

National Literacy and Numeracy Week 2009

Project Report Project title: "Mathematics Around Us"

Project description: We held a Maths Fun Day focusing on the strands of Measurement and Space & Geometry, utilising our school environment as the major resource. Students were grouped within their stage to rotate around through a number of hands-on activities. Part of the day was also spent focusing on the impact of Mathematics in Visual Arts. The teaching and learning experiences implemented are detailed in the resource booklet attached. The day was a whole school event supported by the ESL and STLA teachers. The Head Teacher Mathematics from our local high school was also involved. Parents were encouraged to participate during the day, assisting with the running of some group activities. To develop parent's skills and confidence, we conducted a parent information and training session prior to the "Maths Fun Day".

Person responsible for project: Mrs Rachel Essex

School, region, diocese: Nuwarra Public School, East Hills

Contact person's email: Rachel.Essex@det.nsw.edu.au

Number of students, teachers, parents, other community members directly involved:

All students K-6 (280)

All staff K-6 (20)

Parents (4)

Intended literacy and/or numeracy outcomes:

Mathematics syllabus outcomes ES1 – S3:

Measurement .1 through to .5

Space & Geometry .1 through to .5

Evidence of achievement of intended literacy and/or numeracy outcomes:

Parents who were involved in the information session expressed that they had found the morning worthwhile and that they had extended their knowledge and understanding of how Mathematics is taught, as well as how they can assist their child at home.



During the day, students displayed a very high level of engagement and participation in the learning experiences planned. Students applied their mathematical knowledge to the practical tasks in our school environment.



A variety of interesting activities were collaboratively planned for the day.

Students produced a range of high quality work samples integrating Maths and Visual Arts. These have been displayed in our school foyer.

Other information:

Most of the activities planned have been included in the attached ideas booklet, which staff will be able

to use as a resource in the future.



Feedback about making grants available for such projects: The grant enabled us to hold a “Maths Fun Day” which was both enjoyable and educational. A very worthwhile experience which was appreciated by the students and the parents involved.

See materials below:

Nuwarra Public School
Maths Fun Day - September 2009
“Mathematics around Us”

Ideas and Activities

Early Stage 1

- Students will estimate the number of footsteps from the classroom door to different locations eg. girls’ toilet, library etc. Check the estimates by stepping. Discuss if everyone has the same number of steps.

- Measuring tree girths. Explain the meaning of “girth”. Identify the smallest tree, a medium sized tree and largest tree in the playground to measure. Ask students to estimate the girth of each tree. Measure each tree using toilet paper. Count the sheets and then record the measurements. Discuss the findings with the students asking them to self-assess their estimates.

- String Block Printing.

1. Wrap string around wood block several times and tie into place.

2. Press block into shallow paint tray.

3. Press block onto paper.

4. Decide whether prints will be horizontal, vertical, diagonal or a mix of line directions.

5. Question and discuss with students: Did your lines overlap to make any 2D shapes? Which prints do you like and why? What could your print design be used for?

- Students will be organised into teams of 4 or 5 students. Each team will have a bucket of water, a measuring cup and an empty bucket. Each team member will take it in turns to fill their measuring cup with water then run to the other end of the COLA and tip it into the empty bucket. The first team to fill their bucket to the designated capacity (1 litre / 3 litres etc) wins.

Stage 1

- Finding 2D or 3D shapes in the environment. That is walking around the school looking for shapes and identifying them. This will be followed up with a visual arts activity of creating of a shape collage.

- Length of feet. Working in pairs, students will trace around one foot and then cut out. They will compare length of feet with their partner, then feet will be compared as a whole group discussing shortest, longest or the same. Students will then be asked to find something in the environment that is the same length as their foot. Depending on time this may be extended to finding something

longer or shorter also.

- Symmetrical shapes.

