common three-dimensional objects, from experiencing and creating common three-dimensional objects made out of newspaper rods (<http://www.maths300.esa.edu.au/index.php/component/article/34-lesson/239->). Lesson begins with prior knowledge and engagement activities, reading a picture book and evoking discussion. Student's knowledge about 2D shapes is actively tested through student engagement in using their own bodies to make shapes (squares, triangles and circles). Students also engage in another activity in terms of 3D objects, consisting of passing around familiar 3D objects (balls and boxes). Students also see examples of other 3D objects on the board before creating their own 3D objects out of newspaper from rolling sheets into rods and connecting them together, from making the faces of 2D shapes to create the 3D objects (cubes, pyramids etc).

Mathematical Focus: Introductory lesson: Assessing prior knowledge on shape, and developing an understanding to recognise and name common three-dimensional objects.	
VELS Curriculum Content Description: Recognise and name common three-dimensional objects.	Year Level(s): 2/3/4

Background to the Learning (children's current knowledge):

Students have some knowledge from previous years as it has been noted in previous testing (mathematics online testing on demand).

To assess this knowledge I will include activities, such as using talking partners, class discussion, followed by a quick brain storming session on the board.

Learning Objective (an expansion of your mathematical focus):

The learning objective within this lesson is for the students to develop an understanding of 2D and 3D objects through experiencing their properties by creating the shapes physically with their bodies and making the 3D objects with rolls of newspaper. These experiences will engage the students learning in their own discovery of the major ideas and concepts behind the two areas.

This lesson does not attempt to produce a specific procedure for the students, but for them to immerse themselves into a rich experience of developing their own ideas about the creation of the shapes.

By the end of the lesson the students will be able to recognise and identify 2 and 3D objects, including naming their attributes; for example the number of sides, angles and faces.

Resources required:

Teacher:

Google images

Maths 300 website:

<http://www.maths300.esa.edu.au/index.php/component/article/34-lesson/239->

Williams, G. (1999). *Rigby maths 2 for Victoria*. Australia: Australian Print Group.

Williams, G. (1999). *Rigby maths 3 for Victoria*. Australia: Australian Print Group.

Reys, R., Lindquist, M., Lambdin, D., and Smith, N. (2009). *Helping Children Learn Mathematics*. United States of America: John Wiley & Sons, Inc.

Students:

Picture book:

Reflective task mid map components: Coloured paper

Creation of 3D shapes: Newspaper (Broadsheet, tabloid sheets), sticky tape, scissors, and markers.

Visual aids: Pictures of shapes and objects, provided when discussing and when creating.

Lesson Description

Introduction (Whole) 20mins

- Teacher begins lesson with classroom learnt strategy to gain whole class attention.
- Teacher reads picture book on shape “Windows, rings and grapes- a look at different shapes”.
- After the book is read the teacher asks the students what they know about the topic of shape.
- Students are given two minutes to discuss what they know about shape and that they will be called upon afterwards to share this with the group (Reys et al; 2009 p333).
- Teacher calls upon individual students to share what they know about shape. “Do you know what shape is? What are certain shapes called? What is different about each shape? What do they look like?” While students are explaining, teacher will scribe in the form of a mind map (graphical organiser).
- Link current knowledge to other focus questions.
- Students are then asked to stand up and together make certain shapes with their bodies, and they are told that they can do this as their bodies can be the straight or

curved lines within different shapes. Students are given “take up” time to discover what each shape must look like. For example, students are then asked to create these shapes. Can you make a square? Can you make a triangle? Can you make a circle? What about a rectangle?

(<http://www.maths300.esa.edu.au/index.php/component/article/34-lesson/239->).

- Students are then asked if they can make a cube/box with your bodies. (Question attempts to prompt children to think about the differences between two dimensional and three dimensional properties, e.g. properties-faces). Prompting may need to occur if students have no prior knowledge in regards to 3D shapes.
- If students cannot explain 3D objects, some pictures will be provided, students will be prompted if they know what certain shapes are (identify, describing faces/angles).
- Children will pass around 3D objects such as balls, boxes and other materials so that they can link this knowledge to the task of creating their own shapes with the newspapers. This activity is solely for the students to become familiar with these materials so that they can link their prior knowledge with these sorts of objects to future learning (Reys et al, 2009 p334).
- Students will then be given instructions on what the major activity will entail. “Today we will be working on solving problems about shapes, specifically three dimensional shapes” (<http://www.maths300.esa.edu.au/index.php/component/article/34-lesson/239->).
- That they will be creating three dimensional objects with newspaper. They will do this by rolling up pages of newspaper and joining them together with tape to create rods.
- The creation of the rods will be modelled for the students before they create their own.
- Creating the rods is simply rolling up two or three broadsheets of newspaper (possibly folded to create thickness) and held together with one or two pieces of tape. This will create a tube of 2-3cms diameter.
- The modelling will only consist of the creating of the rods because the students need to figure out how to create the 3D objects by themselves (discovery learning) (<http://www.maths300.esa.edu.au/index.php/component/article/34-lesson/239->).

Independent Learning (Part) 20 mins

- Students will be split up into three groups (as the class size is small), grouping will not depend on grade levels or ability- all groups will have differing ability levels as this will help the ones who need more support and help.
- All groups will be assigned to a designated area of the room with the appropriate materials needed to complete the task.
- The teacher will walk around the room when the students are attempting the constructions of each shape- they will be firstly be given free range to see if they can complete one shape on their own without prompting.
- Students will firstly make the shapes they know; 2D shapes from the rods, to create the faces and they will discover for themselves that they need to connect other rods to create the 3D object (if not they may need prompting).

- Teacher will prompt each group when needing extra scaffolding, such as asking questions, how did you know to use this shape? Will you use this shape again when creating the other faces of the 3D objects? Can you create any more shapes using the same strategies? (E.g. same shape for each face for other shapes).
- Students may be asked to focus on particular groups and the methods and strategies that they are using to show different ways of completing the task. E.g. Everyone have a look ats group and how they did this...
- Students are also told that when they are finished that there are tasks that they need to name each object using their previous knowledge of 2D shapes.

Plenary / Conclusion (Whole) 10mins

- Students will be brought back to the main discussion area of the classroom, for the conclusion.
- Students will be asked individually about how their group created different shapes with the news paper rods (relating to properties and 2D knowledge, a prompt on the board if needed).
- Other questions will be asked to prompt explanations, such as how did you and your group come to conclusions about which shape is which? How did you and your group create the shapes? Did you use your knowledge from 2D shapes to construct the three dimensional shapes?
- Turn to the person next to you and have a quick discussion about the different strategies to construct the different shapes, and anything that you learnt to day that helped your knowledge about recognising and naming different shapes according to their attributes (faces, angles).
- Students will then be asked to come back to the group and share these, they will then be asked to write these down on a piece of coloured paper to create a graphical organiser to refer back to. (Photo's will also be taken to aid this organiser for a wall display).
- Teacher will provide feedback to each group on their efforts and pick up on any errors and redirect them to other students to show what it could have looked like if they did it a different way.
- Students reflect and lesson is concluded. (Being left open for more analytical recordings and evaluations of shapes for another lesson).