# *Make it move* Teaching and learning plan

## Learning intentions

Students will be able to:

* identify and describe ways in which objects move;
* observe, share and reflect on ways in which objects move;
* respond to questions about familiar objects and events such as, the ways in which objects move;
* observe and compare the ways different-sized objects move;
* engage in discussions about observations;
* use methods such as drawing to represent ideas.

## Suggested timeframe

The time needed to complete the *Make it move* CLE will depend on the depth of the prior knowledge of students, the time to perform the Introduction and three investigations—‘Moving toys’, ‘Playground in motion’, ‘Size matters’—and follow up with any further extension activities. Allow 4 hours.

[**Planning ahead and equipment list**](http://assist.asta.edu.au/sites/assist.asta.edu.au/files/Planning_Equipment_List_yrF_Make_it_move.docx)

## Safety considerations

When you and your class are completing your Risk Assessment, consider the following safety points and add any other relevant ones to the list.

* Prior to commencing outdoor activity, check for potential dangers in the area where the class will conduct investigations.
* Prior to commencing outdoor activity, check students’ records for allergies or related health issues.
* When using outdoor play equipment, inform students of the physical boundaries of their investigations.
* Indicate clearly where students need to wait and watch when not using outdoor play equipment.
* Students need to discuss and practise taking turns when using outdoor equipment.
* Students need to discuss and show how they use outdoor equipment safely for themselves and others.

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## Introduction

This CLE focuses on investigating movement in the context of making various objects move. Students will identify and describe ways in which various objects move. This CLE links to Foundation Australian Curriculum: Science.

Students observe events and undertake tasks that involve movement. They will engage in discussions about the different types of movement they observe including the speed of an object and the slowing down of a moving object.

### Equipment needed

Per class:

* laptop (or desktop) computer
* data projector, screen (or interactive whiteboard)

### What to do

1. Ask students to suggest things that move fast and things that move slowly. Ask them to think about the different ways that they themselves can move, for example, walk, run, crawl, skip. Then ask them to think about how different animals move—snakes, fish, horses and butterflies. Why do these animals move in different ways?
2. Record questions raised by students about movement on a whiteboard or chart. Students may add their questions to the board as this CLE progresses.

## Core

### Investigation 1: Moving toys

This investigation comprises numerous experiences requiring students to **explore and make observations** about toys and how they move. They will **engage in discussions about their observations and use drawing to represent ideas on** toys and how they move. Students will **respond to questions about familiar objects and events**, suchas toys and how they move.

This investigation, in particular the observation tasks, can be conducted as a whole class, or as a smaller group task. It is recommended that students work in pairs for the tasks that involve discussion and recording.

Introduce students to a range of simple toys that demonstrate the connection between the size and shape of an object and how it moves.

Prior to commencing this activity, invite students to bring a moving toy to class. Allow a week for the class collection to build up. As students bring toys to class, provide a viewing table or bench where each toy may be exhibited.

Take note of terminology that students use throughout this investigation, for example, change, move, spin, turn, wind up, slow down, stop, pop, slide, roll, jump, wobble, glide, push, pull, wheel, axle.

### Equipment needed

Per class:

* laptop (or desktop) computer
* data projector, screen (or interactive whiteboard)
* stimulus images: [Toys PowerPoint presentation](http://assist.asta.edu.au/sites/assist.asta.edu.au/files/Toys_images_yrF_Make_it_move.pptx)

Per group:

* toy question prompts
* HB or 2B pencil
* sheet of A4 paper
* toys. For example, spinning top, yoyo, wind ups, carousel, popgun, whistle, jumping jack, marbles, car, gravity water wheel, slinky.
* [Toys observation survey worksheet](http://assist.asta.edu.au/sites/assist.asta.edu.au/files/Worksheet_Toys_Observation_Survey_yrF_Make_it_move.docx) (as needed)

### What to do

1. Students view the [Toys PowerPoint presentation](http://assist.asta.edu.au/sites/assist.asta.edu.au/files/Toys_images_yrF_Make_it_move.pptx). Use the following question prompts to encourage students to observe and discuss the ways these toys move.

* Is the toy big or small?
* What shape is the toy?
* How can we make the toy move?
* Which parts of the toy move?
* In what ways does the toy move?
* How can we play with the toy?

