How We See Sail Training Linking To The Curriculum

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| **Subject** | **Intent** | **Key concepts** | **Explanation/Example** |
| Maths | To increase mathematical fluency and numeracy through real life context. This is to be done using numeracy and solving problems to make decisions that affect planning and safety on voyage | Representation and simplification,  Geometric reasoning | The heart of our outdoor learning is by doing and leading others. This involves being able to clearly communicate and simplify concepts.  For example, using knowledge of what affects the boat (engine thrust, prop walk, prop wash, wind effects on a boat with no momentum) and visualising the space in a marina to successfully park or unpark. |
| Vectors and fractions | These are used all the time in sailing navigation to:   * understand tidal stream calculations * to plot an estimated position based on the previous hours speed compass heading, and on the wind and tidal effects. * to plot a course to steer: to actively consider what the wind and tide will do, and plot a course that will keep you in the direction of where you wish to go. |
| Algebra and spatial reasoning | This is used to visualise:   * Calculate the height of tide needed for a safe anchorage * When to get over a sand bar with minimum safety clearance * How to calculate minimum clearance under a bridge |
| Interpreting graphs,  Ratios and proportion | This is used to:   * Calculate what the current and future height of tide is for a given location * Interpolation of tidal height and stream (calculate intermediaries between spring and neap tides |

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| Science | Engage participants in the living world around them, developing curiosity in how the world works, and confidence to apply scientific reasoning into understanding of the natural world | Energy Sources | Gives a practical knowledge base of sail and wind power, renewable energy (electric outboard motors) and sources of fuel for propulsion, cooking and heating. |
| Food | Through creating meal plans and cooking for big groups, participants gain knowledge of balanced diets, food groups and nutrition. By catering for dietary needs, participants gain an understanding of allergies and how to accommodate dietary preference such as vegetarian alongside those who eat meat. |
| Ecology | Through physical encounters with many types of marine animals and birds, and learning facts about such creatures, this is one of the main benefits of being so close to the natural world. For example:   * learning the difference in fin shape between dolphins and porpoises, * learning what identification of bird types mean to how close to shore one is * learning about the voluntary no-anchor conservation zone in Studland Bay to protect the endangered brittle star fish. |
| Tides and Phases of the moon, astronomy | * Participants gain a very practical experience of tide, and learn how the sun and moon affect tidal height and strength * At sea is one of the best places for seeing the night sky, identifying stars and constellations * Participants learn how to use the stars to navigate, and how to reliably find the north star and approximate latitude. |
| Forces | Participants gain and understanding of:   * Buoyancy and forces affecting the boat * Fluid dynamics * How sails provide resultant force * GZ curves/stability, and how this is affected by weight distribution and balance on the boat. * Scalars and vectors to calculate tidal flow |

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| Humanities | Very practical look into geographical landforms, how weather affects the world around us, and identifying and analysing patterns in weather | Meteorology | Participants may learn about   * Cloud formation * Coriolis effect * Passage of depression * Types and development of fog * Rare weather effects * Reading the sky to understand weather * Beaufort scale * Sources of weather forecasting and analysing/discerning local effects from it. |
|  |  | Coastal landforms | Frequently pass many coastal landmarks studied at geography KS3+4, including Lulworth cove, and Old Harry, Studland Bay. In addition, one often sees examples of the effect of longshore drift causing spit formation, coastal erosion and many historically significant sights.  Participants also gain an understanding that even at sea, topography is important, and will impact on the size of current, and size of waves. This has a direct impact on navigation. |
|  |  | Traditional chartwork | These include:   * Taking and plotting visual fixes * Creating and following a route through given hazards * Knowledge of IALA buoyage * Maintenance of navigational records * Use of echo sounder and lead line   Chart work exercises including:   * Dead reconning and estimated position * Estimating tidal heights and tidal streams * Working out course to steer to allow for tidal stream, leeway and drift |