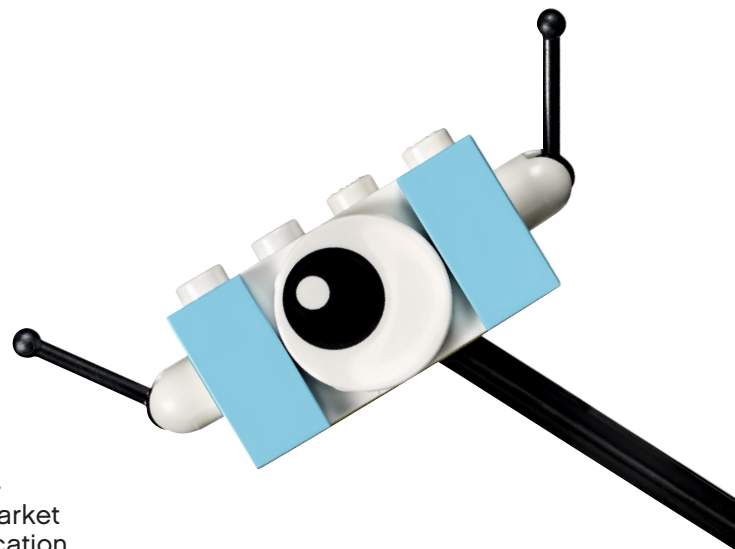
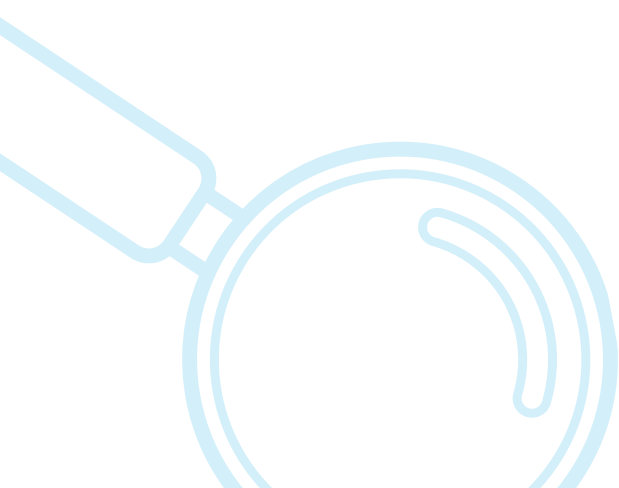
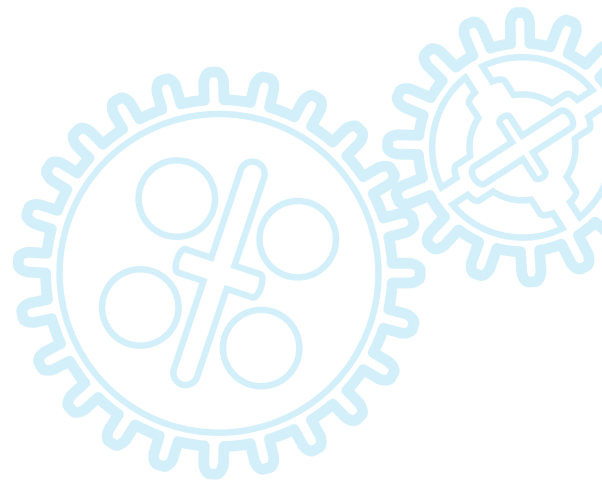


# WeDo 2.0

## MAKER Activities – Primary School



This educational content is a certified and direct translation of educational content that was originally developed and quality-approved by LEGO® Education. It was developed for the US market and has not been changed in any manner to reflect local education standards or curriculum. We hope that you find it helpful.





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## Introduction to the Maker Lessons



The LEGO® Education WeDo 2.0 Maker lessons have been developed to engage and motivate primary school pupils, piquing their interest in learning about design, engineering and coding using motorised models and simple programming.

Each lesson provides an initial brief as a starting point. The open-ended prompts allow for unlimited answers and enable pupils to express a wide range of creative solutions as they sketch, build and test prototypes of the designs that they create.

The teacher's role in these lessons is to provide pupils with the tools and necessary freedom to connect with and define a problem, make a solution and share what they have made.

Use your creativity to adapt these lessons to suit the needs of your pupils.

*'The role of the teacher is to create the conditions for invention rather than provide ready-made knowledge.'*

*– Seymour Papert*

# Classroom Management Tips

## Required Materials

- LEGO® Education WeDo 2.0 Core Set
- Lesson plan
- Pupil Worksheet for each lesson
- Modelling materials already available in your classroom

## How much time do you need?

Each lesson is designed to take 90 minutes. If you work in shorter class periods you can break this down into two 45 minute sessions.

## Preparation

It is important to establish work groups for your pupils. Groups of two work well. Ensure that each pupil has a copy of the Pupil Worksheet for recording their design process. Alternatively, they can use their own preferred method for recording their design journey. They will also need the LEGO Education WeDo 2.0 Core Set (one set for every two pupils is recommended).

## Prior Learning

Before beginning these Maker lessons, it is recommended that the pupils complete at least one of the Getting Started lessons with Milo the Science Rover. They should also spend some time experimenting and playing with the WeDo 2.0 LEGO® bricks and programming app. The Getting Started lessons, which can be found within the WeDo 2.0 software, are designed to build pupils' competence and confidence in building and coding.

However, if you prefer a more open-ended, explorative approach, you can start out with this lesson and allow your pupils to find help on their own by exploring the WeDo 2.0 Model and Program Libraries.

## The LEGO® Education Maker (Design) Process



### Find a Problem

It is important for pupils to define a real problem to solve or to find a new design opportunity from the start. The 'Connect' images are provided as inspiration to help pupils as they begin thinking about their own design solutions.



### Brainstorm

Brainstorming is an active part of making. Some pupils will find it easier to explore their thoughts through tinkering (i.e., hands-on experimentation) with the LEGO bricks and others will prefer to record sketches and notes. Group work is essential, but it is important to allow time for pupils to work alone before sharing their ideas with their group.



### Choose the Best Idea

Discussing and reaching an agreement about the best solution to build can involve a lot of negotiation and may require different techniques that are dependent upon your pupils' skills. For example:

- Some pupils draw well.
- Others may build part of a model and then describe what they mean.
- Other pupils may be good at describing a strategy.



Encourage a culture in which pupils can share anything, no matter how abstract it might sound. Be active during this phase and ensure that pupils choose achievable ideas.

It is important for pupils to set clear design criteria. Once the solution to the problem has been made, they will return to these criteria, which will then form the basis for testing how well the solution works.



### Make the Idea

Pupils must use the LEGO® set to make one of their ideas, and they can also use other materials if necessary. If they are finding it difficult to build their idea, encourage them to break problems down into smaller parts. Explain that they do not have to come up with the whole solution from the start. Remind them that this process is iterative and that they must test, analyse and revise their idea as they go.

Using this Maker process does not mean that you are following an inflexible set of steps. Instead, think of it as a set of practices. For example, brainstorming may be prominent at the beginning of the process. However, pupils may also need to brainstorm ideas when they are trying to figure out ways to improve their idea or when they have a bad test result and must change a feature of their design.



### Evaluate What You Have Made

In order to help pupils to develop their critical thinking and communication skills, you may wish to have pupils from one group observe and critique another group's solution. Peer review and formative feedback helps both the pupils giving and the pupils receiving the feedback to improve their work.



### Present Your Model

The Pupil Worksheet is helpful for basic documentation of the lesson. The pupils can also refer to it when presenting their work in front of the class. You may also wish to use the Pupil Worksheet as a portfolio for performance evaluations or for the pupils' self-evaluation.

