###### LESSON PLAN

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| **Name and Surname:** | Claire Oosthuizen |
| **Student no.:** | 225252732 |
| **Subject:** | Natural Science and Technology |
| **Topic:** | Materials around us |
| **Grade:** | 4 |
| **Duration:** | 60 minutes |
| **Situational analysis** | Alexandria High school is a school situated in the town of Alexandria and teaches Grade R up to Grade 12. The two languages are English and Afrikaans with ENG FAL, HL and AFR HL and FAL learners.  The learners here mainly speak Afrikaans, English and isiXhosa but the school does not provide isiXhosa as a subject.  Learners strengths, needs and challenges:  There is one boy who has been diagnosed with Autism Spectrum disorder and the teachers show him the necessary support by allowing him to use his noise cancelling headphones during classwork sessions and during the day when instructions aren’t given. He takes medication but I am not sure what it is for. The teacher sets an alarm for him and then he leaves the classroom to go and drink his medication in the office. There are a few learners that struggle with paying attention but have not received an official diagnosis nor are they getting extra support. 3 learners are short sighted and wear glasses. 1 learner needs reading glasses, she struggles to read what is in front of her so the teachers provide her with notes in bigger fonts. There are about 4 gifted learners, the rest of the class is average, with 12 excellent performing learners, and 13 of them not performing so well. Majority are visual learners. |

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| **TOPIC (CAPS)**  **List here what CAPS stated for the Grade and include the page number too.** |
| **solids, liquids and gases**  • solids, liquids and gases make up all the materials around  us  • some properties of solids, liquids and gases  -solids keep their shape  -liquids flow and take the shape of their container  -gases, such as air, tend to spread out, have no definite  shape but can be contained (like in a balloon)  **Change of state**  • heating and cooling (removing heat) cause solids, liquids  and gases to change state  -a solid first changes to a liquid (melting) when heated and  then the liquid changes to a gas (evaporating) on further  heating  -gas first changes to a liquid (condensing) when cooled  and then the liquid changes to a solid (freezing/solidifying)  when cooled further  **the water cycle**  • water evaporates, condenses, freezes and melts in the water cycle.  CAPS document page 20 |

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| **LESSON GOALS / OUTCOMES:**  **At the end of the lesson, the learners should be able to [Indicate the PHASE in which the outcome/goals are referring to within brackets after each outcome/goal]:** |
| * Distinguish between solids, liquids and gases. * Identify the types of materials around them. * Explain the water cycle and how it can change its state. |

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| **Barriers to learning:** |
| Barries to learning may include:   * Language * Attention deficit disorders * Learner visual impairment |

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| **Teaching aids/resources** |
| * CAPS document * Books * Chalk board * Personal computer * Projector * Youtube |

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| Introduction | Resources and equipment | Time Allocation |
| Introduce the topic by explaining what matter is and what it has to do with all the material around us.  Play a Youtube video about Matter to accommodate visual learners and also to grab learners attention by keeping them somewhat entertained.  Allow short sighted learners to watch it on the PC.  UDL 1. Multiple and flexible means of representation: animated youtube video | <https://youtu.be/QQsybALJoew?si=jPKdbL9DiCMt9Z7R> | 5 minutes |

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| Body | Resources and equipment |  |
| Phase 1:  Explain the characteristics of solids, liquids and gases using real life examples. Explain that solids keep their shape, liquids take the shape of its container and show different water bottles to help them understand. Pour water into a container.  Gases such as air have no shape but can be contained, like the air in a balloon.  Make examples of solids, liquids and gases. Explain that the desk is a solid because it is hard and can keep their shape unless its broken but still remains a solid if its broken, Liquids are a bunch of molecules that slide around eachother, like water, juice, tea, etc. They can move around, change shape and flow easily. Gases are a bunch of air molecules flying around really fast and spreading out. They can move really far apart and fill up the whole room.  Give learners balloons to fill with air and explain how carbon dioxide is a gas.  **UDL 3. Multiple and flexible means of engagement: Real life examples and applications**  Phase 2:  Explain the change of state of water. Show a visual diagram of the water cycle and hand out print outs for the learners that might struggle to see on the projector.  Conduct an experiment and show them that ice melts after some time. Provide each learner with a block of ice inside a container and let it melt while they watch a video about the water cycle. Then let them take the melted ice and throw it into a bucket of which you will then take the water and boil it to show them that water can change its state and turn into a solid(ice), liquid and gas. Ask them to explain what happened to the ice. Let them record the temperature of the ice and then write the temperature of the water after it melted. They will do this in groups of 3. They will present their findings to the class. Assist learners that might struggle to understand instructions.  **UDL 2: Multiple and flexible means of expression: Group discussion and presentation.**  **UDL 4: Community of learners**  **UDL 5: instructional climate: Experiment** | Water bottles, container, balloon, kettle, thermometer, pens, pencils, paper. | Phase 1: 20 minutes  Phase 2: 20 minutes |

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| **Conclusion** |  |  |
| Conclude the lesson by testing the learners understanding by asking them to name random solids. Ask them why they think the ice melted but other solids cant melt. Give them a homework activity where they have to draw the water cycle, include labels and explain each stage in a short paragraph of 5-7 sentences.  For learners with visual impairments, provide a tactile diagram of the water cycle just for reference. |  |  |

**FORMATIVE ASSESSMENT: Materials around us**

**Please follow the instruction below. Read carefully and ask questions.**

Make a small book.

