Human Slot Machine

NEW April 2025

Year level: 3

Approximate number of lessons: 2

Learning goals

- Engage in chance based investigations about games and everyday situations to:
  - anticipate and then identify possible outcomes
  - collect and record data
  - create data visualisations for frequencies of possible outcomes (e.g., lists, pictures, graphs)
  - describe what these visualisations show
  - answer the investigative question
  - notice variations in outcomes (e.g., how often each of the numbers on a dice comes up)

Resources

- Three chairs, placed side by side, it is preferable that players cannot see other players, they could be blindfolded or there could be partitions between them.
- Three large tubs or buckets labelled 1, 2 and 3.
- Three lots of two different items that fit into the tub together.
  Suggestions for items: A rubber chicken, squeaky pig dog toy, a large mixing spoon, a soft toy, a tennis ball, a sock.
- Seven sets of pictures of the chosen items for cutting and sticking onto large paper to visually represent possible outcomes. See material masters below.
- Large paper, glue, scissors, felt pen.
- A **short video** of a human slot machine - kaiako to use own discretion as to whether this is appropriate for ākonga to view.

Activity - Lesson 1

Introduction

This chance based game is based on the idea of a three factor slot machine, with the end point being either that the factors match or do not match. This game is enhanced with sound effects. Prepare to have fun with your class. There are many videos on YouTube to provide you with examples of human slot machines that you may wish to watch for your own understanding, or even share with your class to build excitement. Please see the linked video example in the resource section. For the purposes of this lesson the ‘tub’ acts in place of a ‘slot’. So, your three tubs make the three parts of the human slot machine.

Game Setup

- Three ākonga are seated, each with a tub on their lap. Each tub contains the same two identical items. The class creates a whirring noise followed by a “bing!”, at which time the ākonga seated draw an item out of their respective tubs and hold it out to be easily seen. Multiple iterations and outcomes are performed.
- During this phase kaiako have a vital role, modelling the correct vocabulary used throughout the ‘game’. (e.g., outcome, possibility, likely, unlikely, anticipate, agree, disagree, reason).
- The purpose of playing this game before the lesson is to create understanding of the game (learning context) before the learning begins. This will increase engagement, motivation and provoke thinking.

? PROBLEM:

Class discussion:

- The kaiako poses the investigative question, “what is the probability that the items drawn will match?” Provide time to discuss what this question means to make sure that everyone understands the word ‘probability’. Probability is a maths word for how likely something is to happen (Goldstone, 2013). This is key vocabulary and needs to become a word that ākonga make use of on a regular basis.
- Time is provided for ākonga to discuss their ideas, think pair share could be utilised here.
- Ākonga ideas are shared and all are recorded. Recording ideas will evoke further discussion and participation.
- Possible responses from ākonga include:
    - ‘Impossible’, ‘possible’, ‘certain’, or ‘won’t happen’, ‘might happen’, ‘will happen’, or ‘unlikely’, ‘likely’, not possible’. Words such as probably, possibly, and probable, possible also may be discussed.

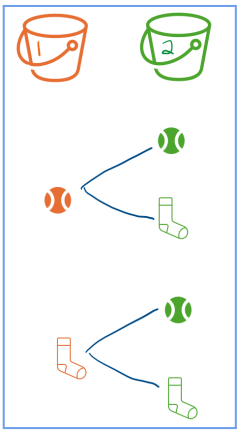
PLAN:

- Kaiako guide ākōnga to build a plan to identify and list possible outcomes using a tree diagram. In this example we are using a tennis ball and a sock for the two items
    - Seat ākonga in a circle, on the mat, surrounding the large piece of paper.
    - Have the pictorial representations cut out and ready to go
    - Use physical items to support listing the outcomes
    - Engage the class in working out what could happen with the slot machine.