## Assessment

### Where can I find the assessment materials?

Assessment materials are provided at the end of the Pupil Worksheets for the first three projects.

### What learning goals are assessed?

Pupils use the Maker self-assessment rubric to evaluate their design work. Each rubric includes four levels of achievement. The intention is to help them to reflect on what they have done well and what they could have done better. Each rubric can be linked to engineering-related learning goals.

Using these rubrics, pupils can assess themselves using the 'Four Bricks Scale' in which the biggest brick represents the highest rating. In certain situations, you might consider asking your pupils to assess themselves using only two of the four bricks.



**Design criteria example:**  
The design must...  
The design should...  
The design could...



### Emerging

The pupil is at the beginning stages of their development in terms of content knowledge, ability to understand and apply content, and/or demonstrate coherent thoughts about a given topic.

### Developing

The pupil is able to present basic knowledge only (e.g. vocabulary) and cannot yet apply content knowledge or demonstrate comprehension of the concepts being presented.

### Proficient

The pupil has concrete levels of comprehension of the content and concepts, and can adequately demonstrate the topics, content or concepts that are being taught. The pupil lacks the ability to discuss and apply these concepts outside of the required assignment.

### Accomplished

The pupil can take concepts and ideas to the next level, apply these concepts to other situations, and synthesise, apply, and extend their knowledge to discussions that include extensions of ideas.

### NGSS Science Standards:

Science and Engineering Practices  
3-5-ETS1.1, 3-5-ETS1-2, 3-5-ETS1-3

Disciplinary Core Ideas  
ETS1.A, (3-5-ETS1-1)  
ETS1.B, (3-5-ETS1-2), (3-5-ETS1-3)  
ETS1.C, (3-5-ETS1-3)

### Common Core State Standards

ELA/Literacy  
RI.5.1, RI.5.7, W.5.8

Mathematics  
MP.2, MP.4

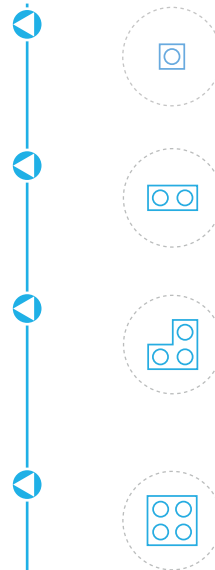
### Share It

We encourage you to share your pupils' brilliant projects on the appropriate social media platforms using the hashtag #LEGOMaker.

### The Maker Lessons

Start your Maker journey with the following three lessons:

- Make a sound machine
- Make a dancing robot
- Make a life hack



 **#LEGOMAKER**

# The LEGO® Education Maker (Design) Process



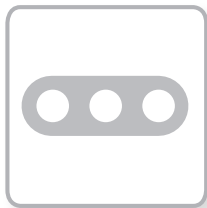
**Find a Problem**



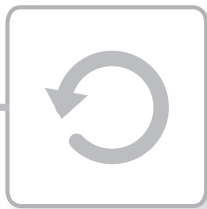
**Brainstorming**



**Choose the Best Idea**



**Make the Idea**



**Evaluate What You Have Made**



**Present Your Model**

## Make a Sound Machine

This is a highly engaging Maker lesson that will create some joyful noise! Your pupils will explore programming variables that make soft sounds, loud sounds, environmental sounds, rhythms and melodies. They can even combine projects to form a band!

### Learning Goals

After completing this lesson, pupils will have:

- Used and understood the design process
- Defined a clear design need
- Developed their ability to iterate and improve design solutions
- Developed their problem-solving and communication skills

### Duration

2 x 45 mins (90 mins)

### Preparation

Ensure that each pupil has a copy of the Pupil Worksheet for recording their design process. They will also need the LEGO® Education WeDo 2.0 Core Set (one set for every two pupils is recommended).

### Other Materials Required (Optional)

Use craft materials that you already have in your classroom to add another dimension to this lesson. Some materials could be:

- Rubber bands
- Pipe cleaners
- Small musical instruments (e.g. xylophone, tambourine, jingle bells, cymbals, drums, maracas, rainstick)
- Plastic or paper cups
- Keys or other metal objects
- Recycled materials and objects from nature

### Procedure

#### 1. Introduction/Discussion

Hand out the Pupil Worksheets and allow your pupils to interpret the lesson for themselves, or read the Maker 'Connect' text aloud to set the scene.

#### 2. Find a Problem

As pupils look at the 'Connect' images and questions, facilitate a discussion to steer them towards a problem or a new design opportunity. Once they have decided upon a problem to solve, ensure that they record this in some way. They can use the worksheet to help structure their project documentation or use their own preferred method to record their design journey.

#### 3. Brainstorm

Pupils should initially work independently or in pairs, spending a few minutes to generate as many ideas as they can to solve the problem. They can use bricks from the LEGO® set during the brainstorming process or sketch out their ideas in the space provided on the worksheet.





It is important for pupils to spend time tinkering with the LEGO® bricks in order to generate ideas. The goal of tinkering is to explore as many solutions as possible. You can use the tinkering examples that are provided at the end of this material for inspiration or as a means for getting started.

Pupils can now take turns sharing their ideas within their groups. Once all of the ideas have been shared, each group should select the best idea(s) to make. Be prepared to help facilitate this process, ensuring that your pupils choose an idea that is possible to make. Encourage diversity, not all groups have to make the same thing.

#### 4. Choose the Best Idea

Pupils should record up to three design criteria on their worksheets. They will refer to this again as they review and revise their solutions.

#### 5. Make the Idea

Let the pupils carry out one of their group's ideas using the WeDo 2.0 Core Set and other materials as needed. Reinforce the idea that pupils do not have to come up with the whole solution from the start.

During the making process, remind your pupils to test and analyse their ideas as they go along, making improvements where necessary. If you would like them to submit their documentation at the end of the lesson, ensure that they use sketches and photos of their models to record their design journey during the making stage of the lesson.

#### 6. Evaluate What You Have Made

Your pupils will test and evaluate their designs against the design criteria that they recorded before they started making their solutions. They can record notes on their Pupil Worksheets.

#### 7. Present Your Model

Allow time for each pupil or group of pupils to present what they have made to the class. A good way to do this is to set out a table that is large enough to display all of the models. If you are short of time, pair off the groups and ask them to present to each other.

#### 8. Assessment

Your pupils will use the Pupil Worksheet assessment rubric to evaluate their design work according to the 'Four Bricks Scale'.

#### 9. Tidy Up

Ensure that you leave approximately 10-15 minutes at the end of the lesson to break down the models and sort them back into the LEGO® boxes.

Take turns to share your ideas.



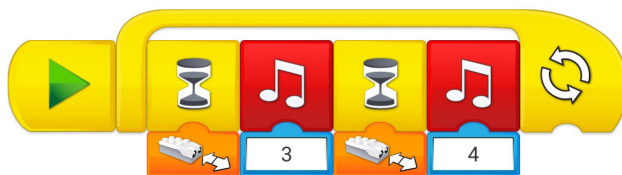
## Tinkering Examples

Some pupils may require a little inspiration and support to help them to get started.

They can explore the Model Library to see some of the different types of sound machines that they can make. By asking questions (e.g. Would you like to make a sound machine that taps a beat or shakes an object?) you can help lead pupils to the most relevant models. Pupils can remake their models by adding or removing LEGO® elements and other objects.

