



MISD Go Green - For a Better Planet

Resource Guide

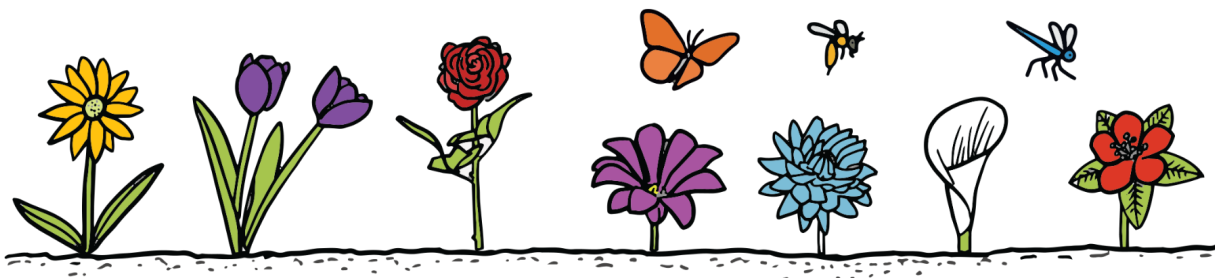
The aim of Little Inventors workshops is to allow students to express the far reaches of their imagination. We want to inspire students to think up and draw original, ingenious, funny, fantastical or perfectly practical invention ideas. There are no limits!

Students will be able to draw and submit their own inventions to appear on misd.littleinventors.org, where they will be reviewed by the Little Inventors team and MISD. Their idea might be chosen as a Little Inventors Team Favorite, turned into an animation or even made into a real object by one of our Magnificent Makers.

Key Project Dates

Teacher Training Session	24th January
Challenge Launch	1st February
Challenge close	31st March *
Making process for winning ideas	Throughout April
Exhibition and challenge celebration	May (Date TBC)

*** Please note: All invention submissions need to be uploaded prior to 31st March.** All details for submissions can be found [here](#).



This project at a glance: (timings can be boosted by the activities contained in each unit)

1	Introduction to inventing	40 - 90 mins
2	Eating: From field to fork	80 - 120 mins
3	Traveling: The way we move	70 - 90 mins
4	Living: Reinventing everyday	60 - 95 mins
5	Prototyping	60 - 90 mins
6	Take your ideas further	10 - 120 mins

More detail:

MISD Go Green offers a creative approach to learning using invention. It is a learning program designed for Macomb County Intermediate Schools District in partnership with Little Inventors. Hearing about your experience using these resources in your school is really important to us so we ask that you complete an evaluation at the end of the project.

MISD Go Green is comprised of:

1 Introduction to Inventing: Introduction to invention, getting students to think about how invention is part of everyday life and all around us. The presentation includes an open invention challenge using creative starter activities.

2 through 4: 2. Eating: From field to fork, 3. Traveling: The way we move, and 4. Living: Reinventing everyday:

Students will explore the topics through a green lens, investigating how we can make our everyday lives, infrastructure, as well as the food we consume, greener. Students will become familiar with where their food has come from, how far it has traveled and explore the concept of food miles. They'll hop into a new mode of green transport and fly over a newly designed town of their own design! Students will head into the great indoors to examine how we can reinvent everyday life and make it greener.

Using their Inventors Log, students will gather information and creative ideas to develop some unique and exciting new inventions that could create a better planet!

Each topic will end with the students using their new knowledge to come up with their own invention drawing. This gives students lots of opportunity to practice their invention skills before the final invention challenge at the end of the last unit. Feel free to print off

additional invention sheets for your students and let their imaginations go wild!

The 5 best invention ideas from the final invention challenge will be selected by you (their teacher) and uploaded to misd.littleinventors.org for a chance to be made real. These invention ideas can be from any one of the themes; eating, travel or living, or a combination of the themes.

5 Prototyping: To celebrate all of the hard work and creativity students can join our amazing cardboard-artist Lottie Smith to make propeller powered objects linked to the green theme.

6 Take your ideas further: For students who really enjoy the Go Green challenge and want to do more they can use the 'Take your ideas further document' included in the pack to expand their invention ideas. They can create badges, draw a comic strip, and get thinking in 3D!



This project has been designed to be totally supportive and flexible to suit the needs of your students. You are best placed to select the activities and slides that will work best in line with your schedule. To support in-class delivery, each slide contains accompanying notes to ensure the main learning points are clear.

Appendix: For links and resources to articles, videos and more, take a look at the appendix section. Students can find out more about each topic, use videos to kick off new research projects and explore the Go Green themes and increase their knowledge.

