|  |  |
| --- | --- |
| **Ocean’s Deep** Year: 8  | Lesson Sequence: B |
| Lesson Title: **Shark Attack part 1** | Suggested number of lessons:1 -2 |
| Learning Objective: **ALL:** will plan a simple investigation using equipment given and explain why they have chosen their particular method and detail safety precautions they will take.**MOST**: will plan a simple investigation and give details of safety precautions taken and how they have made it a fair test**SOME:** will plan a simple investigation and give a detailed explanation of fair testing and validity. Diffusion will proceed faster at higher temperatures as the water/dye particles are moving quicker as they have more energySpreads faster (level 3)Spreads faster at higher temperature (Level 4)Spreads faster at higher temperature, mentions one of *particles*, *diffusion* or *energy* in answer (Level 5)Spreads faster at higher temperature, mentions two of either *particles*, *diffusion* or *energy* in answer (Level 6)Spreads faster at higher temperature, mentions particles, diffusion and energy in answer (Level 7) |
| Key Words: Diffusion Adaptation  |
| Learning Activities | Resources: |  |
| **Starter**: How are sharks adapted for being a top predator? | Card sort sheet | **Risk Assessment:** Students will be using hot water (burns) and glassware. | Differentiation:Low ability may need support in the planning. A help sheet is provided. |
| **Main Activity**: Class discussion to introduce to students the news report headline and ask student to discuss the statement on their tables for 1 minute whether:-They agree with the statement?-Could there be a scientific explanation?Teacher guides a short discussion of findings.  In pairs students discuss how they could test this statement using the equipment on the PowerPoint slide. Encourage discussion from all students. Teacher guides a discussion that leads to the correct method based on laminate sheet. Teacher may give out the laminate sheet and allow students to read over the instructions. Students fill a beaker with water at different temperatures. They can use ice/boiled water/hot water from the tap to create a range of temperatures. They measure the temperature with a thermometer. They add 1 drop of food dye and time how long it takes for the dye to diffuse through the water.You can give the students a choice of end points here. They can stop the timer either when the dye reaches the bottom of the beaker, or when they have judged it has spread and filled the whole beaker. The first suggestion is perhaps easier to measure, but happens faster and is affected by the height they drop the dye in from. The second is slower, but more subjective.The disadvantage with this experiment is that the water cannot be reused and it is very difficult to do a repeat with the exact same temperature. This can be overcome if the students just describe the water as ice water/tap water/hot water and end up producing a bar graph. They can do repeats in this case, but there will be significant variation in their results. Alternatively they can record the temperature and do it once. They can vary the temperature by adding different ratios of hot/tap water or ice/tap water. They can get a range of readings. There will most likely be a general trend that diffusion increases as temperature increases, but there will also be outliers, which could be useful as an opportunity to introduce those. | Beakers (100 mL or 500 mL)Stopwatches.Red food colouring. This is best to give to the students in small quantities in test tubes.Plastic pipettes.Ice.KettlesThermometersMethod worksheet.Planning/ conclusion worksheet. |
| **Plenary:** Students run through verbal conclusions with the class and connect their conclusions to their knowledge of diffusion.  |  |