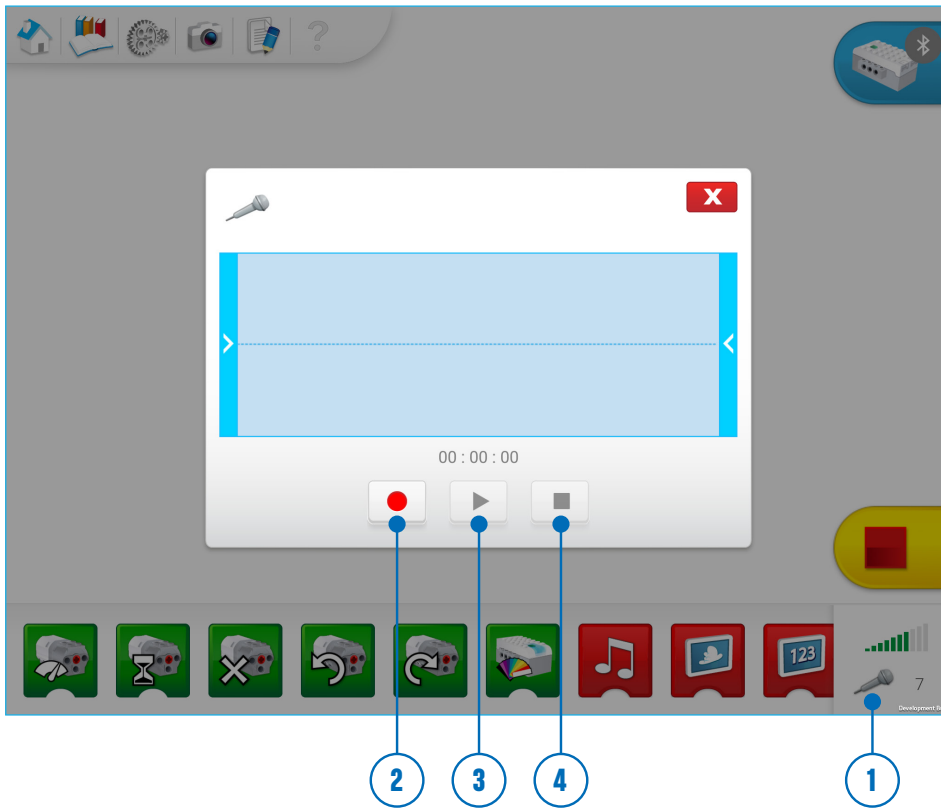


By combining the WeDo 2.0 Smarthub and a sensor, the sound library makes a simple sound machine with many possibilities, including the ability to record and play a custom sound or melody.



**Programming note:**

Pupils can record their own sounds to use with their sound machines.

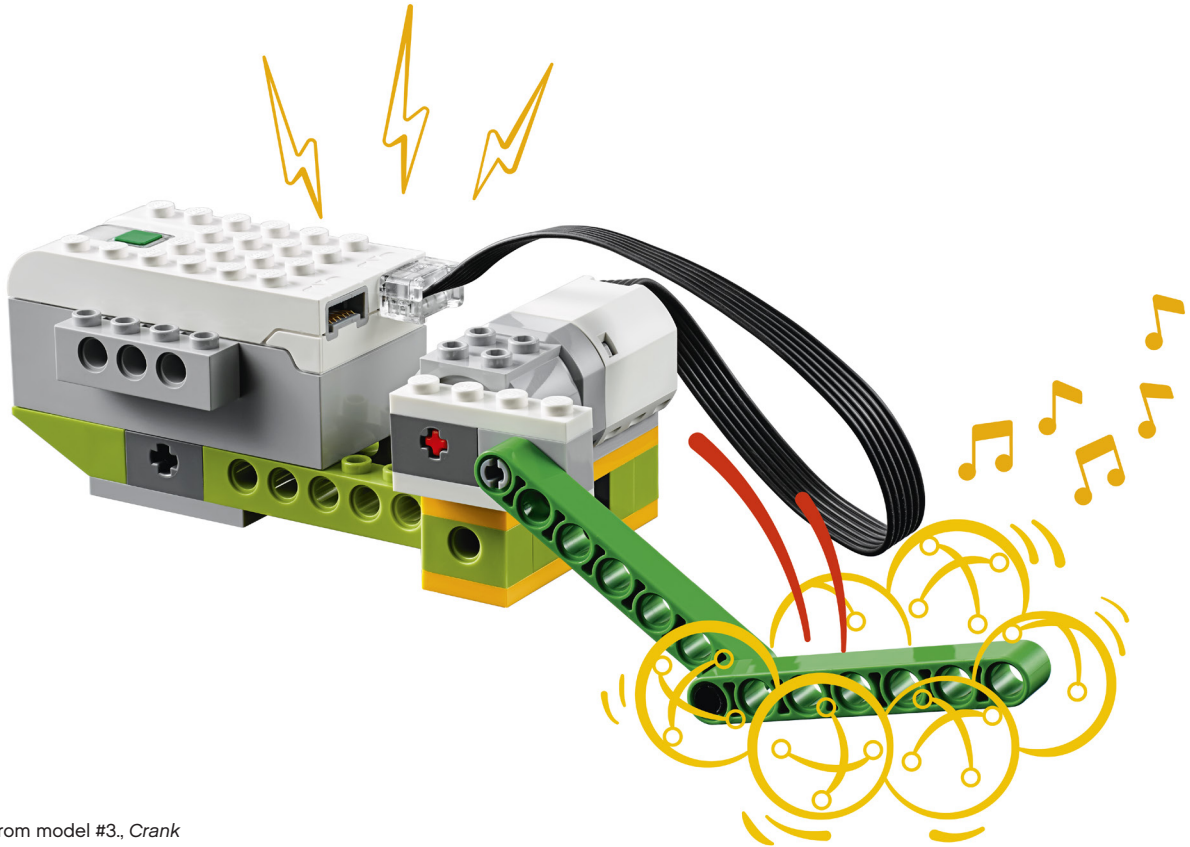


1. Press the Mic icon to access the window.
2. Press the Record icon to begin recording.
3. Press the Play icon to play back the recording.
4. Press the Stop icon to stop the recording.

The last recorded sound will be saved in a Sound Block with the input '0'.