Familiarize yourself with the resources available before the workshop

#	Name of pack	Overview of resource	Activities included
1	Introduction to inventing	<ul style="list-style-type: none"> This will kick the project off in the right direction. Students will pick up top insights and invention skills to use as part of their challenge submission 	<ul style="list-style-type: none"> 1.1 Get Started 1.2 Character Profiler + cards 1.3 Mind Map 1.4 Challenge Cards 1.5 My Invention Drawing Sheet 1.6 Round up (no worksheet)
2	Eating: Field to fork	<ul style="list-style-type: none"> Students will be set the challenge of becoming food detectives! Thinking about how food has arrived at their plate and where it has come from. Students will explore food miles by creating a food character (hello, Brenda the banana!) Students will investigate how far their lunch has traveled. 	<ul style="list-style-type: none"> 2.0 Challenge Cards - Field to fork 2.1 Food detectives 2.2 If your food could talk! 2.3 Pin the packaging 0.0 Go Green Invention Drawing Sheet
3	Traveling: The way we move	<ul style="list-style-type: none"> Students will think about different ways of traveling - you're in for a wild ride! Get to grips with thinking about travel in different ways and re-thinking what modes of transport look like. Students will head off on an adventure and will be thinking about their journeys. Students will be imagining and designing new towns. 	<ul style="list-style-type: none"> 3.0 Challenge Cards - The way we move 3.1 Transport mash up 3.2 River deep, mountain high 3.3 A town called... 0.0 Go Green Invention Drawing Sheet
4	Living: Reinventing everyday	<ul style="list-style-type: none"> Students will be thinking about spaces and how they can make them greener through designing greener rooms. Students will undertake a mind mapping exercise focussed on the actions they carry out during the day. Fun ahoy! Students will investigate how they can make everyday movements more fun. Guidance on how to submit your students best invention ideas. 	<ul style="list-style-type: none"> 4.0 Challenge Cards - Reinventing everyday 4.1 Dream green 4.2 Let's move! 0.0 Go Green Invention Drawing Sheet
5	Prototyping	<ul style="list-style-type: none"> Students can take their invention idea to the next level by bringing them to life in 3D Start by following the step-by-step instructions to make cardboard propeller powered objects! The Propeller Powered tutorials are split into two sections: Lift and Forward Motion Students can use the skills explored in the tutorials to make their own invention idea. 	<ul style="list-style-type: none"> 5.1 Prototyping instructions
6	Take your ideas further	<ul style="list-style-type: none"> This is an additional activity pack for students looking to expand on their invention ideas independently It includes activities such as writing a story about your invention idea or planning your prototype 	<ul style="list-style-type: none"> 6.0 Take your ideas further

	Appendix	<ul style="list-style-type: none"> Links and ideas which link to the themes within the pack. Topics for further research and discussion. 	<ul style="list-style-type: none"> Appendix
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How to use these resources:

A downloadable PowerPoint presentation is available for each of the different modules:



1. Introduction to inventing
2. Eating: From field to fork
3. Traveling: The way we move
4. Living: Reinventing everyday

All powerpoints can be found [here](#).

Before running this project with your students, explore each unit and decide the activities you would like to carry out with your students. Use the resource table above to check if the activity you would like to use has a worksheet associated with it. Students will have all of the required worksheets in the Inventor's Log..

Ensure you have printed -

One per student, but feel free to print extra sheets for your class.

- **0.1** Inventor's Log (containing all activities)
- **6.0** Take Your Ideas Further (additional activity pack for students wanting to expand further on their idea independently)

One per class or group

- **1.2** Character Cards (for Introduction to Inventing)
- **1.4** Challenge Cards (for Introduction to Inventing)
- **2.0** Challenge Cards - Field to fork
- **3.0** Challenge Cards - The way we move
- **4.0** Challenge Cards - Reinventing everyday

Materials required (in addition to worksheets) -

- Scissors
- Pens and pencils for sketching activities

- Junk materials for students that prefer to think with their hands rather than sketching - this could simply be cardboard boxes, plastic soda bottles, pipe cleaners...anything destined for trash that can be re-used to make a model
- Voice recorder for students that prefer to record their ideas over voice messages

Running the workshop

The following activities are offered with indicative timings on how you could run a workshop. You could decide to run only some of the activities depending on time and attainment levels of your students.

Part 1 - Introduction to inventing

1.1 Get started! (5-10 mins)

Explain that in this workshop, children will be given a chance to come up and draw their own invention ideas.

