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Medium term plan
Cycle B, Term 2
ICT

Subject: Purple Mash unit 2.4 Questioning

Key Concept/ Theme: Children learn about data handing tools, use yes/no questions to separate data, construct a binary tree, use a binary tree to answer questions and use both search tools and databases to answer questions and find information.

Prior Learning links: EYFS: Children have been exposed to the layout of purple mash and have had experience of using a variety of technology including interactive whiteboards, ipads and using a keyboard. Prior cycles unit 1.2

Grouping and sorting: Sort data according to criteria.

Vocabulary:

Key Vocabulary

Binary Tree A simple way of sorting information into two categories.	**Data** A collection of information, used to help answer questions.	**Database** A computerised system that makes it easy to search, select and store information.
Field A single piece of data in a database which makes up a record.	**Pictogram** A diagram that uses pictures to represent data.	**Question** A sentence written or spoken to find information.
Record An item in a database with a variety of information about a specific entry.	**Search** Looking for specific information. On a database, you can use the 'Find' tool.	**Sort** Put things together by features they have in common.

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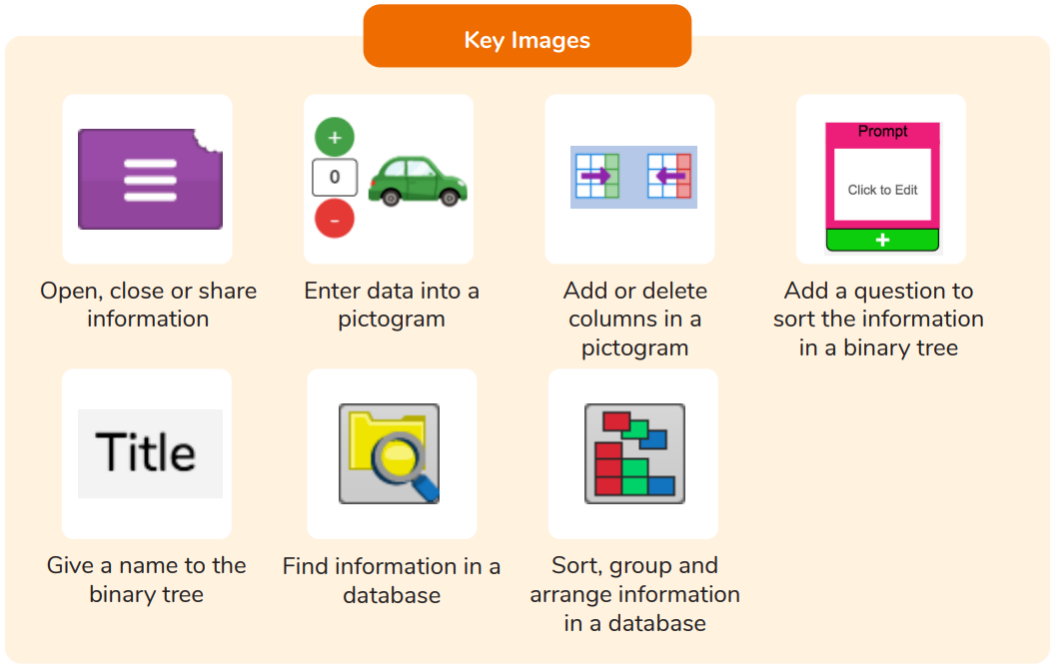
Key Images:



Resources needed for each lesson – 2dos to set.

Lesson 1:

- My Home - activity (print for children).
- Types of Homes Spreadsheet.
- Example Pictogram Types of Homes Pictogram. If you wish children to use the example pictogram, then it can be set as a 2Do for the class.

You can select the following suggested computing objectives when setting the 2Do to make future assessment easier:

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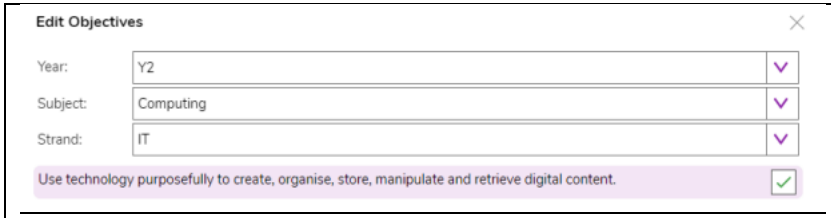

Lesson 2

- Purple Mash Avatar Game (print for children).
- Scissors

Lesson 3

For this lesson, and following lessons, there are two possible topics for the data: Continuing to use the avatars data or using data about animals.