Sample Model

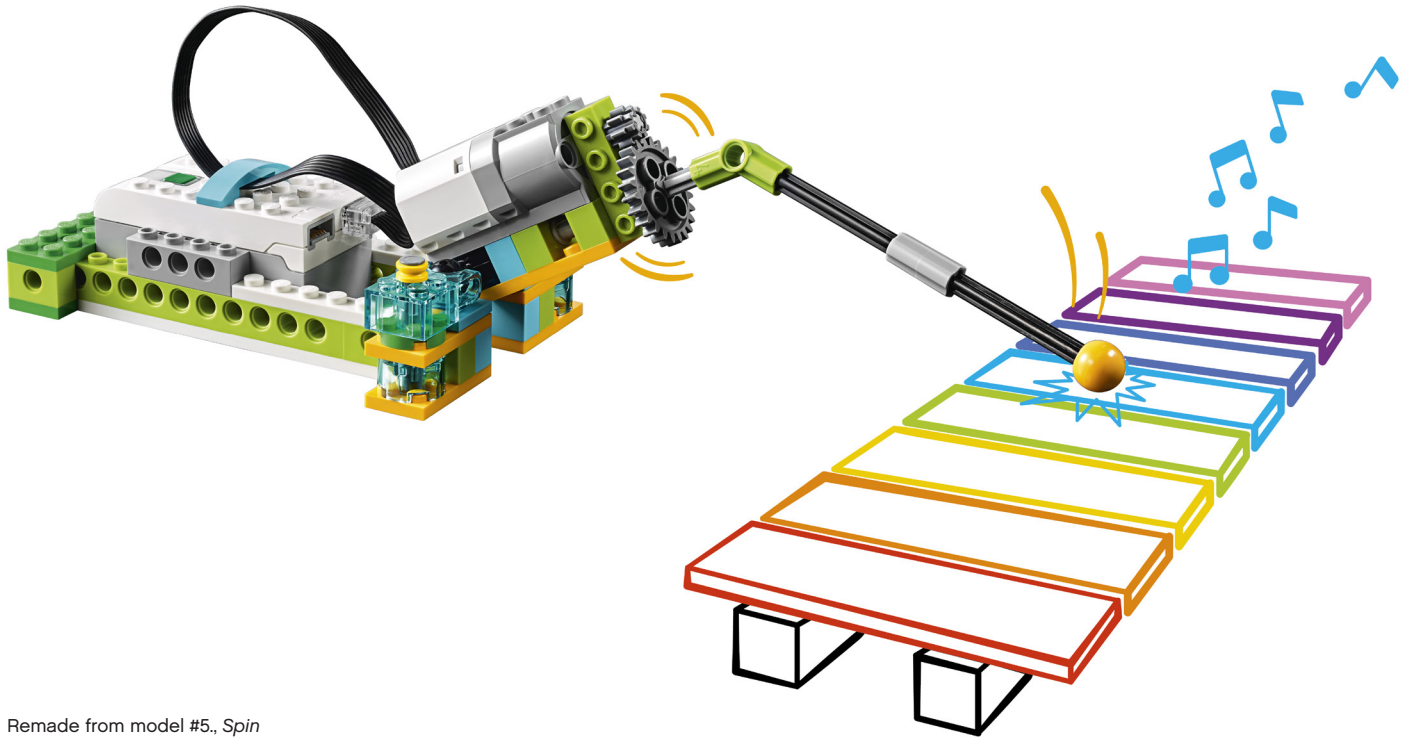


Remade from model #3, Crank

Sample Program



Sample Model



Remade from model #5, *Spin*

Sample Program



## Make a Sound Machine

### Maker Connect

Close your eyes and listen. Sounds are all around us! Can you identify some sounds? Where are they coming from?

Sounds can come from nature, animals, objects and machines. Sounds can make rhythms and sounds can make music. Sounds can wake you up, warn you of danger or entertain you. Sometimes sounds are just noise.

Look at the photos, and think about these questions.

- What do you see?
- What questions do you have?
- What ideas do you have?
- What can you make?
- Can you make your own sound machine?



## Pupil Worksheet

# Make a Sound Machine

Name(s): \_\_\_\_\_

Date: \_\_\_\_\_

### Find a Problem

What ideas came to mind when you first saw the pictures?

---

---

### Brainstorm

*Individual work:* Now that you have found a problem, spend three minutes coming up with ideas for solving it. Be prepared to share your ideas with your group.

*Group work:* Share and discuss your ideas for solving the problem.



Record as much as you can using sketches, photos and notes.



Use LEGO® bricks and sketches to explore your ideas.



Sometimes simple ideas are the best ideas.



### Choose the Best Idea

You should have come up with a number of ideas. Now choose the best one to make.

Write down three things that your design must be able to do:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

### Make the Idea

It is time to start making. Use the pieces from the LEGO® set to make your chosen idea. Test your design as you go along and record any changes that you make.

### Evaluate What You Have Made

Have you solved the problem that you found at the start of the lesson? Look back at the things that you said your design must be able to do.

How well does your solution work? Suggest three things that you could do better.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

### Present Your Model

Now that you have finished, make a sketch or take a photo of your model, label the three most important parts and explain how they work. You are now ready to present your model to the class.

**Well done! What will you make next?**



Name three things that your design must do.  
Example:  
The design must...  
The design should...  
The design could...



You can use other materials from around the classroom.



Print your photos and attach all of your work to a sheet of paper or card.





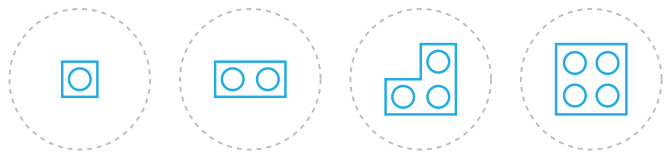
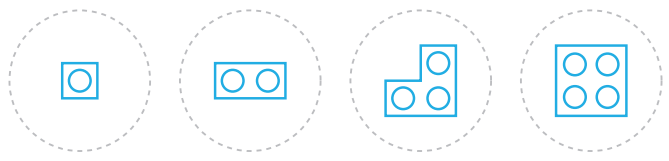
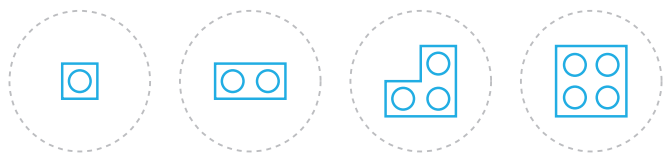
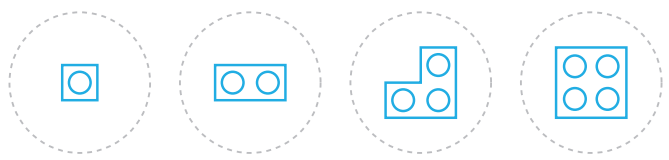
# Self-Assessment

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## How did you do?

Directions: Circle the brick that shows how well you did. The bigger the brick, the better you did.

|  |  |
|--|--|
| <p>We built and tested one or more designs that were based upon a problem that we found.</p> |    |
| <p>We combined ideas in order to build a good solution to a problem that we found.</p>       |    |
| <p>We made our idea better based on our tests.</p>   |   |
| <p>The final design was able to do everything it that was supposed to do.</p>                |  |

Describe what you did (draw, write or add a photo):

Tell someone about the problem that you solved.

## Make a Dancing Robot

This Maker lesson includes a whole range of possible Dancing Robot designs and performances. Your pupils can explore a cultural dance, tell a story through dance, dance in pairs or groups, or even plan a dance party where WeDo 2.0 robots are more than just dancers!

### Learning Goals

After completing this lesson, pupils will have:

- Used and understood the design process
- Defined a clear design need
- Developed their ability to iterate and improve design solutions
- Developed their problem-solving and communication skills

### Duration

2 x 45 mins (90 mins)

### Preparation

Ensure that each pupil has a copy of the Pupil Worksheet for recording their design process. They will also need the LEGO® Education WeDo 2.0 Core Set (one set for every two pupils is recommended).

### Other Materials Required (Optional)

Use craft materials that you already have in your classroom to add another dimension to this lesson. Some materials could be:

- Plastic or paper cups
- Cardboard boxes
- Egg cartons
- Fabric or felt
- Foam, pom-poms or beads
- Pipe cleaners

### Procedure

#### 1. Introduction/Discussion

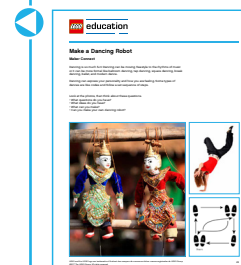
Hand out the Pupil Worksheets and allow your pupils to interpret the lesson for themselves, or read the Maker 'Connect' text aloud to set the scene.

#### 2. Find a Problem

As the pupils look at the 'Connect' images and questions, facilitate a discussion to steer them towards a problem or a new design opportunity. Once they have decided upon a problem to solve, ensure that they record this in some way. They can use the worksheet to help structure their project documentation or use their own preferred method to record their design journey.

#### 3. Brainstorm

Pupils should initially work independently or in pairs, spending a few minutes to generate as many ideas as they can to solve the problem. They can use bricks from the LEGO® set during the brainstorming process or sketch out their ideas in the space provided on the worksheet.



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#### 4. Choose the Best Idea

Your pupils should record up to three design criteria on their worksheets. They will refer to this again as they review and revise their solutions.