Refer to the Little Inventors Introduction to Inventing powerpoint presentation to help you create an inspiring atmosphere. Watch the Little Inventors activated powerpoint video for this part [here](https://misd.littleinventors.org/challenges/misd-go-green) or find it on <https://misd.littleinventors.org/challenges/misd-go-green>



Have a class discussion on inventions, for example:

- What is an invention?
- Can you name some well-known inventions?
- What about ordinary objects? Why were they invented?
- Inventions are used to solve problems – can you think about problems or things that could be made more interesting or fun?
- Can you think of someone who has a problem or finds things difficult? How can you help them?

Note some children may draw robots to tidy their bedroom or do their homework for example. While robots are fun, try to encourage the creation of unique and original invention ideas.

Follow up: Depending on the time available and abilities, children can either move on to do the Character profiler, the Mind Mapping or go straight to drawing on the My Invention Drawing Sheet.

1.2 Character profiler (10-20 mins)

Inventions happen when someone needs help with something! Tell children that this Character profiler will help them form a picture in their mind of a character and what that character might find challenging.

- Give children a Character profiler worksheet.
- Ask them to choose one character card and put it on the worksheet.
- Ask them to write down information about this character, by thinking about who they are, where they live, what they like or dislike.
- Ask them to come up with an invention idea that their character would need or like.

Differentiation: Instead of writing their description, children could draw their character and add keywords to explain who they are, where they live, their likes and dislikes.

Extension activity: You could ask children to write a story, or draw a comic strip about this character, their life and how the invention could change their life.

Follow up: Depending on time available and abilities, children can either move on to do Mind Mapping or go straight to drawing with My Invention Drawing Sheet?

1.3 Mind Mapping (10-20 mins)

This Mind Mapping exercise aims to encourage children to think about challenges in a bit more depth in order to develop a better idea for an invention.

Look at the Mind Mapping Example sheet within the 'Shared worksheets' folder to see how this sheet can be used.

- Ask students to find the Little Inventors Mind Mapping worksheet.
- Get them to choose one ready-made challenge card and put it on the sheet.
- Ask them to write down words that come to their minds when reading their challenge.
 - You might want to get children to work in pairs or small groups to share their ideas.
 - You can help them by asking them to think about different questions: what it is, where does it take place, when, who is involved, what happens? etc.
- Ask children to repeat the process with the words they have written down to create another layer of words.
- Ask them to explore words they have written down – what idea does it give them for an invention?

Differentiation: Choose one ready-made challenge and discuss it with the

class and choose 4-5 keywords or themes for children to work from.

Extension activity: Give children both a ready-made challenge card and their completed Character profiler and ask them to think about how they could link the two together.

Follow up: Depending on time available and abilities, children can either explore the Character profiler if they haven't already completed it or start drawing with My Invention Drawing Sheet.

1.4 Challenge cards

These cards can be found in the Shared Worksheets folder.

The challenge cards are designed as quick fire creative catalysts to help students start inventing quickly.

- Students can work independently or in small groups on this activity.
- Hand out the challenge cards, there are a number of challenges in each pack, you may decide to only use two sets of cards in your class. They will need to be cut up and then distributed amongst the students.
- Students can decide how they wish to use the cards, they can share verbal ideas and then develop the ideas further as a group or they may wish to start sketching or prototyping using scrap materials straight away.

Differentiation

Some students may prefer to work with their hands straight away and sketch or make models of some of the things they think you may need in space.

Some students may benefit from having one area of the activity to focus on e.g. Invent an unexpected way to clean your teeth

Extension

Is there an element of this activity that the students would like to develop further? Students that finish the activity quickly can review each other's ideas.

Follow up

Encourage students to use their inventor's logs to record ideas, thoughts and sketches they have.

1.5 My Invention Drawing Sheet (20-40 mins)

Once children have had a chance to develop their ideas a little through discussion in Introduction to Inventing, the Character profiler and/or the Mind Mapping, give them

a Little Inventors drawing sheet to draw and explain their invention.

- Make sure that children put their name and age on the worksheet.
- First, ask them to draw using a black pen as an outline, and add colors to their invention to bring it to life. Tell them to fill as much of the drawing sheet as possible. Ask them to label parts on their drawing to explain how it works.
- Secondly, ask children to name and explain their invention - what does it do? who is it for? what is it made of? how big is it?
- Tell them they are briefing someone to make their invention (which could happen!). Students can draw more than one invention if they want.

