**MATHEMATICS EARLY STAGE 1**

**TEACHING AND LEARNING OVERVIEW**

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| TERM:  | WEEK: 4 | STRAND: Measurement and Geometry | **SUB-STRAND: Volume and Capacity** | **WORKING MATHEMATICALLY:****MAe-1WM** |
| OUTCOMES: MAe-11MG | **Describes and compares the capacities of containers and the volumes of objects or substances using everyday language.** |
| **CONTENT:**  | **Use direct and indirect comparison to decide which holds more, and explain their reasoning using everyday language. (ACMMG006)*** Compare the capacities of two containers directly by filling one and pouring into the other.
* Predict which container has the greater capacity and explain the reasons for this prediction, eg plant pots of different sizes (Communicating, Reasoning).
* Compare the capacities of the containers indirectly by pouring their contents into two other identical containers observing the level reached by each.
* Establish that containers of different shapes may have the same capacity, eg a tall narrow container may hold the same amount as a short wide container.
* Stack and pack blocks into defined spaces eg., boxes
* Identify which three dimensional objects stack and pack easily (Reasoning)
* Compares the volumes of two objects made from blocks directly by deconstructing one object and using its parts to construct a copy of the other object.
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| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | * Assessment of previous lessons.
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| WARM UP / DRILL TENS activity | * Circle champion: Have students sit in a circle on the floor and pick one student to stand behind another. The teacher will roll two large foam dice on the floor and the first person out of the two to call out the correct answer will continue around the circle. The person who is still standing by the time they challenge the last person and win, becomes the circle champion.
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| TENS ACTIVITY**NEWMAN’S PROBLEM****INVESTIGATION** |  |
| QUALITY TEACHING ELEMENTS | **INTELLECTUALQUALITY** | **QUALITY LEARNINGENVIRONMENT** | **SIGNIFICANCE** |
| * Deepknowledge
* Deepunderstanding
* Problematic knowledge
* Higher-orderthinking
* Metalanguage
* Substantivecommunication
 | * Explicit quality criteria
* Engagement
* High expectations
* Social support
* Students’ self-regulation
* Student direction
 | * Background knowledge
* Cultural knowledge
* Knowledge integration
* Inclusivity
* Connectedness
* Narrative
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| RESOURCES | 6 sets of identical bottles Science books Permanent marker Water Pencils  |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED &INDEPENDENT ACTIVITIES |
| Reiterate the concept of full and when they are to fill the container it is to the point where it is full. * **Demonstrate capacity**. Display three containers one large and two small (the same size). Demonstrate filling one small container to the point where it is half way then full. Check students understand the difference. Ask students to predict which container will have the same capacity. Check by pouring from one small container to another. Then ask students to predict which container has the largest capacity and why. Pour the contents from the smaller container to the larger container to check. Ask them, “Did it fill this container? Why or why not? What do you think would happen if we did it the other way around?”
* **Instruct** students on how to complete investigation 1, then later investigation 2 on capacity.
* **Revise** the concept of volume. Show students a small unifix cube and a larger model made from 5 cubes (2 across, 1 up, 2 across). Discuss which object has the larger volume and why. Ask students to predict which shape would be the easiest to pack into a box and why.

Instruct students on how to complete investigation 3. | LEARNING SEQUENCEPre Foundation Skills | * Concept of full, half full and empty.
* When filling contents must be to the top.
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| LEARNING SEQUENCEES1 | **Investigation:*** Students to fill two containers of different shapes with the same capacity (ie., a tall narrow container and a short wide container) to establish that containers of different shapes may have the same capacity. Discuss their findings.

**Investigation:*** Students are to fill two containers and mark with a permanent marker where they have filled the container to. Have students pour the contents of the containers into an identical container and mark where the contents are filled to. Compare the marks on the containers. Ask the students to write in a science book and if they think one has a bigger capacity, smaller capacity or the same capacity.
* Assessment: record answers of students as they contribute to class conversation. Check the answers in the science book.

**Investigation:*** Have students construct a model with 5 connected unifix cubes. Ask them to make a different shape with the same amount of unifix cubes. Question them on which shape had a bigger, smaller volume or if they were the same. Students then take the unifix cubes apart and pack them into a box. Students to identify that a cube is an easy three dimensional object to pack in a box.
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|  | LEARNING SEQUENCEExtension S1 | **Investigation:** * Packing - Students investigate the capacity of various containers by packing with informal units and counting the number of units used. Encourage students to estimate capacity first.
1. A box with pencils.
2. A carton with crayon packets.
3. A packet with blocks.
4. A cup with marbles.
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| **EVALUATION &REFLECTION** | Where the students engaged? Were the resources appropriate? Did the students achieve the outcomes? What follow up is recommended?  |

* All assessment tasks should be written in **red** and planning should be based around developing the skills to complete that task.
* Assessment rubrics or marking scale should be considered.