#### 5. Make the Idea

Let the pupils carry out one of their group's ideas using the WeDo 2.0 Core Set and other materials as needed. Reinforce the idea that they do not have to come up with the whole solution from the start.

During the making process, remind your pupils to test and analyse their ideas as they go along, making improvements where necessary. If you would like them to submit their documentation at the end of the lesson, ensure that they use sketches and photos of their models to record their design journey during the making stage of the lesson.

#### 6. Evaluate What You Have Made

Your pupils will test and evaluate their designs against the design criteria that they recorded before they started making their solutions. They can record notes on their Pupil Worksheets.

#### 7. Present Your Model

Allow time for each pupil or group of pupils to present what they have made to the class. A good way to do this is to set out a table that is large enough to display all of the models. If you are short of time, pair off the groups and have them present to each other.

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The pupils will use the Pupil Worksheet assessment rubric to evaluate their design work according to the 'Four Bricks Scale'.

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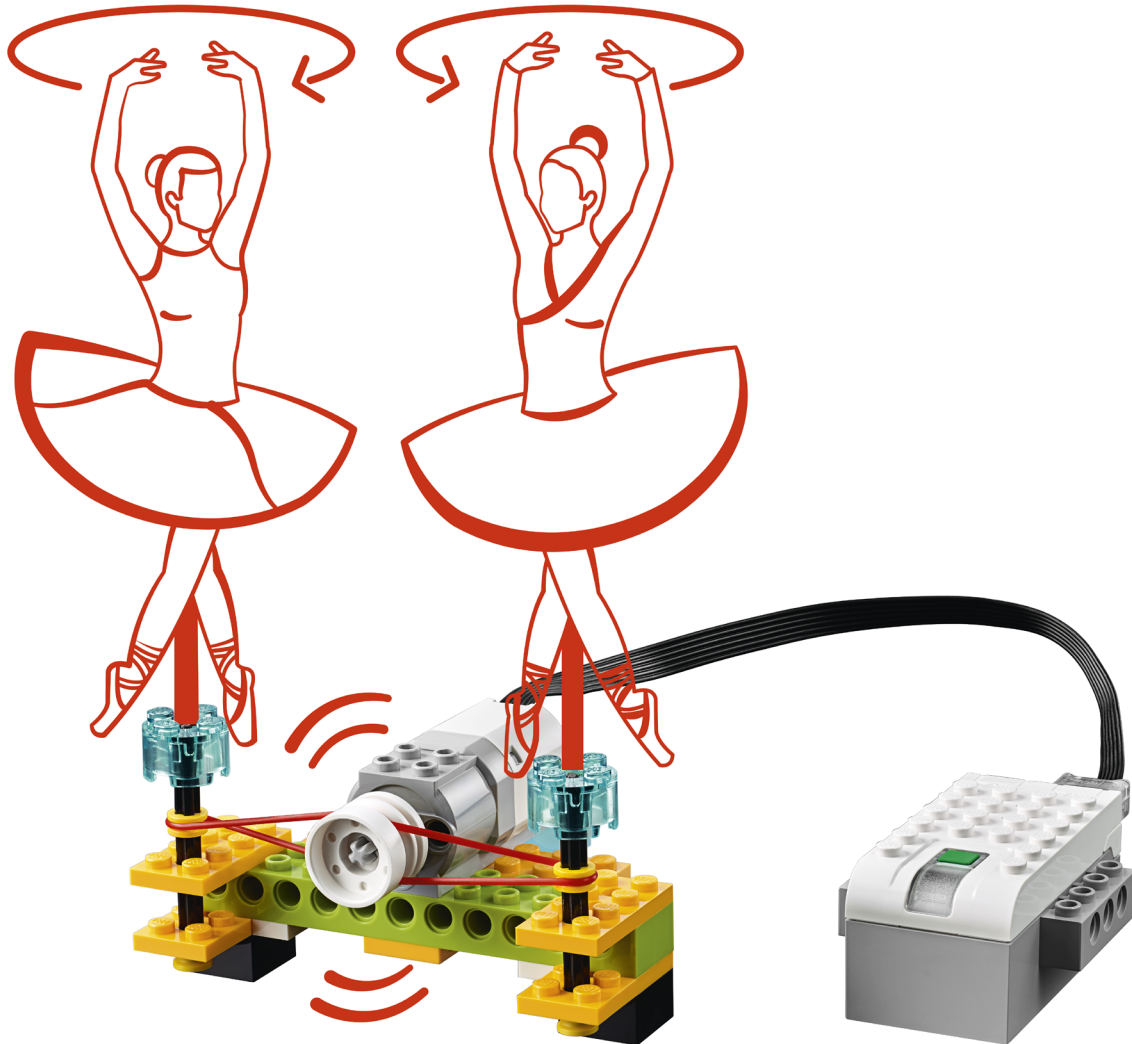


## Tinkering Examples

Some pupils may require a little inspiration and support to help them to get started.

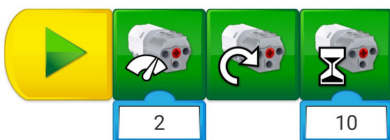
They can explore the Model Library to see some of the different types of dances they can program. By asking questions (e.g. Would you like to make a dancing robot that spins? That walks?) you can help lead pupils to the most relevant models. They can remake their models by adding or removing LEGO® elements and 'costume' pieces.