Differentiation: Children make a video or audio recording to explain how they got their idea in their own words.

Extension activities: Children come up with their own invention ideas, draw them and explain how they think it can work and how it can be made. Children can also create adverts for their invention by designing leaflets or making a video.

Follow up: Use Round-up to finish the session.

1.6 Round-up! (5-15 mins)

Gather all the children's invention drawings in a gallery around the classroom/ workspace.

Get children to discuss their favorite ideas – what do they like and why? Encourage positive feedback throughout.

- What do they think of their invention?
- What are its strengths and weaknesses?
- What would they do differently?
- Can they imagine other people using their inventions? What would they say?
- What other ideas or challenges can they think of?
- Why are inventions useful?
- How will they approach problems in the future?

Now it's time to go green and start to think about solutions for a better planet!
Open the powerpoint presentation for 2.1 Eating: From field to fork.

Part 2 - Eating: From field to fork

View the activated powerpoint for this section [here](#)

There are several activities in this unit, approximate timing guides are provided below.

- For additional support and guidance please refer to the slide notes where tips for delivery have been provided.
- Should all activities be used the timing range guidance for this unit is 80 - 120 minutes.
- The unit can be delivered over a number of lessons.

Slide 1	Welcome all of your students to the new MISD Go Green Project
Slide 2	Watch the go green challenge animation
Slide 3	All about food
Slide 4	It all adds up!
Slide 5	Activity 2.1: Food detectives
Slide 6	Break it down now y'all!
Slide 7	Can't stand losing yew
Slide 8	From land to sea...
Slide 9	Activity 2.2: If your food could talk...
Slide 10	Waste not want not
Slide 11	The future is bright
Slide 12	From the minds of Little Inventors - like you!
Slide 13	Activity: 0.0 Go Green Invention Drawing Sheet

2.1 Food detectives (15 mins)

- Hand out the food detective worksheet
- Students begin by drawing and labeling their favorite meal. Ideally, this

should be a full meal which will be made of a variety of ingredients.

- Encourage students to work with a partner or in small groups to begin discussing their meals through description of the food and ingredients, why they love this food, how it makes them feel and how often they eat it.
- Explore flavors through descriptive words by circling the appropriate words or adding their own.
- Students should then start to think about what is inside their food through listing ingredients, then matching up the ingredients with the origin boxes.

Differentiation

Some students may benefit from working in a small group where they all work together on one meal and its ingredients.

In groups, students can:

- Write out a shopping list for their meal
- Have a discussion about the ingredients that might be in bread, cheese, meat.
- Write down any flavorings that might be in food.

Extension

This activity can be extended by giving each student two pieces of paper, some scissors and glue to create cut-up food poetry. On one piece of paper students write down words under different headings; food items, flavors, how food makes you feel and colors.

Students then cut out all of their individual words or phrases and arrange them on the blank piece of paper to create food poetry!

Follow up

Depending on time available students can move on to the 'If your food could talk' activity (see below).

2.2 If your food could talk... (20 - 30 mins)

- Ask students to work on their If your food could talk...worksheet
- Encourage students to work with a partner or in small groups to begin discussing where their food has come from - transport, location, environment.



- Students take a food item and give it a name and personality. Encourage students to discuss with their groups their food and its personality.
- Individually students create a comic strip based on their food's journey.

Differentiation

Some students may want guidance on where certain foods could have come from in terms of location (see appendix for guidance). Students could work in pairs or groups to choose a food item and create a food personality, then collectively create a comic strip.

Extension

Students that require an extra level of challenge can work with a partner. Students make a list of fruits and vegetables which are currently 'in-season' in America. Students can create a new comic strip or write down the journey these foods have taken. Ask them to examine:

- The difference in the journeys
- The miles each food item has traveled

Follow up

The comic strip can be cut out of the worksheets and used to create a display or book for the whole class and school to enjoy.

2.3 Pin the packaging (25 - 35 mins)

This is an extension activity designed to be undertaken as a full class activity.

You will need:

- Food packaging or labels
- A large world map that the whole class can see- this could be projected onto a white board, or printed and stuck onto the wall (see 'For teachers' activity pack for a ready made world map).
- Post-it notes/ paper and tac

At lunch time, get the class to keep all the packaging from their lunch boxes. Teachers could bring in additional packaging from the suitable ingredients or students could ask kitchen staff for any empty packaging or labels.

Students locate the country or area of origin from the packaging and note this down on a post-it note. These post-it notes are then stuck on the large world map.

