purple mash

Computing Scheme of Work

Unit 3.7 - Simulations

Contents

Introduction

The tool used for simulations during these lessons is 2Simulate. This can be found within the English tools in Purple Mash.

2Simulate

The lesson plans will guide you using this tool in a computing context.

The two simulations used in these lessons are 'Locked Out' and 'The Dark Side of Elpmis'.

With each simulation there is a Teacher Guide in which you can find additional ideas if you wish to take the ideas in the simulations further and use as part of other curriculum areas such as English.

To force links within this document to open in a new tab, right-click on the link and then select 'Open link in new tab'.

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Medium Term Plan

Lesson	Title	Success Criteria
[1](#)	What Are Simulations?	• Children know that a computer simulation can represent real and imaginary situations. • Children can give some examples of simulations used for fun and for work. • Children can give suggestions of advantages and problems of simulations.
[2](#)	Exploring a Simulation	• Children can explore a simulation. • Children can use a simulation to try out different options and to test predictions. • Children can begin to evaluate simulations by comparing them with real situations and considering their usefulness. • Children can analyse choices made using a branching database.
[3](#)	Analysing and Evaluating a Simulation	• Children can recognise patterns within simulations and make and test predictions. • Children can identify the relationships and rules on which the simulations are based. • Children can evaluate a simulation to determine its usefulness for purpose. • Children can create their own simple simulation (extension).

Lesson 1 – What are Simulations?

Aim

- To find out what a simulation is and understand the purpose of simulations.

Success Criteria

- Children know that a computer simulation can represent real and imaginary situations.
- Children can give some examples of simulations used for fun and for work.
- Children can give suggestions of advantages and problems of simulations.

Resources

Unless otherwise stated, all resources can be found on the main unit 3.7 page. From here, click on the icon to set a resource as a 2Do for your class. Use the links below to preview the resources; right-click on the link and 'open in new tab' so you do not lose this page.

- About Simulations: Writing template to be set as a 2Do.
- Extension: Why Simulate? Table writing frame. Set this as a 2Do if you wish to use it.

Activities

Introduction	Display **slide 2** and outline the lesson aims. Display **slide 3** and outline the success criteria.
What is a Computer Simulation?	Use **slide 4** to discuss what a computer simulation is and when it might be used. Ask children if they can think of any examples of simulations.
What are Simulations Used For?	Use the photo prompts on **slide 5** to prompt further discussion of simulations used in real life.
Advantages of Simulations	With **slide 6**, discuss with the children why a simulation could be a good thing. After their feedback, click to share the suggested reasons.
Disadvantages of Simulations	With **slide 7**, discuss the potential problems with simulations. After their feedback, click to share the suggested reasons.

Activity 1: About Simulations	Introduce the activity using **slide 8** where children write about simulations. Set the writing frame as a 2Do in advance so children can access and complete the worksheet on their own devices. (You could print this in advance if you want the children to complete it on paper, although you will not have access to the pictures for question 2.). Clicking the icon on the slide will open a copy of the file. Remind children to save their work in their My Work folder when they are finished.
Activity 2: Extension	Use **slide 9** to introduce an optional extension activity: 'Why Simulate?'. You will need to set this as a 2Do if you wish the children to use it.
Review Success Criteria	Review the success criteria on **slide 10.** Children could rate how well they achieved this using a show of hands.

Lesson 2 – Exploring a Simulation

Aim

- To explore a simulation, making choices and discussing their effects.

Success Criteria

- Children can explore a simulation.
- Children can use a simulation to try out different options and to test predictions.
- Children can begin to evaluate simulations by comparing them with real situations and considering their usefulness.
- Children can analyse choices made using a branching database (extension).

Resources

- 2Simulate: Locked Out simulation. 2Simulate is found within the English tools in Purple Mash.

Introduction (for teachers)

This is a whole-class activity, best done using an interactive whiteboard rather than individual computers.

The Locked-Out simulation has three different endings to mimic real life where a situation may have several solutions.
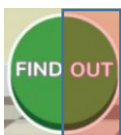
You (the teacher) are in control of the outcome, using this button which will appear whenever the outcome of a question might or might not help.
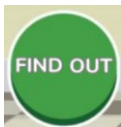
When a question is posed, you (the teacher) can click on the left side of this button to make the answer 'yes'.
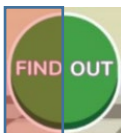
You can click on the right side of the button and the answer will be 'no.'

This tool helps to ensure that children explore several solutions before finding one that works.

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You will also find printable resources for the simulation in the [Locked Out home page](#) that you can use away from the computer to role-play the scenarios and explore different solutions if you wish.

If you wish to know all the possible outcomes and choices within Locked Out, you can find these in the [user guide](#).