- 'yes' and 'no' arrows You will need several copies to construct a paper binary tree on either the floor or the wall (depending on your classroom layout).
- Whiteboard/paper.
- Large avatars pictures from the last lesson or large animal pictures to demonstrate
- Avatar Binary Tree Images. or Animal Binary Tree Images. Print one copy per child/pair.
- Binary Tree Outline. These will need to be enlarged to A3 size and printed for each child/pair. Completed examples for these are available at the end of this document.
- Glue, scissors and Blu-Tack.

Lesson 4

For this lesson, and following lessons, there are two possible topics for the data: Continuing to use the avatars data or using data about animals.

- 2Question database – Avatars or 2Question database - Animals. Set whichever theme you selected in the previous lesson as a 2Do for your class.
- Avatar Names Question Sheet or Animal Names Question Sheet. Print children copies of the worksheet which matches your chosen theme. Answers are available at the end of this document.
- Extension: Debugging Challenge. Set this as a 2Do.

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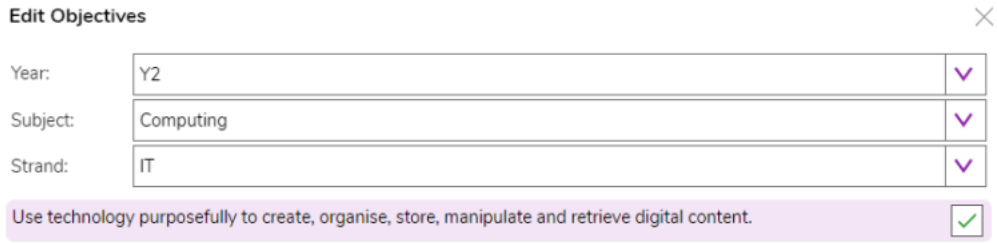
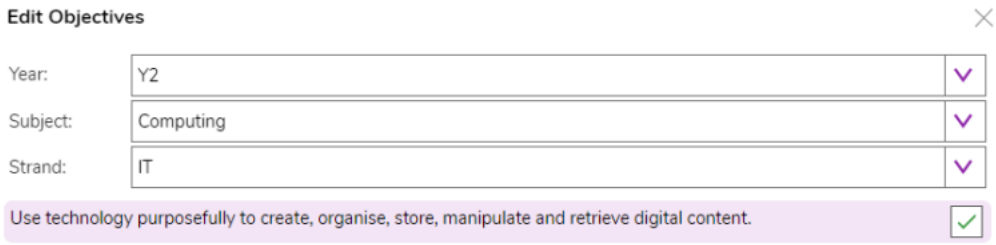
You can select the following suggested computing objectives when setting the 2Do to make future assessment easier:



Lesson 5

- 2Investigate – Avatars Database set the database as a 2Do for the class.
- Avatars Database Questions. Print a copy for each child. There are two sets of questions. Sheet 1 are simple searches and Sheet 2 involves more complex searches. Answers can be found at the end of this document.

You can select the following suggested computing objectives when setting the 2Do to make future assessment easier:



1. Unit 2.4 Lesson 1	**Deeper learning questions:** What other types of homes can you think of? What features do you notice with each type of house? What is your home like? What does the pictogram tell us? What information doesn't the pictogram tell us? What questions can your pictogram not answer? What's wrong with this pictogram? How does a pictogram show information? **Reconnection:** Remind children of importance of online safety and go over rules. **LO:** To show that the information provided on pictograms is of limited use beyond answering simple questions. **Activity:** Go over new vocab for the lesson. Types of homes activity – can children name the type of homes – discuss the features of each house. Ask children if there are any other types of homes they can think of.