Engage in a whole class discussion about food miles. Students can then work in pairs or small groups to discuss:

- How can food miles be reduced?
- Why is it important to reduce food miles?

- What effect do food miles have on the environment?

These ideas can then be shared in a whole class discussion.

Math Extension

If students have access to a computer they could look at their estimated food miles.

<https://www.foodmiles.com/food/calculator>

Calculate the number of food miles each meal and snack they have eaten.

- Ask them to write down all their meals and snacks, or use meals in previous activities.
- Write down the number of food miles for each component of their meal and snacks.
- Add all the miles together to get their total food miles for the day.
- Which meal has the most food miles? Is this the same for other students in the class?
- Create a line graph based on the food miles data, plotting as many different meals and snacks as possible.

0.0 Go Green Invention Drawing Sheet (20 - 40 mins)

Once students have had a chance to develop their ideas a little, give them an invention sheet to draw and explain their own invention based around food and the ideas that have been discussed.

Students can draw more than one invention if they want.

Differentiation: Students make a video or audio recording to explain how they got their idea in their own words.

Extension activities: Students come up with their own invention ideas, draw them and explain how they think it can work and how it can be made. Students could also make a model of their invention.

Students can create a poster for their invention or make a video about it. You could ask your students to write a story, or draw a comic strip about this character, their life and how the invention could change their life or the lives of others.

2.0 Challenge Cards - From field to fork

- The challenge cards are designed as quick fire creative catalysts to help students start inventing quickly.
- Students can work independently or in small groups on this activity.

- Hand out the challenge cards, there are a number of challenges in each pack, you may decide to only use two sets of cards in your class. They will need to be cut up and then distributed amongst the students.
- Students can decide how they wish to use the cards, they can share verbal ideas and then develop the ideas further as a group or they may wish to start sketching or prototyping using scrap materials straight away.

Differentiation

Some students may prefer to work with their hands straight away and sketch or make models of some of the things they think you may need in space.

Some students may benefit from having one area of the activity to focus on e.g. Invent a fun way for food to get to your mouth

Extension

Is there an element of this activity that the students would like to develop further? Students that finish the activity quickly can review each other's ideas.

Follow up

Encourage students to make notes, record their ideas and explore ideas through drawings.

Once the activities have been completed ask your students if they are ready for more! Now we need to pack our bags as we prepare to travel!

Part 3 - Traveling: The way we move



View the activated powerpoint for this section [here](#)

- The approximate timing range for this unit is 70 minutes - 90 minutes

Slide 1	Now it's time to focus on travel and the way we move
Slide 2 - 3	We like to move it, move it!
Slide 4	Activity 3.1: Transport mash-up!
Slide 5	Activity 3.2: River deep, mountain high
Slide 6	Energy makes the world go round
Slide 7	Way back when
Slide 8	Look to the future
Slide 9	The shape of things
Slide 10	Activity 3.3: A town called...
Slide 11	From the minds of Little Inventors - like you!
Slide 12	Activity: 0.0 Go Green Invention Drawing Sheet



3.1 : Transport mash-up! (20 minutes)

- Hand out the transport mash-up worksheet, along with a blank piece of paper, scissors and glue.
- Students cut out the parts on the worksheet and arrange them on the blank piece of paper to create a new mode of transport.
- Alternatively, students can use the parts as inspiration to draw their own mode of transport on the worksheet or the blank piece of paper.
- Let the students know that the mode of transport doesn't need to look like something that already exists.
- This fun activity encourages the students to be as creative as possible - challenge students to go beyond obvious ideas!
- Get the group thinking about shapes, form and edges.
- Give the transport a name.

Differentiation

Some students may benefit from working in a small group to create a giant new mode of transport!

Extension

Students that require an extra challenge can work with a partner or small group to play a game of transport mash up! One piece of blank paper is folded equally into 3 or 4 parts, concertina style. Each student playing the game each needs a piece of paper. Each student starts by drawing one element of the transport, then folds their drawing over to conceal their contribution, then passes it to the person next to them for further contribution. The game ends when all 3 or 4 spaces are filled. Students then fold out the paper to reveal their group transport mash up!

This game is based on the game exquisite corpse, for visual guidance on how to play this game see [here](#).

Additional extension

Students can create a short story about the person operating the new mode of transport for the first time:

- Write the story from the viewpoint of the operator
- How does the operator feel?
- What can the operator see?
- How does the transport move? Does it hover, roll, bounce, tumble?
- What would the operator do? Do they sit up, lie down, pedal?
- Is it powered by something new?
- How do people react when they see the transport?

