



### Overview of the programme

The Sea Change programme is made up of five lessons that build up students' understanding of marine plastic pollution and develop a sense of caring for the sea. The programme integrates the latest scientific research on marine plastic pollution with innovative, hands-on experiential learning materials that include games, experiments and a recap quiz at the end. The programme culminates with a Sea Change celebration, for which the students will need to be given at least two class periods to work on their group projects. The Sea Change celebration is an opportunity for students to present their work and teach the rest of the school, and their friends and family about what they have learnt.

### Resources

- 5 teacher learning boards which are the materials you will use to teach students.
- 1 learning board stand which can be placed on your desk to put the learning boards on top while you teach.
- Student booklets for every student to follow each lesson and one teacher copy for your reference.
- Microbead experiment kit for lesson 2 includes a glass jar, hygiene product and a piece of white cloth.
- 40 badges for the bioaccumulation activity in lesson 4.
- Student movies with a QR code for four lessons that explain key concepts.
- Teacher movie and lesson summary movies with a QR code.
- Completion certificates to be given to every student once they have completed the programme.



Teacher movies



Teacher resources

### Structure of the lessons

- *45 minutes:* each lesson is designed to last 45 minutes.
- *Preparation:* make sure to read the 'Prepare' sections before each lesson.
- *Recap:* before each lesson, make sure to read out loud the recap of the previous lesson to the students.
- *Story:* make sure to read these stories out loud to students, using different voices for the talented teacher turtle and smart student starfish characters.
- *Hands-on activities:* each lesson includes an interactive fun activity or experiment that further explores the scientific concepts taught in the lesson.
- *Movies with QR codes for lessons 1-4:* these explain the key concepts covered in the lesson. If time permits, watch the movies in the classroom, otherwise encourage students to watch these at home.
- *Additional activities:* encourage students to do these creative and fun activities in their free time or at home.

### Lesson details



**Lesson 1** will look at different water bodies and the roles they play in transporting plastic waste into the sea. Emphasis is placed on students connecting and developing a sense of care for the ocean. It is important that the students understand that clean-ups are not a long-term solution because plastic pollution can also be invisible in the form of microplastics.



**Lesson 2** will start with a microbead experiment to allow students to see and touch a form of microplastics. Use the experiment kit to test the hygiene product for man-made microbeads and explain to students how they can identify whether a product has microbeads in it. The three stories will explain the water cycle, how plastic travels into the sea and how microplastics are formed.



**Lesson 3** teaches students about what happens to microplastics in the ocean through an interactive tag game. After the game is completed there will be two stories that explain in greater detail i) how microplastics look and smell like plankton so that fish eat them because they cannot tell the difference, and ii) how chemicals stick onto microplastics.

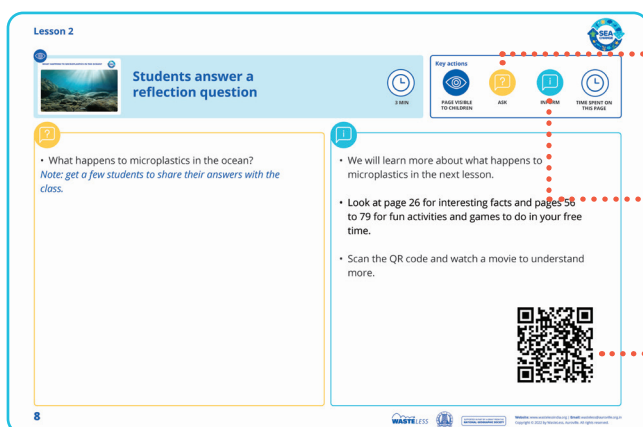


**Lesson 4** focuses on the concept of bioaccumulation of microplastics and poisonous chemicals. Students will play another tag game to understand how the bioaccumulation of microplastics and chemicals happens in the sea and how microplastics end up in the food we eat. The three-pen fact is important as it links the concept of microplastic bioaccumulation with us as individuals. Three stories will further explain the concepts of bioaccumulation in fish and how microplastics end up on our plates, as well as discussing the microplastics cycle and how this is linked to the water cycle.



**Lesson 5** will start with a recap quiz on all the information students have learnt in the programme and then focuses on starting to prepare for the Sea Change Celebration. The aim of the celebration is for students to teach others what they have learnt. Make sure that students will have enough time to complete their project work, so allow for at least two extra lesson periods and select a date for when this event can take place.

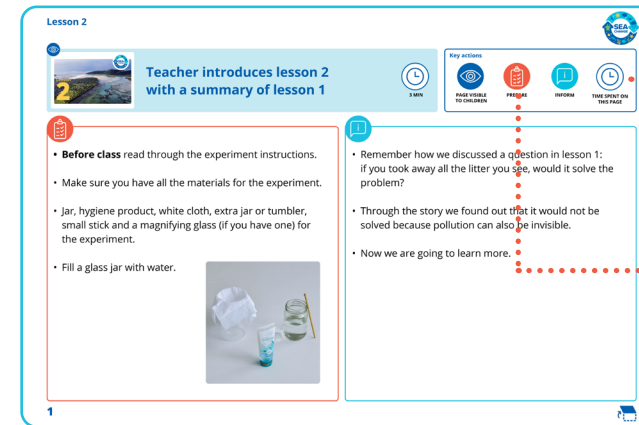
### Understanding how to use the learning boards



**Ask:** questions that need to be asked to the students.

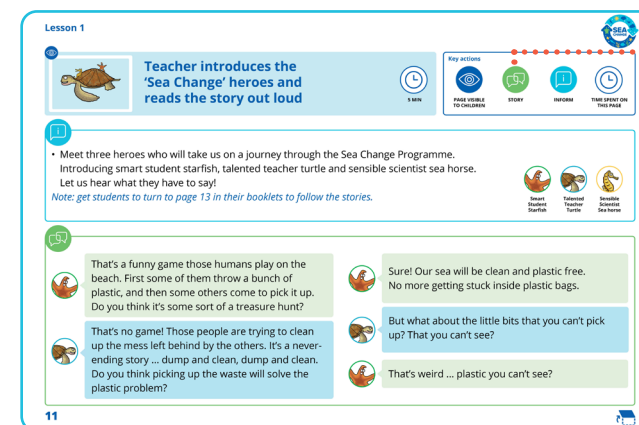
**Inform:** information to be shared with students.

**QR code:** at the end of lessons 1-4 there is a QR code to a movie.



**Time:** amount of time to spend on each page.

**Prepare:** information you need to read and prepare before every lesson.



**Story:** two characters, talented teacher turtle and smart student starfish will explain the important scientific concepts and theories in greater detail. Read these dialogues out loud to the students who can follow the story in their booklets. To make it engaging for students, you can try to use distinctive voices for the two characters.



**Learning board:** hold the learning board so that the image on the front is visible to students.



You can also place the learning board on top of the learning board stand on your desk.

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