Every student will make a basic small book with specific sections.

Title the Cover Page as "States of Matter and the Water Cycle" and include an illustration showing a solid, liquid, and gas.

States of Matter: Create and add labels to three illustrations—one representing a solid (such as ice), one depicting a liquid (like water), and one showcasing a gas (such as steam). Write a single statement to describe each state (e.g. "Water is liquid and flows easily.")

Illustrate state changes by drawing a basic image of water transitioning between different states, such as ice melting into water and water evaporating into steam. Provide a description for every modification made (e.g., "When ice transforms into a liquid, it turns into water.").

Create a simple diagram showing the stages of the water cycle: evaporation, condensation, precipitation, and collection. Describe each phase in one sentence (for example, say "Snow is frozen precipitation").

**Share Your Short Book:**

Partner up and discuss how you will present and your small book with each other.

**Thinking back on something.**

In the space provided at the end of the mini-book, jot down a piece of information you have learned about either the states of matter or the water cycle.

**RUBRIC**

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| Criteria | Excellent (4) | Good(3) | Satisfactory(2) | Needs improvement(1) |
| Content Knowledge | Shows  clear understanding of solids, liquids and gases, state changes and the water cycle. | Shows good understanding of solids, liquids and gases, state changes and the water cycle. Minor inacurasies. | Shows basic understanding with some key inaccuracies. | Limited understanding with many inaccuracies. |
| Clarity | Mini-book is very clear, well-organized, and visually appealing. | Mini-book is clear and organized with good visuals. | Mini-book is somewhat clear but lacks organization or detail. | Not visually appealing. Unclear and disorganized. |
| Illustrations and labels | Drawings make sense, clear and well labelled. | Most drawings make sense and are labelled accurately. | Accuracy may be inconsistent. | Drawings are missing labels and are not accurate. |
| Sharing and reflection | Clear explanation of content. Insightful reflection. | Good explanation of content. | Reflection is basic. | Struggles to explain content, not a very clear understanding. |

**Assessment Task: “States of Matter and Water Cycle Quiz”**

**Quiz Questions:**

**Multiple Choice Questions:**

**Circle the correct answer.**

**1.1 What state of matter is frozen water? (1)**

**A) Liquid**

**B) Solid**

**C) Gas**

**D) Plasma**

**1.2 What happens to water when it comes in contact with heat? (1)**

**A) It freezes**

**B) It melts**

**C) It evaporates**

**D) It turns into ice**

**1.3. Which of the following is a gas? (1)**

**A) Ice**

**B) Water**

**C) Steam**

**D) pencil**

**1.4 What is it called when water falls from the sky? (1)**

**A) Evaporation**

**B) Condensation**

**C) Precipitation**

**D) Collection**

**1.5 What state of matter is the air you release when you breathe out? (1)**

**A) Solid**

**B) Liquid**

**C) Gas**

**D) Plasma**

**2.1 Name one example of a solid, a liquid, and a gas. (3)**

**2.2 Describe what happens to water during the process of evaporation. (3) TOTAL 10 MARKS**

**MEMORANDUM**

**Question 1.**

**What state of matter is frozen water?**

**Answer: B) Solid**

**What happens to water when it comes into contact with heat?**

**Answer: C) It evaporates**

**Which of the following is a gas?**

**Answer: C) Steam**

**What is it called when water falls from the sky?**

**C) Precipitation**

**What state of matter is the air you release when you breathe out?**

**Answer: C) Gas**

**Question 2.**

**2.1. Name one example of a solid, a liquid, and a gas.**

**Possible Answers:**

**Solid: Books, Table, Ruler etc**

**Liquid: Water, Juice, Rain etc**

**Gas: Steam, Air etc**

**2.1 Describe what happens to water during the process of evaporation.**

**Correct Answer: During evaporation, water changes from a liquid to a gas (steam) due to heat. It happens when the water absorbs enough energy to break the bonds between water molecules.**

**(Any accurate explanation may be correct)**

REFERENCE LIST.

* CAST. (2018). Universal Design for Learning Guidelines version 2.2. Retrieved from https://www.cast.org/our-work/research/udl-guidelines.html
* Meyer, A., Rose, D. H., & Gordon, D. (2014). Universal Design for Learning: Theory and Practice. CAST.
* Basham, J. D., Israel, M., & Graden, J. (2010). Universal Design for Learning and Technology: Enhancing the Curriculum and Instruction for All Students. In S. M. Hodge (Ed.), Universal Design for Learning: A Guide for Teachers and Education Professionals (pp. 51-72). Routledge.
* Spooner, F., & Jordan, A. (2017). Implementing Universal Design for Learning in the Classroom: Practical Strategies for Educators. Journal of Special Education Technology, 32(3), 140-147. https://doi.org/10.1177/0162643417736824