Follow up

Encourage students to label their transport and discuss how it might move, what kind of fuel it runs on and the materials it could be made of.

Activity 3.2 River deep, mountain high (20 mins)

- Hand out the activity worksheet or put it on the board.
- In groups, ask the students to think about the following:
What is an adventure?
What makes an adventurous journey? They could think about the place, how they get there, or the environment around them.
What do you need to do before an adventure? Do you pack a suitcase, do you fill your pockets with your favorite food, do you need a map?
- Ask the students to jot down their thoughts and then in groups share them with the rest of the class.
- The questions on the activity sheet focus on traveling to unexpected places. In pairs or individually ask the students to think about the following for each question:
Do you need equipment?
Do you need special clothing?
What does your vehicle or transport look like? It doesn't have to be a car, train or boat - they can name their own vehicle.
How do you move? Think about descriptive words or descriptions of movement and travel. Do they zoom, float, spring, glide, tumble?
When you're underwater what can you see? Are you dry or wet? How do you breathe?

Differentiation

Some students may benefit from creating a mind map to answer both sets of questions.

Extension

Working in small groups, students create a short play about their adventurous journey.

Follow up

Depending on time available students can move on to the 'A town called...' activity (see below).

Activity 3.3 A town called... (30 mins)

- Hand out the A town called... activity worksheet.
- Explain to the class they are going to design a new town.

- Ask everyone to close their eyes and imagine a completely empty green space - no roads, no paths and no infrastructure. Allow their imaginations to run wild!
- With their eyes closed ask the students to think about the following:
Who would live in the town?
Are there any buildings? What do they look like? What are they made out of?
Encourage students to think about different materials - trees, plants, natural materials. Or bricks, steel, clay.
How do you move around the town? Are there trampolines in the ground? Are there swimming lanes, do you shrink and ride on the back of insects?
What's the weather like in your town? How does this change the environment?
- Ask the students to open their eyes and then draw what they imagined onto the activity sheet.
- Encourage students to name their town and label their drawings.

Differentiation

Some students may prefer to write bullet points about what they imagined instead of drawing.

Extension

Students that require an extra level of challenge can create their own animals and creatures that inhabit the town. Why do the animals live there and why are they suited to the town's environment?

Math Extension

Create the 'A town called...' activity using graph paper. Ask students to calculate the area and perimeter of the following:

- Green space
- Buildings
- 'Transport' areas
- Or 'zones' and areas of their choosing, using the prompts in the original activity outline.

Color code each area and use a key to clearly represent each 'zone'.

Follow up

Cut out all the towns created to create a display of the ideas. Students could add their new modes of transport as an idea of how you might travel from one town to the other.

0.0 Go Green Invention Drawing Sheet (20 - 40 mins)

It's time to invent again! Students should try and focus on a totally new invention related to their new learning.

Differentiation: Students make a video or audio recording to explain how they got their

idea in their own words.

Extension activities: Students come up with their own invention ideas, draw them and explain how they think it can work and how it can be made. Students could also make a model of their invention. Students can create a poster for their invention or make a video about it. You could ask your students to write a story, or draw a comic strip about this character, their life and how the invention could change their life.

3.0 Challenge Cards - The way we move

- The challenge cards are designed as quick fire creative catalysts to help students start inventing quickly.
- Students can work independently or in small groups on this activity.
- Hand out the challenge cards, there are a number of challenges in each pack, you may decide to only use two sets of cards in your class. They will need to be cut up and then distributed amongst the students.
- Students can decide how they wish to use the cards, they can share verbal ideas and then develop the ideas further as a group or they may wish to start sketching or prototyping using scrap materials straight away.

Differentiation

Some students may prefer to work with their hands straight away and sketch or make models of some of the things they think you may need in space.

Some students may benefit from having one area of the activity to focus on
e.g. Invent a mode of transport that can hold 1000 people

Extension

Is there an element of this activity that the students would like to develop further? Students that finish the activity quickly can review each other's ideas.

Follow up

Encourage students to make notes, record their ideas and explore ideas through drawings.

Now we're off to see how we can reinvent the everyday.

Pack 4 - Living: Reinventing Everyday

View the activated powerpoint for this section [here](#)

- The approximate timing range for this unit is 60 minutes to 95 minutes.