### Sample Model

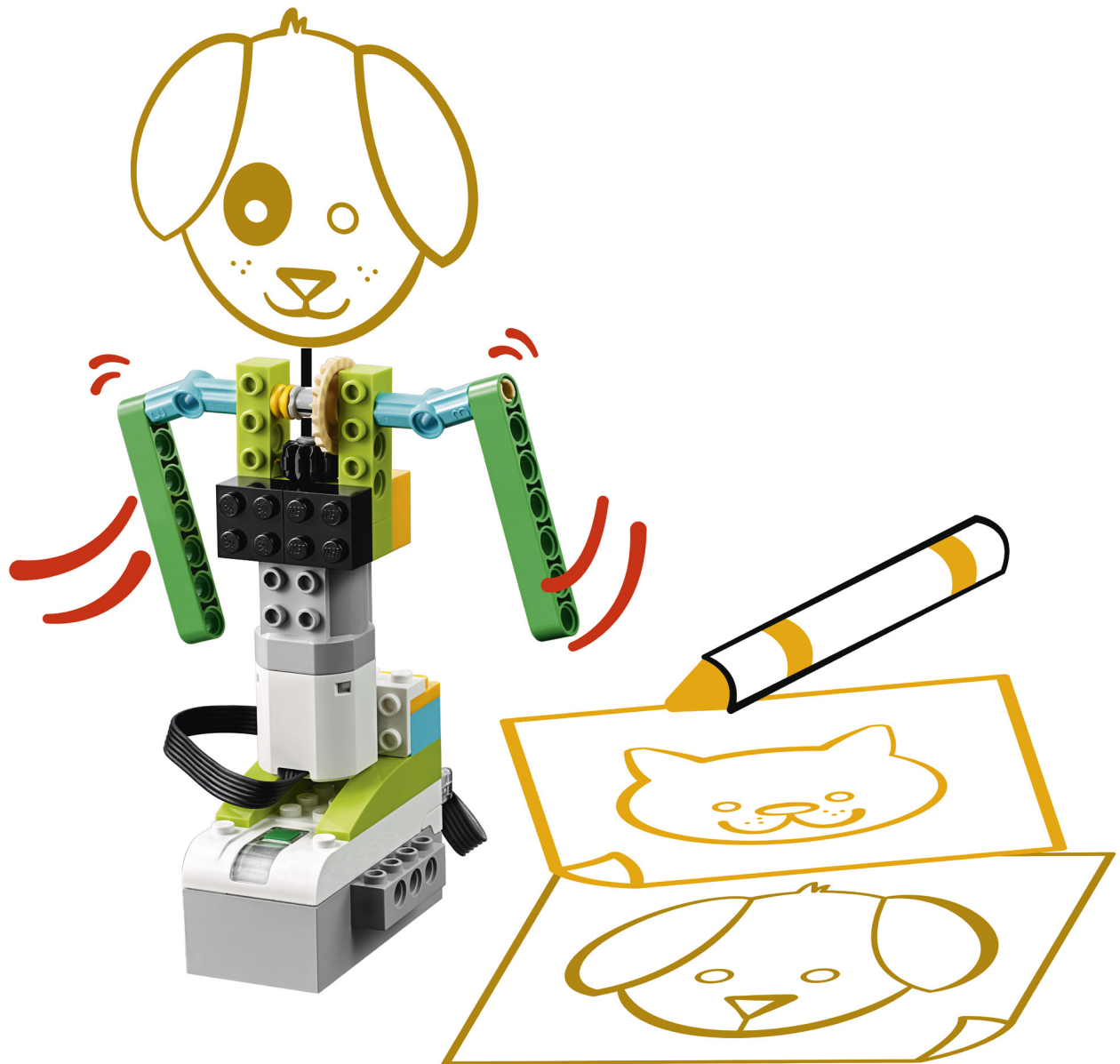


Remade from model #13., Sweep

### Sample Program

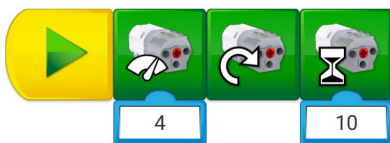


Sample Model



Remade from model #1., *Wobble*

Sample Program



# Make a Dancing Robot

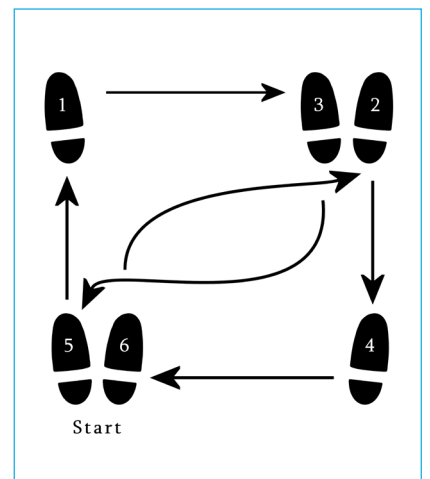
## Maker Connect

Dancing is so much fun! Dancing can mean moving freestyle to the rhythm of music or it can be more formal like ballroom dancing, tap dancing, break dancing, ballet and modern dance.

Dancing can help you to express your personality and how you are feeling. Some types of dances are like codes and follow a set sequence of steps.

Look at the photos and think about these questions.

- What questions do you have?
- What ideas do you have?
- What can you make?
- Can you make your own dancing robot?



## Pupil Worksheet

# Make a Dancing Robot

Name(s): \_\_\_\_\_

Date: \_\_\_\_\_

### Find a Problem

What ideas came to mind when you first saw the pictures?

---

---

### Brainstorm

*Individual work:* Now that you have found a problem, take three minutes to come up with ideas for solving it. Be prepared to share your ideas with your group.

*Group work:* Share and discuss your ideas for solving the problem.



Record as much as you can using sketches, photos and notes.



Use LEGO® bricks and sketches to explore your ideas.



Sometimes simple ideas are the best ideas.



**Choose the Best Idea**

You should have come up with a number of ideas. Now choose the best one to make.

Write down three things that your design must be able to do:

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_

**Make your Idea**

It is time to start making. Use pieces from the LEGO® set to make your chosen idea. Test your design as you go along and record any changes that you make.

**Evaluate What You Have Made**

Have you solved the problem that you found at the start of the lesson? Look back at the things that you said your design must be able to do.

How well does your solution work? Suggest three things that you could do better.

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_

**Present Your Model**

Now that you have finished, make a sketch or take a photo of your model, label the three most important parts and explain how they work. You are now ready to present your model to the class.

**Well done! What will you make next?**



Name three things that your design must do.  
Example:  
The design must...  
The design should...  
The design could...



You can use other materials from around the classroom.



Print your photos and attach all of your work to a sheet of paper or card.





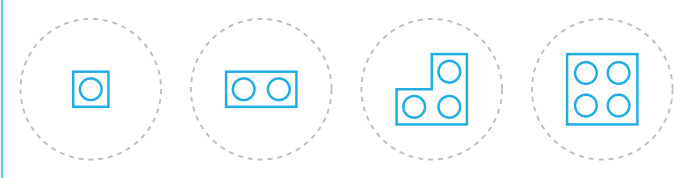
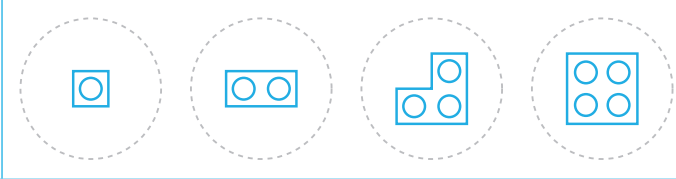
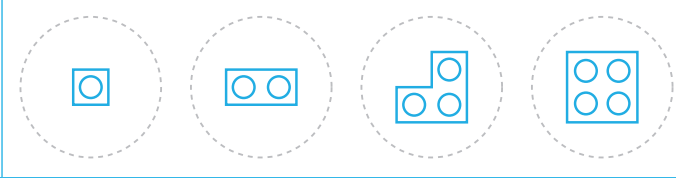
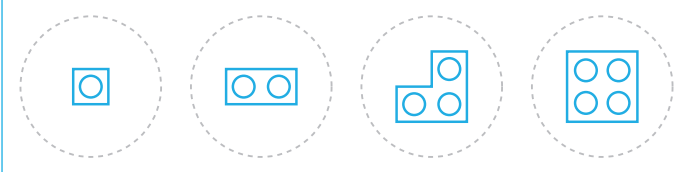
# Self-Assessment

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## How did you do?

Directions: Circle the brick that shows how well you did. The bigger the brick, the better you did.

|  |  |
|--|--|
| <p>We built and tested one or more designs that were based upon a problem that we found.</p> |    |
| <p>We combined ideas in order to build a good solution to a problem that we found.</p>       |    |
| <p>We made our idea better based on our tests.</p>   |   |
| <p>The final design was able to do everything it that was supposed to do.</p>                |  |

Describe what you did (draw, write or add a photo):

Tell someone about the problem that you solved.

## Make a Life Hack

There's inspiration for life hacks all around us. A great place to start is to ask your pupils to brainstorm simple problems that they face in their daily lives. Ask them to think about things like:

- What could they make or hack together in order to make their lives easier?
- Do they need help waking up in the morning?
- Do they need a helper for household chores?
- Do they need a reminder to do something?

Be sure to have materials on hand that they can repurpose into something new.

### Learning Goals

After completing this lesson, pupils will have:

- Used and understood the design process
- Defined a clear design need
- Developed their ability to iterate and improve design solutions
- Developed their problem-solving and communication skills

### Duration

2 x 45 mins (90 mins)

### Preparation

Ensure that each pupil has a copy of the Pupil Worksheet for recording their design process. They will also need the LEGO® Education WeDo 2.0 Core Set (one set for every two pupils is recommended).