1. Discuss symmetrical shapes, lines of symmetry etc.
2. Paint one A3 paper, $\frac{1}{2}$ red, $\frac{1}{2}$ blue or $\frac{1}{2}$ yellow.
3. Fold the piece of coloured paper in half and draw / rule a pattern.
4. Cut along pattern lines while still folded to create a reflected pattern.
5. Glue design onto painted A3 paper.

- Length of spaghetti. Estimate the length of the contents of a packet of thick, uncooked spaghetti if it is placed end to end.

- Tessellation of various shapes (using different coloured papers) onto art paper with an outside border (which has been painted previously).

- How many children fit into a square metre?

- Estimate the weight of various objects found within the environment, eg. brick, stone, stick, witches hat. Place the item in ascending order from lightest to heaviest.

- Creating pictures using 2D shapes. Pattern mosaics.

- Measuring tree girths. Discuss the meanings of girth, measurement, etc. Estimate the circumference of the smallest tree, medium sized tree and the largest tree. Measure the girth of each tree. Record the results and discuss any differences. This will be followed by a string art visual arts activity.

Stage 2

- Measure the circumference of the water tanks and various trees in the playground.

- How many children can fit into a square metre?

- Measure the length of a packet of spaghetti end to end.

- Estimate and measure the weight of a bucket of mulch, leaves, sugarcane mulch.

- Who can make the longest length by tearing a small brex square?

A mintie wrapper?

- Estimate and then time students running a lap of the oval, end to end of oval and a lap of the school.

- Sketch and shade 3D shapes.

- Constructing tangrams on the Interactive Whiteboard.

Stage 3

- Measure and compare the circumference of various trees in the playground. These results could be represented as a graph afterwards. Discuss if the widest trees were also the tallest trees.

Are the widest trees all of the same species?

- Capacity. Containers of the same size filled with things from the garden, eg. mulch, dirt, sand, sugar mulch, etc. Students are to

order them from heaviest to lightest by sight only. The next step is to order the containers by hefting. The final step is to weigh each container and order them based on their actual weight. Discuss the results. Were our estimates correct? Convert the weights from grams to kilograms and vice versa. Discuss the relationship between weight and volume.

- Perimeter / Area. Students will measure the perimeter of a shape marked out with witches hats on the oval using trundle wheels. They will then also determine the area of that same shape. Discuss the results as a whole group after each measurement task.
- Connecting triangles/circles. Colouring with oil pastels.
- Designing a Fun Run course. Students will work in a group of 3, with the aim to design a fun run course that covers a distance of 0.5km on the school grounds. The start line and finish line should be at the same point. This will require some estimation of distance. One student will be the artist, one will be the measurer and the other will be the calculator. The artist should create a sketch of the area chosen for the fun run. The sketch should be a plan view and show all landmarks in the area. The measurer should begin to measure out the course using a trundle wheel, and lengths measured should be recorded on the sketch. The calculator's job is then to calculate the remaining distance and plan to complete the course back at the starting point. The course should be drawn at the scale of 1:100.
- How far does a bike tyre travel when its tyres go around once?
 1. Take a piece of string and stretch it around the circumference of a bike tyre. Cut where the string joins.
 2. Measure this length of string.
 3. Discuss, how far does the bike travel for one rotation of the tyre?
 4. Discuss, how many times the bike tyre will rotate while the bike travels one kilometre.
 5. Do all bike tyres have the same circumference?
- Can you find your reaction time?
 1. Obtain a metre stick and place a starting mark on it (at the 50cm mark).
 2. Ask a partner to hold it vertically while you place your thumb and forefinger on either side of the starting mark at the pencil's thickness from the stick (in preparation to catch it).
 3. When your partner releases it unannounced, catch it.
 4. Compute the distance it fell before you caught it.
 5. Repeat this experiment two more times and average your

three results.

6. Test your partner's reaction time in the same way.

7. Discuss the implications of certain reaction times.

- Create lines and patterns using compasses, protractors and rulers.

See attached sheet.