Slide 1	Now it's time to focus on living and the environment around us.
Slide 2	The great indoors
Slide 3	Let's start small
Slide 4	Reinventing normal
Slide 5	Activity 4.1: Dream green
Slide 6	Feel the power!
Slide 7	Activity 4.2: Let's walk!
Slide 8	From the minds of Little Inventors - like you!
Slide 9	Activity: 0.0 Go Green Invention Drawing Sheet

4.1 : Dream green (20 - 35 minutes)

- Distribute the dream green worksheet.
- Ask students to choose a room in their school or a space they know well.
- On the worksheet, list all the things which use energy within the space - TV, console, heating, lighting, water.
- The worksheet focuses on problem solving. Encourage students to think about what problem they can solve within their chosen room. This could be water wastage, lots of appliances using a lot of energy, an alternative heating system. Ask students to think about interesting ways they could use the walls, ceilings, floor and windows.
- Encourage students to think about how nature could provide inspiration and solve problems. Students could explore bringing the outside inside, or think about how nature can help reduce energy consumption.
- Students draw and label their room. The labels indicate what has been added, removed or modified. Give students the freedom to change some infrastructure such as ceilings, walls, floors and windows.

Differentiation

Students may benefit from working in groups and choosing a room they all know from within the school. In groups they can visit the room and find all the things which use energy within the space. They could draw a diagram of the room and mark where everything is. This can then be shared with the class.

Extension

Students can create a diorama of the newly modified space using recycled materials.

Follow up

Students can share their modifications with the class, leading to a whole class discussion. Students can look at how they can change things within the school to reduce energy consumption.

4.2: Let's walk! (20 minutes)

- Hand out the Let's walk! Activity sheet.
- Explain to the students that they are going to explore movement and think about their everyday movement behaviors.
- Encourage students to rethink the way we move and behave and make it much more fun!
- Begin with the simple mapping exercise which will get the class thinking about the different ways they move their bodies each day or each week. Explain that they can include sporting activities and games, but the activity sheet is about movement and actions within school and indoors.
Give the students prompts to get them thinking differently:
Their daily routines - getting up, getting dressed, having breakfast and cleaning their teeth.
Cooking or making food.
Tidying up, hoovering
Moving around the school - walking up and down the stairs, moving from room to room.
- Students then examine their ideas and think about how they can make them more fun! If students need encouragement to think differently about movement, provide some prompts:
Could they add anything to the movement or action - moving from room to room swinging on ropes, getting down stairs by slide, going upstairs on a treadmill.
Could they make their breakfast on a bike?
Could they get dressed using a clothes decision making machine?
- Ask students how they can make these ideas environmentally friendly. Explain this could be through materials, power, multiple use, or whether their idea could harness energy.

Differentiation

The mind mapping exercise can be done in pairs, groups or as a whole class activity. Students can stand and move around the room, exploring different movements of the body. In groups, or as class, play a game of movement charades!

Extension

Design a poster or act out an advert for their new idea.

Follow up

Encourage students to use their inventor's logs to record ideas, thoughts and sketches they have made so far.

0.0 Go Green Invention Drawing Sheet (20 - 40 mins)

Another opportunity for students to turn their ideas into an invention. Using the information covered in this unit can the students create a new invention or make an adaption to a previous invention?

Differentiation: Students make a video or audio recording to explain how they got their idea in their own words.

Extension activities: Students come up with their own invention ideas, draw them and explain how they think it can work and how it can be made. Students could also make a model of their invention.

Students can create a poster for their invention or make a video about it. You could ask your students to write a story, or draw a comic strip about this character, their life and how the invention could change their life.

4.0 Challenge cards - Reinventing everyday

- The challenge cards are designed as quick fire creative catalysts to help students start inventing quickly.
- Students can work independently or in small groups on this activity.
- Hand out the challenge cards, there are a number of challenges in each pack, you may decide to only use two sets of cards in your class. They will need to be cut up and then distributed amongst the students.
- Students can decide how they wish to use the cards, they can share verbal ideas and then develop the ideas further as a group or they may wish to start sketching or prototyping using scrap materials straight away.

Differentiation

Some students may prefer to work with their hands straight away and sketch or make models of some of the things they think you may need in space.

Some students may benefit from having one area of the activity to focus on e.g. Invent an unexpected way to clean your teeth

Extension

Is there an element of this activity that the students would like to develop further? Students that finish the activity quickly can review each other's ideas.

Follow up

Encourage students to use their inventor's logs to record ideas, thoughts and sketches they have.