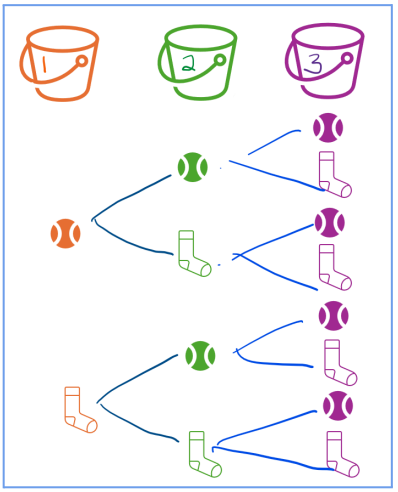
    - Start with the first tub
        - Hold up the items from the first tub. Ask the ākonga to arrange the pictorial representations of the items on the large paper to show what the possible outcomes are for the first tub (for example, as shown in this picture).

- Identify the two items that are on offer within the first tub. E.g. Item 1 is a ball and Item 2 is a sock. Identify that when an ākonga chooses an item a choice has been made. There are three choices made in this game because there are three tubs.

- Move to the second tub.
  - Explain that after the first choice a second choice is to be made. If the first choice is a ball, then there are two possible items that could be chosen as the second choice.
  - If a ball is chosen as the first choice, then the second choice could either be a ball or a sock. If a sock is the first choice, then the items that could be chosen for the second choice are a ball or a sock.
  - Work with the ākonga to record this thinking using the pictorial representations. Use a felt pen to draw the lines (branches) to show the pathway of choices.
  - The picture here demonstrates what you need to create with the ākonga on the large piece of paper.



- Move to the third tub.
  - Explain that after the first choice and second choice, a third choice is to be made.
  - Use the diagram below to guide your discussion with the ākonga to explore the possible outcomes.
  - You could say “If the first and second choices are balls, then there are two possible items that could be chosen as the third choice. Let’s stick them here.”
  - Continue to explain to create the diagram.
  - Use a felt pen to draw the lines (branches) to show the pathway of choices.



- Kaiako guide ākonga to connect the game with the tree diagram. They identify which pathway on the tree diagram matches the game outcome.
  - Choose three ākonga to return to the three chairs and play the game one more time. Bing!

Ask ākonga to remain holding items up for the next part of the discussion.

- Support ākonga to identify the pathway chosen by this game's outcome on the tree diagram. You may ask individuals to show and prove their thinking, making use of a magic pointer and the large tree diagram as they communicate their ideas.

  Ākonga might say "the first choice was a ball, the second choice was a sock, the third choice was a ball. This is the pathway showing this outcome."

- Ask other ākonga if they agree or disagree.
- Many iterations here will provide opportunity to clarify thinking, support the development of vocabulary, reasoning and justification while building confidence and understanding.

- Kaiako guide ākonga to identify matches and non-matches as outcomes.
  - identify outcomes involving matches, and non matches.
  - Answer the investigative question, how many outcomes involve a match? How many outcomes involve a non-match.
  - Ask ākonga Is a match or a non-match more likely? How do you know?

    There are _____ outcomes that are a match.
    There are _____ outcomes that are a non-match.
    There are _____ outcomes altogether.
    The most likely outcome is _____.
    The least likely outcome is _____.
    The probability of the items matching is _____ out of _____ outcomes.
    The probability of the items not matching is _____ out of _____ outcomes.

    Kaiako poses the question, "I wonder if we could investigate this? I wonder if this would really happen in real life? "

Activity - Lesson 2

Introduction

- Spend time reviewing the game and tree diagram from lesson one. Ensure that ākonga are using the correct vocabulary; outcomes, match, non-match, most likely, least likely, probability.

  Spend time reviewing the end of lesson one. Discuss the following statement.

  The probability of the items matching is _____ out of _____ outcomes.
  The probability of the items not matching is _____ out of _____ outcomes.

