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| Year 8: Infiltration Investigation  Autumn Term 2 (7 Weeks):  **Why are we studying this unit of work?**  This unit provides a building block to the rest of the KS3 curriculum. It enables pupils to develop their investigative skills and gain an understanding of conducting and completing an enquiry, using the correct sequencing. It develops fieldwork skills, as well as developing the ability to assess and evaluate the effectiveness of an investigations and the reliability of the conclusions found.  **How does this unit build on students’ prior learning?** This unit builds on the foundations of Year 7 topic – Forest Trails, where students used enquiry and Cartography skills to investigate and map trails. It also builds upon knowledge and understanding gained during Year 7 Geography lessons – Rocky World topic, relating to rock types, understanding the impact of different rock and soil type.  **How does this unit provide a foundation for future learning?** The skills used in this topic link to fieldwork enquiry skills which will be built upon over the KS3 curriculum. This also links into KS4 Geography and Land Base studies where understanding how to conduct an enquiry is a vital part of the GCSE. This unit develops personal skills such as motivation, perseverance and team work.  **SMSC & Careers**: Skills – teamwork, staying positive, listening, aiming high, Career links – Developer, Construction, Engineering.  **Summative assessment:** Project based learning – assessment based on final investigation.  End points: By the end of the Scheme of work pupils should:   * Lower ability: Students will be able to: Write a methodology to plan out their investigation, collect data from a number of sites, present their data using simple charts and graphs. * Middle ability: In addition to the above, students will be able to: Give clear reasons for the methods used, compare data collected from a number of sites, analyse data to enable valid conclusions to be made. * Higher ability: In addition to the above, students will be able to; Assess and evaluation the effectiveness of their investigation. Make evaluative judgements on the success of the investigation and the reliability of the data collected, methods used throughout the enquiry and the conclusions made.   THEME FOR THIS UNIT: Sustainability  Questions to consider:   * What is an investigation? * How do we effectively sequence and investigate? * What is infiltration? * Do rock types impact infiltration rates? * How reliable are our conclusions? * How effective was our enquiry in completing a successful investigation? * Why is it important to know infiltration rates? | | | | | |
| Time | Non negotiables | | | Adapt to the needs/size of the class | |
| Key Idea | Content | Key Vocabulary / Case Study | Suggested approaches to learning and resources | Assessment/homework |
| 1 | How do we conduct an infiltration investigation?  (1 lesson) | **Know more**: What is infiltration? How can we test infiltration rates?  **Do more:** Write a methodology to plan out an infiltration investigation.  **Go Further:** Team work – working in groups to demonstrate infiltration. | Frayer model: infiltrate  Characteristics – modelled on the French ‘infiltrer’ – military sense of penetrate enemy lines.  Verb – to filter into or through something. | **Reminder of H&S when learning outside of the classroom.**  **Connect:** Using White Boards – answer the following questions.   1. Name one-way nature can be used to make music. 2. Why is recycling important? 3. YEAR 7 KNOWLEDGE QUESTION   **Content:**  Frayer model – infiltrate. Think, pair, share – how does this link to rock and soils types? Link to Year 7 learning of Rocky World (CCC – Geography).  Share the sequences of an investigation as a recap.  Give students the key question to investigate: ‘Do infiltration rates in urban areas increase flood risk?’  Class discussion – how do we investigate the key question?  Together complete the plan template on the Smart Writer.  **Checkpoint:** Which of the following statements are effective methods to collect primary data?  **Concentration:** Students to use the smart writer to write their methodology for the investigation.  **Consolidation:** Linking back to H&S discussed at the start – how do we conduct this investigation safely? Pupils to think of risks and how to reduce these.  **Challenge:**  **Support:** | Self-assessment |
| 2-4 | Collecting Data – What are the different infiltration rates across an urban area?  (3 lessons) | **Know more**: Do infiltration rates vary, dependent upon rock and soil type?  **Do more:** Collect data from three different areas to show infiltration rates.  **Go further**:  Use team work to collect data for our investigation. |  | **Connect:** Using White Boards – answer the following questions.   1. How can recycling link to sustainability? 2. What is infiltration? 3. Name one way we can find out the infiltration rate of an area.   **Content**: Think, pair, share – how do we collect primary data for infiltration rates? How might soil and rock type impact the results.  **Checkpoint: How do we know we are collecting accurate primary data?**  **Concentration:**  Pupils to access three sites over the next three lessons to collect data. At each site, place a pipe onto the ground, add 500ml of water into the pipe, time how long it takes for the water to disperse into the ground. This will be timed using a stop watch. Pupils will record this on a pre-prepared data sheet.  **Consolidation:** How accurate is our data? – State three ways in which we know our data is accurate.  **Challenge:**  **Support:** | Peer-assessment – lesson 3 |
| 5 | How can we effectively present our findings?  (1 lesson)  Try to book a computer room to practice excel skills for graphs and charts (CCC – ICT) | **Know more**: Which graphs/charts are best to present our findings?  **Do more:** Complete data presentation of findings using appropriate graphs/charts.  **Go further**:  Aim high to present data and justify the presentation methods used. |  | **Connect:** Using White Boards – answer the following questions.   1. What is primary data? 2. How accurate was our data collection? 3. Write down the correct sequence of an investigation.   **Content:** Think, pair, share – how can we present our data? Discuss the best methods for discrete and continuous data – which should we use?  **Checkpoint:** Which are correct presentation methods for continuous data?  **Concentration:** Use excel to create graphs/charts to present your primary data.  **Consolidation**: What do our graphs/charts tell us about our data?  **Challenge:**  **Support:** |  |
| 6 | What does our data show?  (1 lesson) | **Know more**: What can we find out from our data? Do infiltration rates differ across the three areas?  **Do more:** Write a data analysis to compare data and explain our findings.  **Go further**:  Aim higher to accurately analyse data to help reach valid conclusions. |  | **Connect:** Using White Boards – answer the following questions.   1. State one way to present continuous data. 2. Give one reason why primary data collection may not be reliable or accurate. 3. What is a methodology?   **Content:** Read the two-model data analysis – complete WWW/EBI for both. What makes a good data analysis? Look at our graphs/charts – what does our data show? Write down 5 bullet points.  **Checkpoint: What makes a good data analysis?**  **Concentration:** Extended writing – data analysis.  **Consolidation**: Does our data help answer the enquiry question?  **Challenge:**  **Support:** | Whole class feedback |
| 7-8 | Do infiltration rates in urban areas increase flood risk?  (1-2 lessons) | **Know more**: What conclusions can we gather from our analysis? Was our investigation effective in reaching reliable conclusions?  **Do more:** Write a conclusion and evaluation to effectively explain what the investigation has found and evaluate its effectiveness.  **Go further**:  Aim higher to evaluate our investigation. |  | **Connect:** Using White Boards – answer the following questions.   1. State one thing our data tells us. 2. Give one graph/chart appropriate for discrete data. 3. State what makes a good data analysis.   **Content:** Think, pair, share – what conclusions can we gather from our data? Discussion on how to answer the enquiry question.  **Checkpoint:** Which of the statements are correct in relation to our findings?  **Content:** Think, pair, share – how effective was our investigation? Complete a table of WWW and improvements.  **Concentration:** Extended writing – complete a conclusion and evaluation.  **Consolidation**: How successful was our investigation?  **Challenge:**  **Support:** | Lesson 8 - Final project presentation (Teacher assessed) |