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	Give out My home activity and encourage children to write about what type of home they live in, what it looks like, what it is made from, how many rooms it has and how many people live there. The icon on the slide will open the file to demonstrate on the board. Explain that the children are now going to gather the information about their homes – show that the spreadsheet will give them a total. The icon on the slide will open the file to demonstrate on the board. On the whiteboard, collate some of the information from the children' pictures. You could collate the results in the 2Calculate file **Types of Homes** or on the whiteboard. Save this file as you may need it for subsequent activities. Save this resource once the results are entered. Explain how to design and create a simple pictogram using the information collected from the children. You can use the sample 2Count pictogram **Types of Homes** by clicking on the icon or create one of your own. Click to reveal the points to demonstrate: • Clicking in the rectangle then selecting an image to represent the answer or using the paint button to draw the picture. • Clicking on the + or – to record the data. Demonstrate how to do this using 2Count. Ask the children to use the pictogram to answer some simple questions whose answer can be ascertained from the pictograms • How many people live in semi-detached houses? • Do more people live in flats than bungalows? • How many houses have four people living in them? With the class, look at what information the pictograms cannot provide you with. For instance: • How many semi-detached houses have four people living in them? • How many people living in bungalows have four or more rooms? Open the data you saved earlier on the spreadsheet. The children can then create and fill in the data in their own 2Count pictogram. Some children might need to use the sample and just enter data rather than create from scratch. Set this as a 2Do for those children Can the children think of any questions of their own that the pictograms cannot answer? Ask children to look at the pictogram image that shows birthday month for children in a class. • What could the pictogram tell them when they looked at it? (How many children had a birthday in a particular month) • What couldn't the pictogram tell them when they looked at it? (Who had a birthday in which month)

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	• Can they think of a reason why this pictogram is not a good idea? (It only has 10 months – November and December have not been included as they pictogram only allows 10 choices). Review vocab from lesson & Success criteria – children rate own learning using hands up. **Extension:** create a list of questions your pictogram cannot answer.
2. Unit 2.4 Lesson 2	**Deeper learning question**: Is it possible to sort shapes using a yes/no question? What yes or no question could identify a certain avatar? How many yes/no questions need to be asked to find the answer? Can you improve on this improving the questions that they ask? What types of questions work well? **Reconnection:** Remind children of online safety rules. Go over previous words encountered last lesson. **LO**: To use yes/no questions to separate information. **Activity**: Introduce new vocab for the lesson. Show the children the different shapes on the slide. Show how we can use simple questions with a yes/no answer to separate them e.g. • Is the shape red? • Does the shape have 4 sides? Show the children four characters from the Purple Mash avatars. Choose one. Explain how we can use a range of yes/no questions to separate the avatars so we can select one. Discuss how we can ask questions relating to hair colour, hats, glasses etc Hand the children a copy of the Purple Mash Avatar Game. The children cut up the 12 images and then they play a game like Guess Who? Remind the children they can only use questions with a yes/no answer. Clicking the icon will open the file on the board for demonstration. How many YES / NO questions needed to be asked before an answer was reached? Can pupils improve on this by thinking about and improving the questions that they ask? What type of questions work well? Look at the need to split the pictures into two. Review vocab learnt in lesson. Pupil rate the success criteria to see how they felt they did **Extension:** Repeat the game and find the fewest number of questions needed to find an answer.