Activities

Introduction	Display **slide 2** and outline the lesson aims.
	Display **slide 3** and outline the success criteria.
Locked Out - Simulation	Introduce today's simulation with **slide 4**. Open the activity from 2Simulate and then click the arrows to navigate through the simulation forwards and backwards. Most of the text is read aloud.
	When you get to the screen called 'What is everybody thinking?' discuss what the characters might be thinking and then click to find out.
	When there are choices about what to do, characters in the simulation will be clickable.
	At this point, you (the teacher) can use the Find Out button to see whether this question will lead to the solution. Click the left side for 'yes' or the right side for 'no.'
	Use these options to enable the class to explore various scenarios before coming to a solution, rather than solving the problem straightaway.
	Once the solution is reached, you can try the simulation again, making different choices by using the 'Try Another Way' button.
Evaluate the Simulation	Before the end of the lesson and during the simulation, use **slide 5** to spend some time discussing in which ways this simulation was or was not realistic, e.g., by how animated the graphics were, was it a real-life situation etc.

Activity 2: Extension	Use **slide 6** to introduce an optional extension activity. Children may have needed to have completed Unit 3.6 – Branching Databases to understand this task.
Review Success Criteria	Review the success criteria on **slide 7.** Children could rate how well they achieved this using a show of hands.

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Lesson 3 – Analysing and Evaluating a Simulation

Aim

- To work through and evaluate a more complex simulation.

Success Criteria

- Children can recognise patterns within simulations and make and test predictions.
- Children can identify the relationships and rules on which the simulations are based.
- Children can evaluate a simulation to determine its usefulness for purpose.
- Children can create their own [simple] simulation.

Introduction (for teachers)

This simulation allows children to explore space. They are on a mission where something goes wrong, and their task is to save the stranded astronauts.

They will need to investigate the planet's conditions, decide upon what equipment needs to be taken and solve challenges on the planet.

The simulation should be displayed on the interactive whiteboard for the whole class and children should work in groups within the class when solving the mission without using computers.

At one point, explorers are instructed to exit and look at the message centre to continue. At this point, exit the simulation screen using the red arrow at the top right and open the message centre; this is a simulated email flow. At the end of this, exit and then open part 2 of the simulation to continue.

Some groups might not make it to the end of the mission because they have not brought the correct equipment. In this situation, you might decide to allow them the Emergency Resource Cards – a get-out-of-jail-free resource, in case groups have left behind a piece of equipment they later deem to be essential to the mission.

There are several resources listed; these should not be given out until referred to in the lesson plan.

This lesson plan provides a brief overview of the simulation. If you wish to use it in more detail over two or three sessions, there is detailed activity information in the user guide for the simulation .

You have the option of scoring each group at the end to determine the winning group. This is determined by the success of their solutions to the challenges, by the usefulness of the equipment they choose to take and by speaking and listening rewards for good class participation. You can award these at your discretion.

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Resources

Unless otherwise stated, all resources can be found on the main unit 3.7 page. From here, click on the icon to set a resource as a 2Do for your class. Use the links below to preview the resources; right-click on the link and 'open in new tab' so you do not lose this page.

- 2Simulate: The Dark Side Of Elpmis Simulation
- Equipment Requisition – You might wish to set this as a 2Do for the class.
- Equipment Cards for Groups – one set per group.
- Emergency Resource Cards – one or two per group.
- Speaking and Listening Reward Cards – if you wish to use them to determine a winning team, then between two and five copies of each card, depending how generous you are with your rewards!
- Equipment Scoring Sheet – you could display this on the whiteboard or print and distribute **AFTER** the mission. They can be used to discuss the effectiveness of the equipment selected.
- Group Scorecard – one per group, if you wish to score the groups.
- Simulation Evaluation – sheets to be set as a 2Do.

Activities

Introduction	Display **slide 2** and outline the lesson aims. Display **slide 3** and outline the success criteria.
The Dark Side of Elpmis – Part 1	Introduce todays simulation with **slide 4**. Split the class into groups of four to six children – they will be working in their group later in the session. Open the activity from 2Simulate and then click the arrow to begin.
The Dark Side of Elpmis – Part 1	With **slide 5**, look through the first scenes of the simulation, listening to the voice over to set the scene. Continue to the point that you are presented with a choice to save yourself or the crashed crew. Allow children to think about what they want to do and give reasons. Hopefully, they will decide to help the crew by choosing "Warn Shuttle"; otherwise, their mission is over, and they have failed! You can explore this aspect of the simulation if you wish, and then return to this point to explore the outcome if you make a different decision.

