DATTA Vic STEM Resources

Title: Creating a Playground

Year level: Junior School P-2

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Description: A project to design a playground specifically for a junior school

Timeline: Flexible, over 1 year

- Term 1 – Define the problem & research at school and local community level
- Term 2 – Design, model/prototype & experiment
- Term 3 - Collaborate; create student funding team to source funds
- Term 4 – Build

Resources Required:

- Materials to test (i.e. metal in heat for slide)
- Cardboard or balsa wood to design within classroom
- Materials in Maker Space to practice prototyping (popsicle sticks, etc.)
- Measuring Materials (Measuring tape, trundle wheel, etc.)
- Digital resources (iPads, 3D Printer)
- Experts (Builders, local council, Playgrounds Australia)
- Money (an understanding of budget & funding)

Teacher & Timetabling Approach:

- Within a traditional school, 2 hours per week
- Can be incorporated within Maths and Science blocks
- In a non-traditional school, 30 mins to 1 hour per day
- Part of a Learning Agreement – set up prevocation based on the project. i.e. Computers for Minecraft; Google *Sketchup*; Makerspace

Curriculum Benchmarking:

Design & Technology
Foundation – Level 2

1. ***Technology & Society*** - Identify how people create familiar designed solutions and consider sustainability to meet personal and local community needs
2. ***Technologies Contexts*** – Explore how technologies use forces to create movement in designed solutions
3. ***Materials & Technologies Specialisations*** – Explore the characteristics and properties of materials and components that are used to create designed solutions
4. ***Creating Designed Solutions: Investigating*** - Explore needs or opportunities for designing, and the technologies needed to realise designed solutions
5. ***Creating Designed Solutions: Generating*** – Visualise, generate and communicate design ideas through describing, drawing & Modelling

6. ***Creating Designed Solutions: Producing*** – Use materials, components, tools, equipment and techniques to produce designed solutions safely
7. ***Creating Designed Solutions: Evaluating*** – Use personal preferences to evaluate the success of design ideas, processes and solutions including their care for the environment
8. ***Creating Designed Solutions: Planning & Managing*** – Sequence steps for making designed solutions

Science
Foundation – Level 2

1. ***Science Understanding*** – People Use Science in their everyday lives
2. ***Chemical Sciences*** – Objects are made of materials that have observable properties
3. ***Chemical Sciences*** – Everyday materials can be physically changed or combined with other materials in a variety of ways for particular purposes
4. ***Earth & Space Science*** – Observable changes occur in the sky and landscape; daily and seasonal changes affect everyday life
5. ***Earth & Space Science*** – Earth's resources are used in a variety of ways
6. ***Physical Sciences*** – The way objects move depends on a variety of factors including their size and shape: a push or a pull affects how an object moves or changes shape
7. ***Physical Sciences*** – Light and sound are produced by a range of sources ad can be sensed
8. ***Science Inquiry Skills: Questioning & Predicting*** – Respond to and pose questions, and make predictions about familiar objects and events
9. ***Science Inquiry Skills: Planning and Conducting*** – Participate in guided investigations, including making observations using the senses, to explore and answer questions
10. ***Science Inquiry Skills: Recording and Processing*** – Use informal measurements in the collection and recording of observations
11. ***Science Inquiry Skills: Recording and Processing*** – Use a range of methods, including drawings and provided tables, to sort information
12. ***Science Inquiry Skills: Analysing and Evaluating*** – Compare observations and predictions with those of others
13. ***Science Inquiry Skills: Communicating*** – Represent and communicate observations and ideas about changes in objects and events in a variety of ways

Mathematics – Number and Algebra
Level 2

1. Investigate number sequences, initially those increasing and decreasing by twos, threes, fives and ten from any starting point, then moving to other sequences
2. Recognise, model, represent and order numbers to at least 100
3. Group, partition and rearrange collections up to 1000 in hundreds, tens and ones to facilitate more efficient counting
4. Explore the connection between addition and subtraction
5. Solve simple addition and subtraction problems using arrange of efficient mental and written strategies
6. Recognise and represent multiplication as repeated addition, groups and arrays

7. Recognise and represent division as grouping into equal sets and solve simple problems using these representations
8. Count and order small collections of Australian coins and notes according to their value
9. Recognise and interpret common uses of halves, quarters and eighths of shapes and collections
10. Solve problems by using number sentences for addition or subtraction

Mathematics – Measure and Geometry
Level 2

1. Compare and order several shapes and objects based on length, area, volume and capacity using appropriate uniform informal units
2. Compare masses of objects using balance scales
3. Use a calendar to identify the date and determine the number of days in each month
4. Describe and draw two-dimensional shapes with and without digital technologies
5. Describe the features of three-dimensional objects
6. Interpret simple maps of familiar locations and identify the relative positions of key features

Digital Technologies
Foundation – Level 2

1. *Digital Systems* - Identify and explore digital systems (hardware and software components) for a purpose
2. *Data and Information* – Recognise and explore patterns in data and represent data as pictures, symbols and diagrams
3. *Data and Information* – Collect, explore and sort data, and use digital systems to present data creatively
4. *Data and Information* – Independently and with others create and organise ideas and information using information systems, and share these with known people in safe online environments
5. *Creating Digital Solutions* – Follow, describe and represent a sequence of steps and decisions (algorithms) needed to solve simple problems
6. *Creating Digital Solutions* – Explore how people safely use common information systems to meet information, communication and recreation needs

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