1. As a class, invite individual students to show the toy they have brought in, discuss how it moves and show how it works. The class should observe the demonstration. Use the same question prompts above to probe student thinking and their responses
2. Ask students to record their ideas about the movement of toys that they have observed in a drawing. (Where students require support, use [Toys observation survey worksheet](http://assist.asta.edu.au/sites/assist.asta.edu.au/files/Worksheet_Toys_Observation_Survey_yrF_Make_it_move.docx).) Display student drawings.
3. Invite students to classify the collection of toys brought in to the class using a range of categories. Possible categories to assist classifying toys and prompt students’ responses are discussed fully in the following section: ‘Expected results and explanations’.

### Expected results and explanations

By undertaking the recommended tasks, it is expected that students will observe, identify and comment on a range of toys and the particular way(s) in which each toy moves.

Some key ideas about the movement of an object (toy) that will emerge during this investigation may include the following.

* Movement may be defined as any change in position.
* Movement may be fast or slow.
* Movement occurs over long or short distances.
* Objects need a pushing or pulling to cause, and change, their movement.

The provision of each student with a piece of paper and pencil is intended to assist students with representing, through drawing, their ideas on toys and the way(s) each toy moves. It would assist students with their recording if you provided a list of words associated with movement. This list needs to be visible on a chart or whiteboard, for example, change, forwards, backwards, roll, push, pull, twist, turn, spin, pop, wind up, move, slow down.

Classifying or sorting toys will challenge students to carefully observe, examine and compare the similarities of a range of toys and to identify differences between moving toys. It is recommended that students are shown a collection of toys (or pictures) and are asked to sort (classify) the toys (using the students’ own criteria) in a way that best describes its movement or how it works. Invite students to articulate their thinking on the criteria they use. Following this experience, ask students to group the toys using teacher-directed categories. A list of some possible categories that can be used to sort toys can be seen below. This list of categories maybe enlarged, cut up and made into labels. Any given toy may fit one or more categories.

|  |
| --- |
| Toy with movable joints |
| Toy that spins |
| Toy that roll |
| Toy that bounces |
| Toy that works using wheels |
| Toy that produces sound |
| Toy that produces a musical sound |
| Toy that needs electricity |

Offer students opportunities to raise questions and respond to these questions about how a given toy moves.

### Investigation 2: Playground in motion

This investigation comprises numerous experiences requiring students to **observe, share and reflect on ways in which objects move** on schoolyard (or neighbouring park) play equipment. Students will **identify and describe ways in which objects move**. They will **engage in discussions about observations and use methods such as drawing to represent ideas.**

This investigation can be conducted as a whole-class investigation. It is recommended that students work in pairs when exploring outdoor play equipment.

It is advisable that the teacher prompts students to describe what they observe about each piece of equipment and how it is used to produce movement.

Take note of terminology that students use, for example, move, up, down, backwards, forwards, climb, hang, direction, slide, speed, balance.

### Equipment needed

Per class:

* playground equipment: slide, climbing frame, rope course, monkey bars, rolling wheels
* digital camera
* data projector, screen (or interactive whiteboard)
* pencils, markers

### What to do

1. Select a student to use a piece of playground equipment. Invite the class to describe the movement of this student as he/she uses the equipment.
2. Repeat for each piece of equipment available. Take photographs of students using the equipment.
3. Invite students to participate in adding to a class chart that records and shows their observations. Viewing a slideshow of images of students using various pieces of play equipment maybe useful. For example:

|  |  |  |  |
| --- | --- | --- | --- |
| Equipment | Used for | Moving body parts | Observations |
| ladder | climbing up  climbing down | hands, feet, legs | easier to climb down |
| slide | sliding | whole body | sped up near end |
| rope course | balancing  stepping  backwards  forwards | feet, hands, legs | hung on tight  placed feet with care  looked down |
| monkey bars | hanging  swinging  backwards  forwards | hands, arms | tired from hanging  strong hold |
| climbing net | hanging  climbing up  climbing down | hands, arms, legs, feet | wobbly frame  placed feet and legs with care |
| hopscotch | hopping  stepping | legs, feet | landed accurately inside square |

1. Discuss each piece of equipment. Invite students to contrast and compare the movement associated with one piece of equipment with that of a different piece of equipment. Pose a question such as: How does the movement associated with using a monkey bar differ to the movement on a slide?

### Expected results and explanations

Students observing, sharing and reflecting on ways in which schoolyard playground equipment moves can address the learning intention. They will **engage in discussions about observations and use methods such as drawing to represent ideas** on ways in which playground equipment can be used.