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3. Unit 2.4 Lesson 3	**Deeper learning question:** What improvements do you think you can make to the binary tree? Why would these be useful? How is information organised in a binary tree? **Reconnection:** Remind children of online safety rules. Go over previous words encountered last lesson. **LO:** To construct a binary tree to separate different items **Activity:** Explain to the children that the class will be creating a binary tree. Since binary trees are used for identification of unknown items, the questions must be something observable rather than requiring knowledge of the item e.g. 'Does it have legs?' rather than, 'Is it a herbivore?' • Splitting into equal halves will result in the fewest (average) number of steps to the solution for all the items. • Write the question onto paper/whiteboard and then put 'yes'/'no' arrows on the floor or Blu-Tack them to the board. It is advisable to enlarge the arrows onto A3 paper. • Repeat until all the items are sorted individually. • Select one item and check that the binary tree works and leads to the correct item. The children should complete their own binary tree using the avatars or animals and the outline sheet. Review Vocab & children review success criteria **Extension:** Recap the learning from Activity 1. What went well and what could be improved? Use the other set of images to create another binary tree.
4. Unit 2.4 Lesson 4	**Deeper learning question:** Why is online safety important? What other questions could not be answered using 2question? Can you find the errors in the binary tree? Can you debug it and find what they are? **Reconnection:** Remind children of online safety rules. Go over previous words encountered last lesson. **LO:** Use 2Question (a binary tree) to answer questions. **Activity:** Open the selected 2Question database by clicking the appropriate icon. Explain each of the children or animals has been given a name. Use the 2Question binary tree to find out the names. With the children look at how it works, there is a demonstration on the next slide Questions and answers can be read using the play button to assist with reading the text.

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	Hand out the question sheets. Demonstrate how to choose an avatar or animal and then work through the database to find out the name. Questions and answers can be read using the play button on each question to assist with reading the text. Children should use the database to work out the names of the different children\animals Collect the class together and discuss the correct answers. A copy of the answers is provided for you at the end of the PDF lesson plan. Discuss with the class the limitations of the information in 2Question: Questions are limited to 'yes' and 'no' answers; we are unable to ask questions such as 'children wearing a sweater and glasses' or 'animals with no legs and a shell'. What other questions could not be answered using 2Question? Review Vocab & children review success criteria **Extension:** Pupils should open the Debugging 2Question from their 2Dos. Explain that it is not working correctly. Can they debug the database and make it work correctly?
5. Unit 2.4 Lesson 5	**Deeper learning question:** Why is this kind of database better than a binary tree? Can you write questions about the database for a peer to answer? How can a database help organise information? **Reconnection:** Remind children of online safety rules. Go over previous words encountered last lesson. Can you remember how we were limited when asking questions with a binary tree? **LO:** To use a database to answer more complex search questions. • To use the Search tool to find information. **Activity:** Go over new vocab With the class, recap the limitations of the questions we can ask about information stored in a binary tree. Explain that, this time, we are going to look at a database that allows us to ask more than one question. Open the 2Investigate database – Avatars by clicking the icon. Show the record and look at how the information is stored. Clicking reveals more information. Show the children how to use the Find tool. Explain we can search by more than one criterion. E.g., ginger hair **and** glasses. Clicking reveals more information. Hand out the question sheets. Children should open the database from their 2Dos and use it to answer the questions.

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	Review Vocab & children review success criteria **Extension:** Extension 1 Open the 2Investigate tool and then the 'Fruit' database and answer the questions using the 'Find' option to help discover the answers. If the children finish, can they write some questions about the database for their peers to answer? Extension 2 Open the 2Investigate tool and then the 'Fruit' database and answer the questions using the 'Find' option to help discover the answers. If the children finish, can they write some questions about the database for their peers to answer?
	End of unit quiz & reflect on gaps from the unit: Unit 2.4 Quiz – found on unit page on PM Questions: Can you label the features of a pictogram? Can you answer questions using a pictogram to interpret? Which question can you answer using the pictogram? Which of the questions are yes/no questions? What question would be best for a desired result? What question could have given us this group? Can you match answers to a database type? What button do you need to use to search a 2investigate database?
End Points:	

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How does a Pictogram show information? On a pictogram, data is represented by pictures. Pictograms are set out in the same way as bar charts, but instead of bars they use columns of pictures to show the numbers involved.

How is information organised in a binary tree? On a binary tree information is organised through a series of questions that can only be answered 'yes' or 'no'. Eventually only one item is left in the category which forms the end of a branch of the binary tree.

How can a database help organise information? A database is a way of storing information in such a way that it can easily be searched. Databases are designed to hold lots of information that would be difficult to search without using a computer.

Evaluation: What have the end of unit quizzes, pupil self-reflections and termly work told you about what the children can remember and recall? What are the gaps? Ensure that the areas that need further reinforcement are documented in the next subject unit MTP. **Plan in time to revisit gaps within units, determined by the quizzes.**

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