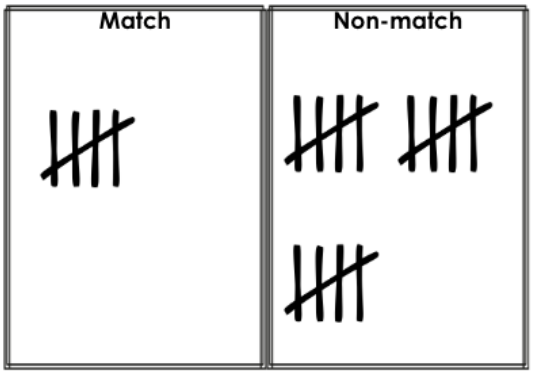
  Support ākonga to identify that 2 out of 8 is actually one quarter of the outcomes.

- Kaiako pose the question: what is the probability that the items drawn will match if we play the game 20 times?

- Support ākonga to make an estimation based on finding out that one quarter of the outcomes match.

DATA:

- Support ākonga to collect data for 20 games.
- Record the data on a tally chart.



ANALYSIS:

- Make a data visualisation, e.g., a bar graph of match and non match.
- Write statements about what the data shows both specific and general.

CONCLUSION:

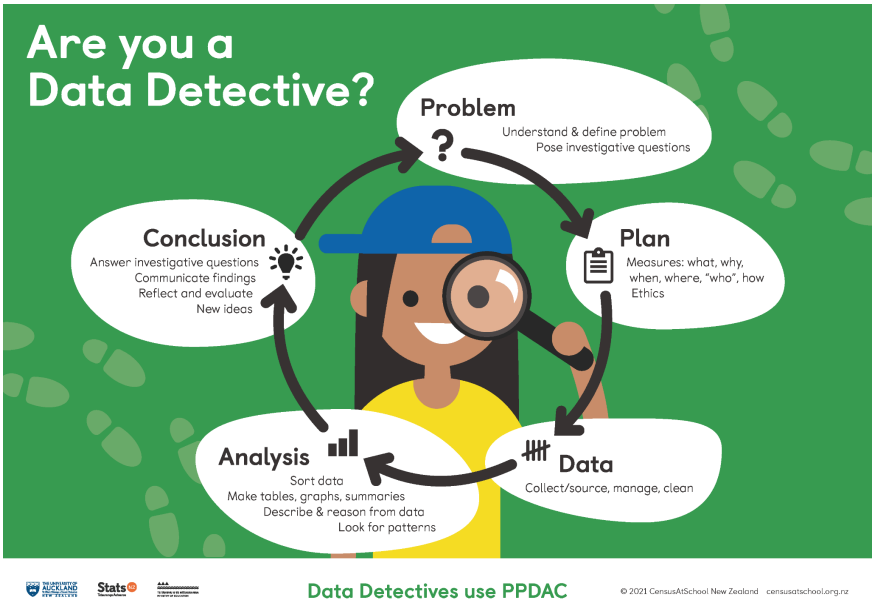
- Kaiako support ākonga to compare the predicted outcome with the actual collected data. Were the results expected? Support ākonga to explain this.
- Support ākonga to identify that in a game of chance the predicted result may be different to the real life result.
- See teacher note for extension.

Reference

Goldstone, B. (2013). *That's a possibility!: a book about what might happen* (First edition.). Henry Holt and Company.

Notes for teachers

- There are opportunities to run much larger digital trials using web based tools that will give you instant data.
- There are key vocabulary at Year 4 that ākonga need exposure to at this stage. Please note the intentional modelling of terms such as not an ‘equally likely outcome’, ‘probability experiment’ and ‘chance based investigation’.
- For ākonga that need further extension you could:
    - collect larger quantities of data (play more games) possibly in small groups. This would show that larger trials will be closer to the predicted outcome.
    - Add a fourth tub to create 16 possible outcomes.
    - Add a third item to each tub to create 27 possible outcomes.



https://new.censusatschool.org.nz/resource/data-detective-poster/

Human slot machine materials

Resource list with preparation

Resource	Preparation required	Approx numbers
Material Masters	Print the material masters onto paper and cut them up. These need to be printed in colour. Felt tip pen Glue stick Large paper to create the tree diagram on	One set.

Material Masters / Pictorial Representations