### Other Materials Required (Optional)

Use craft materials that you already have in your classroom to add another dimension to this lesson. Some materials could be:

- Plastic or paper cups
- Cardboard boxes
- Egg cartons
- Fabric or felt
- Foam, pom-poms or beads
- Pipe cleaners

### Procedure

#### 1. Introduction/Discussion

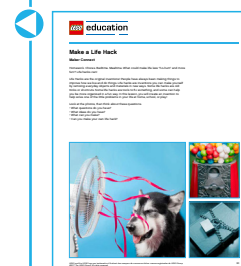
Hand out the Pupil Worksheets and allow your pupils to interpret the lesson for themselves, or read the Maker 'Connect' text aloud to set the scene.

#### 2. Find a Problem

As pupils look at the 'Connect' images and questions, facilitate a discussion to steer them towards a problem or a new design opportunity. Once they have decided upon a problem to solve, ensure that they record this in some way. They can use the worksheet to help structure their project documentation or use their own preferred method to record their design journey.

#### 3. Brainstorm

Pupils should initially work independently or in pairs, spending a few minutes to generate as many ideas as they can to solve the problem. They can use bricks from the LEGO® set during the brainstorming process or sketch out their ideas in the space provided on the worksheet.



It is important for pupils to spend time tinkering with the LEGO® bricks in order to generate ideas. The goal of tinkering is to explore as many solutions as possible. You can use the tinkering examples that are provided at the end of this material for inspiration or as a means for getting started.

Your pupils can now take turns sharing their ideas within their groups. Once all of the ideas have been shared, each group should select the best idea(s) to make. Be prepared to help facilitate this process, ensuring that pupils choose an idea that is possible to make. Encourage diversity, not all groups have to make the same thing.

#### 4. Choose the Best Idea

Pupils should record up to three design criteria on their worksheets. They will refer to this again as they review and revise their solutions.

#### 5. Make the Idea

Let your pupils carry out one of their group's ideas using the WeDo 2.0 Core Set and other materials as needed. Reinforce the idea that they do not have to come up with the whole solution from the start.

During the making process, remind your pupils to test and analyse their ideas as they go along, making improvements where necessary. If you would like pupils to submit their documentation at the end of the lesson, ensure that they use sketches and photos of their models to record their design journey during the making stage of the lesson.

#### 6. Evaluate What You Have Made

Pupils will test and evaluate their designs against the design criteria that they recorded before they started making their solutions. They can record notes on their Pupil Worksheets.

#### 7. Share Your Model

Allow time for each pupil or group of pupils to present what they have made to the class. A good way to do this is to set out a table that is large enough to display all of the models. If you are short of time, pair off the groups and have them present to each other.

#### 8. Assessment

The pupils will use the Pupil Worksheet assessment rubric to evaluate their design work according to the 'Four Bricks Scale'.

#### 9. Tidy Up

Ensure that you leave approximately 10-15 minutes at the end of the lesson to break down the models and sort them back into the LEGO® boxes.

Take turns to share your ideas.

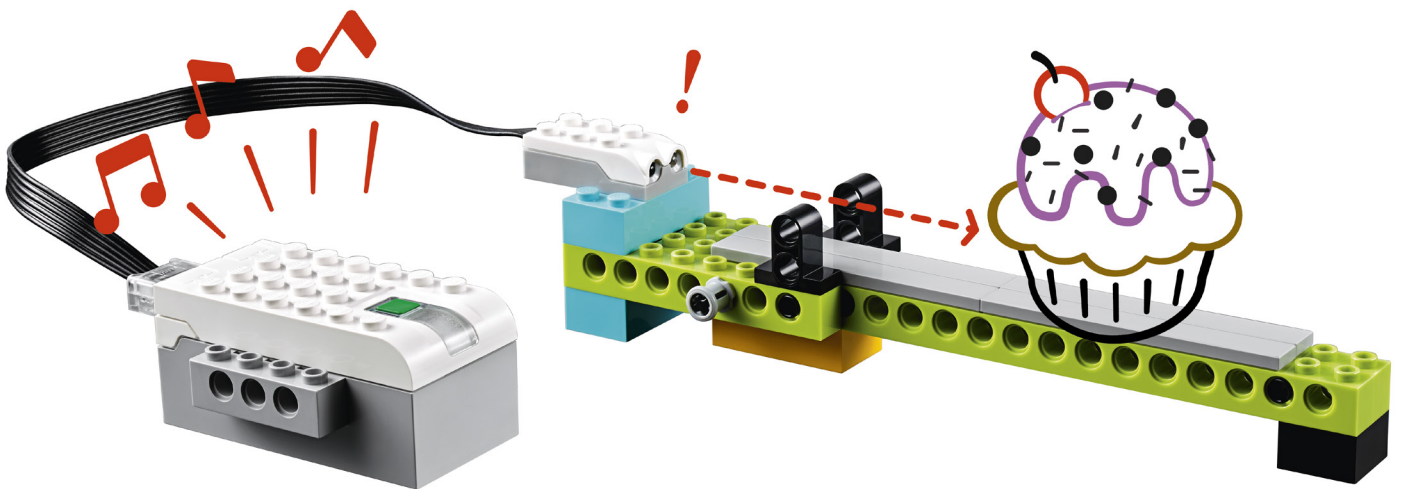


## Tinkering Examples

Some pupils may require a little inspiration and support to help them to get started.

Pupils can explore the Model Library to find inspiration for their solutions. By asking questions (e.g. Would you like to make a life hack that lifts something? That carries something? That protects something?) you can help lead your pupils to the most relevant models. Pupils can remake their models by adding or removing LEGO® elements and other objects.