By undertaking the recommended tasks, it is expected that students will identify and discuss how given examples of play equipment can be used and the type of movement associated with their use. Discussing and recording students’ observations regarding play equipment on a class chart will assist with clarifying their thoughts and ideas.

Students may raise questions and make statements about what they think makes a given piece of equipment move or work. The following are some key ideas about movement that should emerge during this investigation.

* Movement may be defined as any change in position.
* Movement may be fast or slow.
* Movement occurs over long or short distances.
* Objects need a pushing or pulling to cause and change their movement.

Students may describe the movement of a piece of play equipment in simple terms—move, up, down, backwards, forwards, climb, hang, direction, slide, speed, balance. It would assist student learning if the teacher introduces and uses appropriate terminology as opportunities arise.

### Investigation 3: Size matters

This investigation allows students to compare the way different-sized, but similar shaped, objects move, for example, tennis balls, golf balls, marbles and basketballs.

### Equipment needed

Per class:

* Collection of balls, e.g. baseball, basketball, beach ball, bowling ball, tennis ball, football, golf ball, marble, ping-pong ball, pool ball, racquet ball, soccer ball, volleyball
* Ramps such as boards, slides, rain gutters, cardboard tubes

### What to do

1. Ask the students what they already know about balls. Write these ideas up under a heading, ‘What we know about balls.’ These ideas could include the following.

* Most balls are round.
* Balls come in many different sizes.
* Balls come in different colours.
* Balls bounce.
* Balls are made of different things.
* You can play with balls.

1. Invite students to experiment with rolling balls of different sizes and shapes on a flat surface such as the floor. Ask the following questions.

* Which balls rolled the fastest?
* How can we make them roll faster?
* Which ball rolled the furthest?
* How can we make them roll further?

1. Ask the students to predict which of two teacher-selected balls might roll faster down (or travel furthest off the end of) a slide or ramp.
2. Divide the class into groups of 3–4 students and provide them with two different balls and a ramp.
3. Ask the students to draw their two balls and then predict which ball will roll faster down (or travel furthest off the end of) the slide or ramp. They can show this prediction by circling this on their drawing.
4. Allow time for the students to test their prediction and discuss their observations.
5. Bring the class back together and ask each group to talk about their results. Each time, ask the class the following questions.

* What is different about the two balls?
* What is the same about the two balls?
* Why do you think the ……. ball went the furthest/fastest?

### Expected results and explanations

The size of objects affect the way objects move. Students should be able to make reasonable predictions regarding the movement of the two different balls and link this to some physical property of the ball, mainly its size.

## Conclusion

A teacher may invite students to ask questions about a particular investigation on how an object moves. The questions (i.e., ‘Alternatively…’, ‘I wonder…’) posed by students can be revisited. This will give students an opportunity to articulate their findings, give insights into their understandings and identify improvements in skills they practised or acquired through their investigations.

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### Additional lessons and activities about movement:

‘Forces and Motion (Pushes and Pulls)’, *First School Years* website, <http://www.firstschoolyears.com/science/forces/forces.htm>. Select ‘Push or Pull?’ in the ‘Our resources...’ section to download a pdf file for copying and using as a worksheet.

### Assessment opportunities

**Investigation 1:** **Moving toys**, provides an opportunity to assess student understanding of how a toy moves. Students could be expected to show what they know about the different types of movement. A teacher can assess students’ learning by setting tasks that will motivate students to record what knowledge and understandings they have gained.

Tasks may require students to:

* share their knowledge of moving toys with a peer;
* draw a moving toy and label it to show its movements;
* attempt to write caption sentences using specific terminology;
* devise questions about their observations on moving toys that can be recorded on a class chart (include the name of the student).

**Investigation 2**: **Playground in motion**, provides an opportunity to assess student observations and reflections on ways that various pieces of playground equipment move and how students move when using that equipment. This task provides a fertile opportunity for a teacher to observe, interact and question the understandings and thinking of students.

**Investigation 3: Size matters**, provides an opportunity to assess students’ understanding of the connection between the size of an object and the way it moves. A teacher may observe and assess the following skills.

* How well does a student follow instructions, understand the tasks and conduct the investigation?
* How well do students describe or explain their ideas on movement?
* Which questions do students still have about the ways objects move?