Submitting your students best invention ideas

You should choose between 3-5 invention ideas in total to submit to Little Inventors. All invention submissions need to be uploaded prior to 31st March. Inventions can span across the Go Green themes; eating, traveling, living. Invention drawings should be scanned if possible (rather than photographed) to be uploaded on misd.littleinventors.org for a chance to get picked as Little Inventors Team favorites, turned into animations or even get made into real objects.

Here's our criteria recommendations for being chosen (but feel free to create your own criteria!):

- Most fun
- Most detailed
- Most innovative
- Most likely to succeed within the chosen environment
- Wild card - this could be an invention from a student that rarely gets picked in school or a student that is a little shy/needs a little confidence boost!

Part 5 - Prototyping

If the students have more time and want to take their ideas to the next level they can bring their inventions to life in 3D.

As an example/practise prototype there are step-by-step instructions included on how to make your very own propeller powered prototypes with artist, Lottie Smith. There are two parts to the prototyping section:

- Propeller Power: Lift
- Propeller Power: Forward Motion



Watch the Propeller Power tutorials via the Little Inventors youtube channel or find them in the resource list at misd.littleinventors.org to learn how:

- [Propeller Power: Lift](#)
The tutorial is split into sections, you will be able to see the names and timings in the description text.
- [Propeller Power: Forward Motion](#)
The tutorial is split into sections, you will be able to see the names and timings in the description text.

There are also written and illustrated instructions included in the 'For Kids' section of the resource pack labeled 5.1 ProtoInstructions.

Extension

Students can name their vehicle and create their own badge for their propeller powered vehicle using the space provided in the *6.0 Take your ideas further* document. They can make the badge out of cardboard or paper which could be added to their vehicle or made into a badge to wear!

6.0 Take your ideas further

There is a whole host of extension activities included for students who have really enjoyed the activities and want to take their invention ideas further. These activities can take between 10 mins - 2 hours depending on how many of the activities they engage with. You can do these extra activities in class time or give to your students to complete at home.

Celebrate all of the hard work completed by the whole class. You may want to explore ideas of how you can showcase all of the inventions at your school. How about an invention exhibition? You could invite the school community to come and explore all of the fantastic ideas!

Top Tip: Give students extra invention sheets to come up with more invention ideas at home. These can be found in the 'For Kids' section of the resource pack.

They can also download more invention sheets for free on misd.littleinventors.org

Appendix

Below are a list of links which relate to the themes; eating, traveling and living. These include some exciting innovations to inspire students further.

Eating: From field to fork

Food Miles Calculator - <https://www.foodmiles.com/food/calculator>

Food Miles Cafe Menu. Here you will find a pre-made cafe menu which can be used as additional support material for activities 2.1, 2.2 and 2.3 -

https://cdn.agclassroom.org/media/uploads/2018/03/08/Food_Miles_Menu.pdf

How rotting vegetables can make electricity - <https://youtu.be/c1adiK8nLbA>

Can maggots devour all of our food waste - <https://youtu.be/2cKyjFqHE-A>

America's top composting city helps farms grow food & save water -

<https://youtu.be/XleUJUiyZtE>

Worm bin: 100 day time lapse- <https://youtu.be/McQYDcqc0Nk>

MarinaTex a bioplastic made from fish waste - <https://youtu.be/AHKaChoCDW8>

Edible Water Bottles - <https://www.youtube.com/watch?v=klG5Y1f8mvY>

Swaziland teens engineer hydroponic solutions for farmers - <https://youtu.be/LCT0rDzFXMM>

Traveling: The way we move

Transport Mash Up - The transport mash up paper folding game is based on 'Exquisite Corpse' played by Surrealists which was played to stimulate creativity through collaboration. For a visual guide on how to play the game see - <https://artfulparent.com/a-fun-family-drawing-activity-that-will-make-everyone-laugh/>

A life size lego car powered by air- https://youtu.be/_ObE4_nMCjE

How can birds teach us to build better airplanes - <https://youtu.be/iazEZZ63Yik>

Rowland Emmett's marvelous machines - <https://youtu.be/-tYoayiGBH0>

Living: Reinventing everyday

How green roofs can help cities - <https://youtu.be/FIJoBhLnqko>

Designing solar panel walls that can recycle & heat greywater - https://youtu.be/nS_HgfanRjA

A practical guide to climate resilient buildings - <https://youtu.be/qVVwjHqWCI8>

Cities that are saving the planet - <https://youtu.be/qVVwjHqWCI8>

How trees inspired a new way to dispose of human waste <https://youtu.be/jU7aVkvCKho>

The man who built a mini-hydropower station for his neighbors <https://youtu.be/g6zzuJwdWu0>