

*Suggested lesson plan. Review and modify according to your class.*

<b>Topic: Measure School Spaces (using Google Earth)</b>	
<b>Subject:</b> Math	<b>Date/Time:</b>
<b>Stage:</b>	<b>Allocated time:</b> 1 x 60 minute lesson
<b>Curriculum Links:</b> <ul style="list-style-type: none"><li>• Measurement and Geometry Life Skills, Mathematics K–10 Syllabus 457</li><li>• Measurement: Area</li></ul>	
<b>Outcomes:</b> <p>A student:</p> <ul style="list-style-type: none"><li>• Responds to and uses mathematical language to demonstrate understanding MALS-1WM</li><li>• Uses reasoning to recognise mathematical relationships MALS-3WM</li><li>• Applies formal units to estimate and calculate area MALS-29MG</li><li>• Related Stage 4/5 outcomes: MA4-13MG, MA5.1-8MG, MA5.2-11MG</li></ul>	
<b>Links to the PD/H/PE K-10 Syllabus:</b> <ul style="list-style-type: none"><li>• Numeracy</li><li>• PDHPE helps students to become confident, willing and able to apply mathematics in their lives in meaningful and constructive ways in relation to health and physical activity concepts.</li></ul>	
<b>Learning Intention:</b> <p>I can measure the school playground space and understand the importance of play space for my physical health and wellbeing.</p>	
<b>Success Criteria:</b> <ul style="list-style-type: none"><li>• I can estimate the total area of play space in our school.</li><li>• I know for schools, that the recommended play space per student is 25m<sup>2</sup>.</li><li>• I can follow the instructions provided and use google Earth to measure the total play space of our School.</li></ul>	

## Lesson Content:

### Prior Knowledge:

Students should have an understanding of estimation and perimeter. Students should also be able to measure using meters.

### Equipment:

- Computers and calculators
- Instructions for using google earth (See activity)
- Additional resource for documenting numerous play space areas

### Lesson:

#### Guided Learning

Discuss with students the importance around play space in a school playground. Pose the question how much space do you think a school should have per student? Allow discussion time between students. Inform students that the evidence that supports the recommendation of 25<sup>2</sup> of play space per student. Inform students that they will be measuring their own school playground using google earth.

#### Activity

Provide students with a handout of the below Instructions for measuring the playground area using google earth.

1. Students estimate the total square space of the school playground and record this in their books.
2. Go onto google earth website [www.earth.google.com](http://www.earth.google.com)
3. Enter in school address
4. On the left hand tab there is a ruler icon. Click this and it should be automatically set to metres. If it is not, then click the down arrow under distance and select metres.
5. Click on one corner of the playground space. From there, you can continue to click on all the corner points of the school yard and keep going around the playground until you reach the original starting point
6. In most cases you will have to do separate space measures (such as the school oval, tennis courts, netball courts etc.). If that is the case, document each measurement amount in a table and have the students add all the spaces together at the end (See additional resource).
7. Once you have reached the original starting point. It will then automatically calculate the total area and total distance.
8. Write down the total area answer
9. From here, divide the total area answer by the amount of students enrolled at the school
10. That result will give you the area of space per student.

#### Wrapping Up:

As a whole class, discuss what the results mean to the students. Does our school meet the recommended 25m<sup>2</sup> of space per student?

Pose the question: Do you think we have enough play space area in our school? Why/why not?  
How can we improve or best use the space at our school?

## Differentiation:

- Provide step by step guidance and modelling of google earth activity.
- Pair together students of varying levels together to provide peer support those students who need it.
- Calculators can be used to calculate total play space area.

### Additional resource:

Estimate of total school play space area =

Area per section:

*E.g. school oval*

*E.g. tennis courts*

Total school play space area =

Total school play space area divided by total number of students in school (play space area per student) =

How close or far where you from your estimate?

How close or far is the area of play space per student in comparison to the recommended 25m<sup>2</sup> of space per student?

# School Play Space... how much is enough?

## Background

Only a minority of Australian children meet recommended physical activity levels. With increasing student numbers, our schools need to ensure they maintain sufficient playground space to support physical activity and wellbeing.

## The study

The relationship between primary school playground size and children's physical activity levels was examined. Free play space was mapped within forty-three randomly selected NSW primary schools. The play space data was cross matched with physical activity data from the 2015 Schools Physical Activity and Nutrition Survey.

## Results



## Recommendations



Set a benchmark of 25m<sup>2</sup> free play space per student when planning and designing schools.



Ensure loose play equipment is available.



Undertake further research on real world variables such as school design, surrounding open space and population density.

## Reference:

1. Ecological study of playground space and physical activity among primary school children, 2020  
Anne Grunsell, Blythe O'Hara, Bradley Drayton, Vincent Laamhan, Louise L. Hardy, Eve Clark, Paul Klaremaat, Lina Engelen <https://anzpubs.health.com/content/10/5/034596>

## Northern Sydney Health Promotion Service

- www.nshealthpromotion.com.au
- 9388 5299
- NSLHD-HealthPromotion@health.nsw.gov.au



Health  
Northern Sydney  
Local Health District