### Sample Model

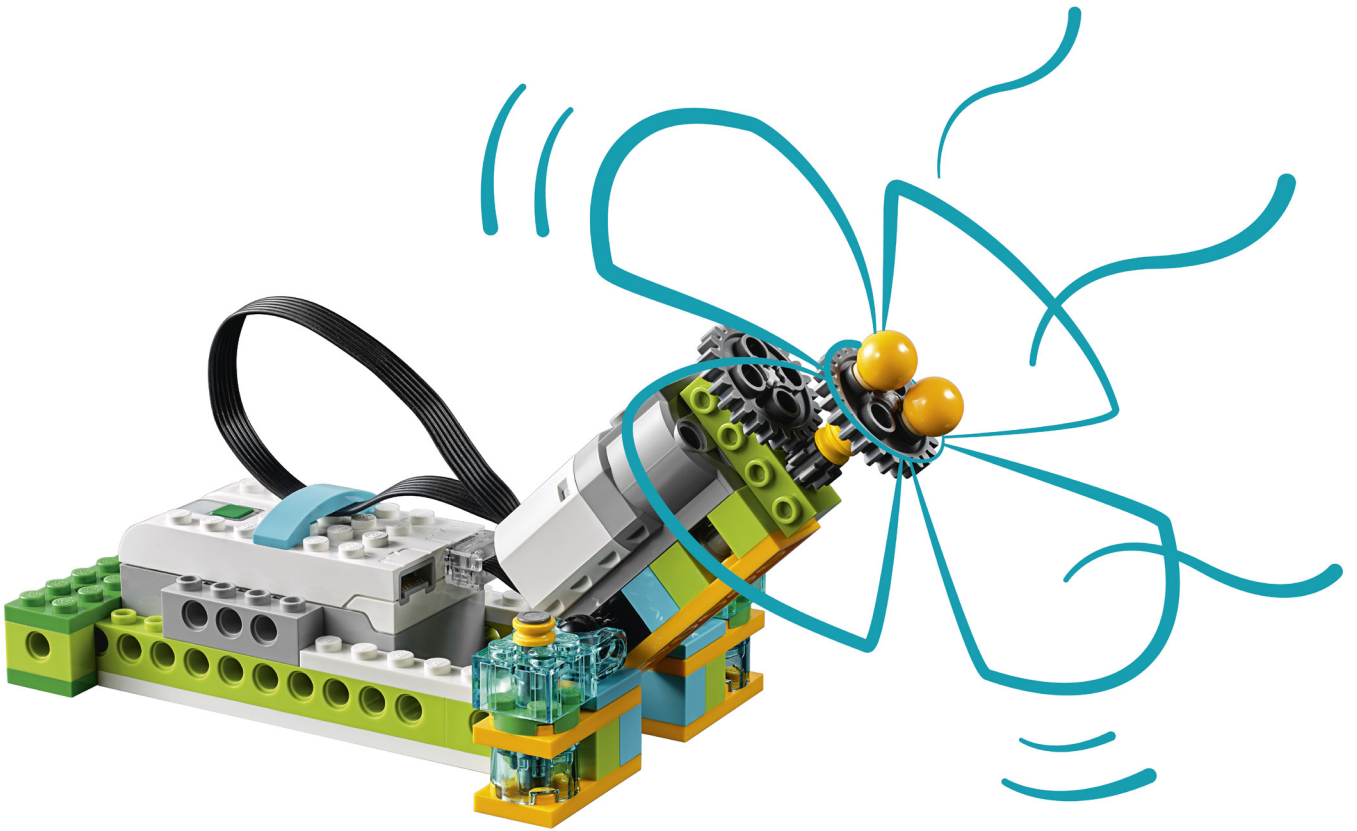


Remade from model #14., *Motion*

### Sample Program



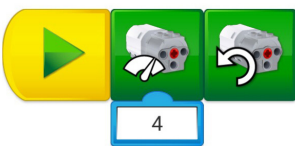
Sample Model



Remade from model #5., *Spin*

Fans can be dangerous. Please take care when choosing the shapes and materials for your model.

Sample Program



## Make a Life Hack

### Maker Connect

Homework. Chores. Bedtime. Mealtimes. What could make life less ho-hum, and more fun? Life hacks can!

Life hacks are the original inventions! People have always been making things to improve how we live and do things. Life hacks are inventions that you can make yourself by remaking everyday objects and materials in new ways. Some life hacks are old tricks or shortcuts. Some life hacks are tools to fix something and some can help you to be more organised in a fun way. In this lesson you will create an invention to help solve one of the little problems in your life at home, school or play!

Look at the photos and think about these questions.

- What questions do you have?
- What ideas do you have?
- What can you make?
- Can you make your own life hack?



Pupil Worksheet

# Make a Life Hack

Name(s): \_\_\_\_\_

Date: \_\_\_\_\_

### Find a Problem

What ideas came to mind when you first saw the pictures?

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### Brainstorm

*Individual work:* Now that you have found a problem, spend three minutes coming up with ideas for solving it. Be prepared to share your ideas with your group.

*Group work:* Share and discuss your ideas for solving the problem.



Record as much as you can using sketches, photos and notes.



Use LEGO® bricks and sketches to explore your ideas.



Sometimes simple ideas are the best ideas.



### Choose the Best Idea

You should have come up with a number of ideas. Now choose the best one to make.

Write down three things that your design must be able to do:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

### Make your Idea

It is time to start making. Use pieces from the LEGO® set to make your chosen idea. Test your design as you go along and record any changes that you make.

### Evaluate What You Have Made

Have you solved the problem that you found at the start of the lesson? Look back at the things that you said your design must be able to do.

How well does your solution work? Suggest three things that you could do better.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

### Present Your Model

Now that you have finished, make a sketch or take a photo of your model, label the three most important parts and explain how they work. You are now ready to present your model to the class.

**Well done! What will you make next?**



Name three things that your design must do.  
Example:  
The design must...  
The design should...  
The design could...



You can use other materials from around the classroom.



Print your photos and attach all of your work to a sheet of paper or card.





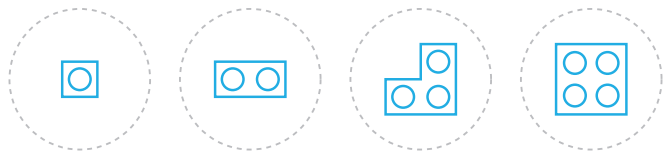
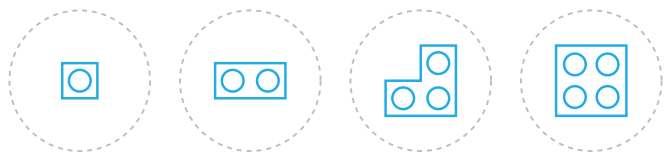
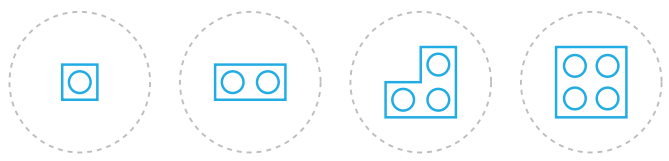
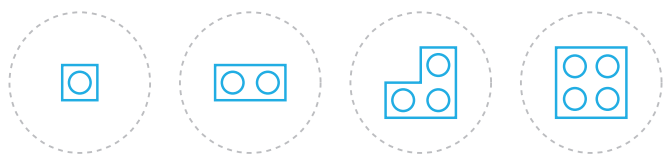
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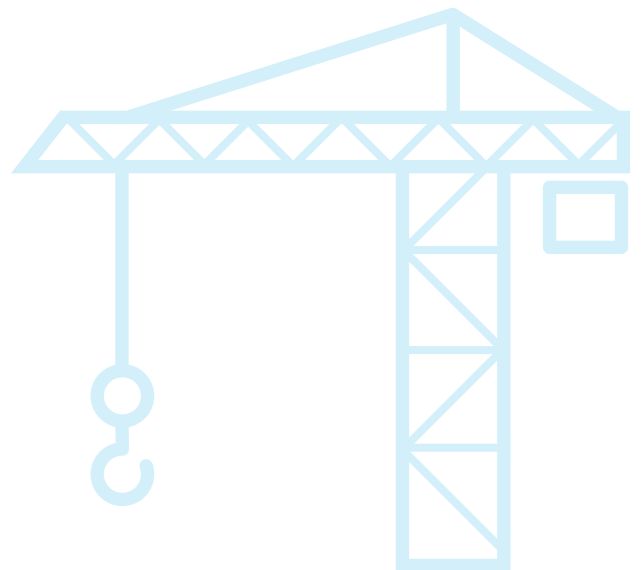
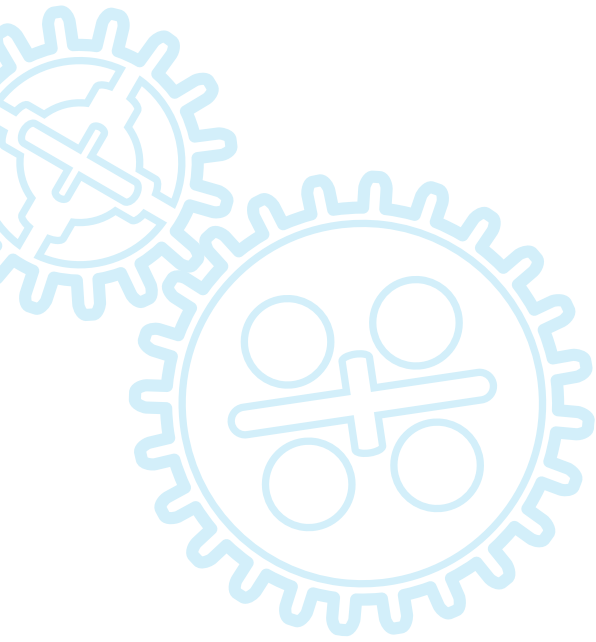
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