2 lessons

50 minutes

Age range

7 - 11 years

PLASTIC Changemakers

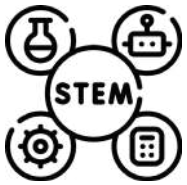
MODULE 3: LESSON PLAN
INNOVATION & CREATIVITY

THE BRETEAU FOUNDATION

ZAG HEROEZ Miraculous Action

Module 3: Innovation & Creativity

Module Facilitator: Max & Markov	Module Objectives
	Students will be able to: • Use STEM methodology to formulate a solution to an aspect of the plastic problem that could minimise or solve it • Evaluate other students' innovations that have attempted to solve problems around the use of plastic

Note to teachers:	Icon Legend
• This module consists of 2 lessons where the main activities are approximately 50 minutes each. They can be completed sequentially in one session or split over two sessions, depending on the availability of time. • The starter and plenary activities introduce and conclude both lessons and can be done separately or in conjunction with the lessons. • This lesson uses the STEM methodology to help students innovate solutions to the plastic pollution crisis. The teacher will be a guide in this lesson and the students will be working together as a team to create and evaluate solutions. • This module is intended for students ages 7-11 but could be adapted otherwise.	**STEM METHODOLOGY** 

Link to the Miraculous Ladybug "Action" Episode:

This module is directly related to the Miraculous Ladybug "Action" Episode particularly in this scene:

- **In the first minute** of the episode, Nino shows how he and his friends have converted their houseboat into an ecological water treatment plant that intercepts the various plastic items that have fallen into the Seine River as pollution.

Time	Activities	Resources/ Materials
STARTER		
10 minutes 	**Introduce** and present the STEM design process circle (PPT - slide 3). As the lesson progresses, refer back to this process to indicate which step the students are focussing on. **ASK** **Ask** students *'Do we have a plastic problem?'* Teacher PPTt slide 4: **Show** pictures from the worksheets on plastic consumption to engage the students' interest. **Discussion prompts:** What is happening in the pictures? How did this happen? How does this make you feel? Ask students to share and discuss their feelings and add their responses to a board/flip chart (worried, anxious, helpless).	Projector/Internet Whiteboard/Screen for presentation Teacher Powerpoint slide 3: STEM Design Process Worksheet: Ask, Understand, Imagine, Plan, Create, Improve (page 5 of resource booklet) Pictures of Plastic Consumption and/or Environmental Impact (page 4 of resource booklet)

Time	Activities	Resources/ Materials
LESSON 1 - MAIN		
25 minutes 	**UNDERSTAND** We can all make a difference. There are lots of young people all around the world who are coming up with amazing ways to tackle the plastic problem. **Show** example of Haaziq Kazi	Teacher Powerpoint slide 6

	Haaziq Kazi example: Ervis invention Video of Haaziq Kazi	
	**Comprehension:** Share with the class other young innovators from around the world using the Changemaker reading comprehension worksheets (Anna Du and Francisco Vera). Using the Changemaker template worksheet, students choose one innovator and answer the question prompts. **Research opportunity:** If resources allow, students could do some internet research on their chosen environmentalist - Haaziq Kazi, Anna Du, Francisco Vera or Lesein Mutunkei. (Remind students of internet safety in advance) **Important note for teachers** - At 11 years old, Francisco Vera received an anonymous death threat via Twitter after he urged the government to improve access to education for children during the COVID-19 pandemic. It is important to be prepared if students do have questions or feel worried about the personal impacts of activism. This may lead to a discussion about social media safety.	Changemaker Reading Comprehension information sheets (pages 1-3 of resource booklet) Teacher Powerpoint slides 7-9 Changemaker Template Worksheet (page 6 of resource booklet)
15 minutes 	**IMAGINE & PLAN** **Share** PPT slide 10 with the class and discuss the questions. **In pairs,** using the planning sheet and PPT (slide 11), students fill in the first column of boxes - problem, invention, features, impact and materials. As students work on their ideas, use the guiding questions worksheet to promote deeper thinking. **Examples:** • Tell me about your idea? • What materials will you make it from? Why? • How have you come to an agreement as a group? • How do you think it will have an impact? • Why do you think this happened? • What will happen next? • How did this happen? • What can you do about it?	Teacher Powerpoint slides 10-13 Planning sheet (page 8 of resource booklet)

Time	Activities	Resources/ Materials
LESSON 2 - MAIN		
25 minutes 	**CREATE** **In groups,** using the planning sheet from the previous session, students draw a detailed prototype of their design (an additional sheet in the worksheet has been added for space - you may want to enlarge this page to A3 for each group). Encourage students to use diagrams and provide as much detail as possible. Share PPT slide 15 and remind students that changes to their design are part of the design process and STEM methodology. **Extension activity:** If resources and time allow, ask students to create a paper-based prototype of their design. You may want to provide paper straws, cards, foil or any other appropriate school resources. Use the PPT video on slide 16 to help your students understand what a paper prototype is. Video on making a paper prototype (Quirky)	Planning sheet (page 8 of resource booklet), paper/pens, rulers. Teacher Powerpoint slides 16-17 Any available classroom resources e.g. paper, card, sticky tape, glue, pens/pencils, paper straws, tissue paper, foil. Teacher Powerpoint slide 17
15 minutes 	**IMPROVE** Before each group shares their design with the rest of the class, ask students to think about these following questions when giving feedback to their peers: • What is the problem you are tackling? • What is their idea for the solution? • What are its features? • What is the impact? • How does it benefit the stakeholders? • What materials would be needed? • Other groups give feedback, then swap and repeat. Upload your completed template to www.breteaufoundation.org/steamchallenge for a chance to win the Plastic Changemaker Steam Challenge!	Sentence Starters for Feedback (page 9 of the resource booklet). Teacher Powerpoint slide 18 Final innovation submission (page 10 of resource booklet)

PLENARY		
10 minutes	**Provide** students with one post-it note each or a small piece of paper and ask them to write one aspect of the STEM process of designing a solution to the plastic problem they have enjoyed. Discuss whether it may have been thinking about the problem, designing an invention etc. Encourage students to think about why they enjoyed that part of the process. Either share responses as a whole class or stick notes on a shared wall for the students to read each other's responses.	Small pieces of paper/ post-it notes.

Notes for low-tech and non-tech classrooms

- For the starter activity, recap on learning from the previous modules to encourage the discussion 'Do we have a plastic problem?'
- For the 'changemaker' videos, if there is no access to a projector/interactive whiteboard and reduced access to computers for students to research, teachers use a 'hot-seating' activity to encourage students to find out about the changemakers. Allow yourself time to read through the changemaker worksheets and watch the videos for your own reference. Present yourself to the class as one of the young changemakers (you may choose to do this with more than one changemaker). Students have '20 questions' as a class to find out as much information as possible from you. Students can make their own notes as they listen to your responses - this can be used instead of the 'changemaker worksheet' template.
- For the 'planning sheet,' transfer/copy the headings onto a board/flipchart and ask students to jot down in bullet point form their ideas. Students then draw or create their designs as in Lesson 2 of this module.

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