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The Dark Side of Elpmis – Part 1	Continue through the simulation with **slide 6**. When you reach the screen with the incoming message from the shuttle, discuss the questions on the presentation. Click on the button to be taken to an email simulation, the 'Shuttle Messaging Centre.' Suggest that the children take notes about what they learn from the email received.
The Dark Side of Elpmis – Part 1	Using slide 7, read the email simulation as a class. Discuss what the message says. In groups, children can discuss which questions might be most important to write in our reply. A selection of the best questions from each group can be entered here and sent to the stranded astronauts. Type out your reply as an email message. When you have sent it, you will receive a further email with some answers. If any questions are not answered and are particularly deserving of an answer, you might have to make up the answers and could 'receive' them via your own mobile phone.
The Dark Side of Elpmis – Part 1	As shown on **slide 8**, continue working through the email simulations until the captain asks the children to use the equipment requisition to decide on which equipment they should take on their mission. The equipment requisition is also available in the resources section. Opening in a new tab allows the 'feel' of the simulation to continue. Alternatively, you could set this as a 2Do for the class. Equipment cards should now be given to each group. Only seven items can be taken.
Activity 1: Equipment	Children must decide on which 7 items they think should be taken on the mission to save the stranded astronauts (see slide 9). The Equipment Requisition form can be completed by each group, or you may choose to feedback and complete it as a class. Reply to the captain one

	more time with your chosen items and follow the link in the reply to open Part 2 of the simulation.
The Dark Side of Elpmis – Part 2	With **Slide 10**, follow the link in the captain's last email, or open <u>Part 2 of the simulation </u>to continue.
The Dark Side of Elpmis – Part 2	With **slide 11**, children should discuss what should be done next, making use of the equipment they have. The key point to note here is the ledge. The crevasse is 100m deep – if the group has brought the 70m rope, they may be able to lower someone down to the ledge. But how will they get back up? Again, weaker gravity will help with throwing things further. They may decide to leave him/her but will lose points at the end. On the next screen, feedback some of the best solutions to the crevasse problem. Then watch the buggy continue to the dark side of the planet.
The Dark Side of Elpmis – Part 2	With **slide 12**, children will be asked at this stage of the simulation whether they brought a torch with them. If not, an Emergency Resource Card can be used – at your discretion. This will provide a torch to light up the crew on the dark side of the planet.
The Dark Side of Elpmis – Part 2	With **slide 13,** discuss the final problems with the children. Encourage them to make notes in their groups according to how they will proceed. Complete the rest of the simulation and then, if required, use the Equipment and Group scoring sheets (the former feeds into the latter) to assess each group's progress and achievements if you are keeping scores.
Activity 2: Evaluation of Simulation	Use **slide 14** to introduce the activity of evaluating the simulation and its effectiveness. You may wish to set this as a 2Do for your class to complete on their own devices.
Activity 3: Extension	Use **slide 15** to introduce an optional extension activity where children can have a go at creating

	their own simulation activity. You may wish to extend this over another lesson.
Review Success Criteria	Review the success criteria on **slide 16.** Children could rate how well they achieved this using a show of hands.

What are simulations used for?
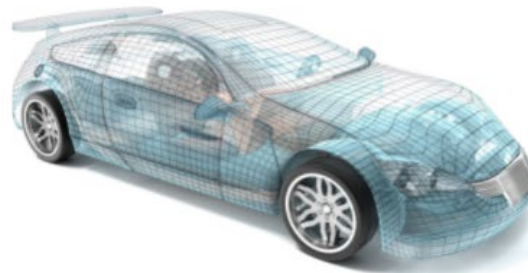
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Assessment Guidance

The unit overview for year 3 contains details of national curricula mapped to the Purple Mash Units. The following information is an exemplar of what a child at an expected level would be able to demonstrate when completing this unit with additional exemplars to demonstrate how this would vary for a child with emerging or exceeding achievements.

Assessment Guidance	
Emerging	With support throughout, children are beginning to analyse and evaluate information relating to the situations in the activities within 2Simulate (Unit 3.7 Lesson 2 and 3). They can verbally present their findings as part of a discussion (Unit 3.7 Lesson 2 and 3). Although there understanding may be limited, they are beginning to understand the importance of simulations in relation to real and hypothetical situations (Unit 3.7 Lesson 1).
Expected	Using 2Simulate, children can analyse and evaluate information relating to the situations in the activities (Unit 3.7 Lesson 2 and 3). They present their findings as part of a discussion and give reasons for the choices they made (Unit 3.7 Lesson 2 and 3). They will understand the importance of simulations to replicate events that could occur in real and hypothetical situations (Unit 3.7 Lesson 1).
	Most children can effectively assess their own and others' progress and achievements through a simulation. Additionally, they can evaluate the effectiveness of the simulation (Unit 3.7. Lesson 3).
Exceeding	Children demonstrating greater depth, will use 2Simulate to analyse, evaluate, identify patterns, and predict the outcomes of simulated scenarios (Unit 3.7 Lesson 2 and 3). They will present their predications and findings as part of a discussion and give detailed explanations for the choices they have made (Unit 3.7 Lesson 2 and 3). Children demonstrating greater depth will not only understand the importance of simulations to replicate events but will also identify where simulations are used in everyday life (Unit 3.7 Lesson 1).

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