Nechells Primary
E-ACT Academy

# Medium Term Overview for Computing
# Year 1

E-ACT

| Autumn | Unit 1 - Online Safety and Exploring Purple Mash | Unit 2 – Grouping and Sorting | Unit 3 – Pictograms |
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| **Number of Lessons** | **4** | **2** | 3 |
| **Outcome** | Children have created a document which contains text and images. They have saved this work and are able to re-open the document and print it. | Children have sorted and grouped images on screen by clicking, dragging and re-sizing images of objects/shapes. | Children will collect data and then enter this data into a digital pictogram. |
| **Curriculum Content: Substantive Knowledge** | **Lesson Question**<br>How can I save my work so I can access it in the future?<br>**Substantive Knowledge**<br>- We log onto a computer so that it's secure<br>- An avatar is a computer-generated image of a person or character<br>- Saving work means I can access it at a later date<br><br>**Procedural Knowledge**<br>- Enter username and password on the log in page.<br>- Press the floppy-disk icon to save work<br><br>**Outcome:** Children will log into purple mash and save work to the "My Work" folder | **Lesson Question**<br>What is the best way to sort this group of objects?<br><br>**Substantive Knowledge**<br>- A criteria is a rule which helps group things into<br>- If you have a criteria you can sort things based on that criteria<br><br>**Outcome:** Children will sort shapes online based on physical properties such as colour. | **Lesson Question**<br>What images could we use to create a pictogram?<br><br>**Substantive Knowledge**<br>- Pictograms contain images and each image relates to a number<br>- Data is the name we give to information that we collect<br>- An image in a pictogram is linked to the data collected (e.g. a car for a pictogram on how we travelled to school this morning)<br><br>**Procedural Knowledge**<br>- Ask people questions to collect data on how they travel to school.<br><br>**Outcome:** Children will collect data about how they travel to school and present this using a pictogram. |
| | **Lesson Question**<br>Where does my saved work go and how can I access it?<br>**Substantive Knowledge**<br>- Clicking on a saved document will open the document that I saved<br>- Saving work in my folder means only I can access it<br>- Once a document is saved it can be saved again so that all the changes made will be there for the next time I open it<br><br>**Procedural Knowledge**<br>- Click on the "work" tab to retrieve work.<br>- Press the alert button to see notifications.<br><br>**Outcome:** Children will find messages and work that they have saved on PurpleMash. | **Lesson Question**<br>How do you sort and group images on a computer?<br>**Substantive Knowledge**<br>- A picture of an object can be added onto a computer<br><br>**Procedural Knowledge**<br>- Shapes can be moved by clicking on them with one finger and dragging on the trackpad with another finger.<br>- If you click on an image an arrow appears; you can then hold a click on the arrow; and this will change the size of an image<br><br>**Outcome:** Children will sort shapes online based on physical properties such as colour. | **Lesson Question**<br>How can we collect data using technology?<br>**Substantive Knowledge**<br><br>- We can collect data by asking people a question where they record their answer using a computer<br>- A pictogram is a visual way of showing data we have collected<br>- An image in a pictogram tells me how many people chose that answer<br><br>**Procedural Knowledge**<br>- Data is collected by clicking on the rectangle above favourite fruit or clicking on the + sign next to favourite fruit<br><br>**Outcome:** Children will contribute to a class pictogram about their favourite fruits. |

Nechells Primary
E-ACT Academy

# Medium Term Overview for Computing
# Year 1

E-ACT

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| | **Lesson Question**<br>How do I find different resources on Purple Mash?<br>**Substantive Knowledge**<br>- Icons help me to add images or text<br>- To keep safe, personal information should not be shared when using a computer<br><br>**Procedural Knowledge**<br>- Click on a textbox to type.<br>- Click the A in the toolbar to change font and size.<br><br>**Outcome:** Children use different icons and writing cues to add pictures and text to their work. | | **Lesson Question**<br>How do I create a pictogram to share data I have collected?<br>**Substantive Knowledge**<br>- Images can be added to a document<br><br>**Outcome:** Children will create a pictogram based on the results of them rolling a dice 20 times. |
| | **Lesson Question**<br>How do I share my work with others?<br>**Substantive Knowledge**<br>- Work can be shared in a shared folder<br>- Clicking print gives me an actual version of my digital work<br><br>**Procedural Knowledge**<br>- Pictures are added to pictograms by using the + and – buttons.<br>- Click the arrow to exit a program.<br><br>**Outcome:** Children will explore the Tools section and become familiar with "Save", "Print", "Open" and "New". | | |
| **Vocabulary** | Log on, log off, computer, type, add, save, open, new, share, print, safe, information, private, avatar, draw, resources, tools | Image, object, sort, criteria, screen, mouse, click, drag, resize, hover, arrow, pointer, move, hold | Image, pictogram, data, information, question, ask, share, visual, choose, opinion, answer, process |
| **Resources** | Avatar creator<br>Paint Projects<br>Writing Templates<br>2Count (Pictograms)<br>2Explore (Music) | 2 Quiz | 2 Count<br>2 Connect |
| **Curriculum Progression (including coverage of National Curriculum)** | A unit of work which enables children to use technology purposefully to create, store and retrieve digital content. Pupils will also recognise ways to use technology safely by recognising what personal information is. | A unit of work which enables pupils to use technology purposefully to create, organise, store, manipulate and retrieve digital content. Pupils will use a mouse more effectively by clicking, dragging, moving and resizing different images on a screen. | A unit of work in which pupils recognise common uses of information technology beyond school. |
| **Coherence (links to other subjects & prior learning)** | **Prior Learning -**<br><br>**Subject Links** – PSHE, English | **Prior Learning** – Y1 Unit 1- pupils will have used a mouse to click onto a box when entering their username and password<br><br>**Subject Links** – Maths | **Prior Learning –** Y1 Unit 2- using a mouse to move and drag an image<br><br>**Subject Links** – Maths |

Nechells Primary
E-ACT Academy

# Medium Term Overview for Computing
# Year 1

E-ACT

| Spring | Unit 4 – Lego Builders | Unit 5 – Maze Explorers | Unit 6 – Animated Story Books |
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| **Number of Lessons** | **3** | 4 | 5 |
| **Outcome** | Children will have followed an algorithm and will be familiar with how to debug when instructions given are not precise | Children will create algorithms to move an image across a background image following a specific route/direction | Children will create an e-book by adding text, images and animations to a document |
| **Curriculum Content: Substantive Knowledge** | **Lesson Question**<br>What happens if I don't give precise instructions?<br>**Substantive Knowledge**<br>- A vague instruction may cause you to so something incorrectly<br>- Instructions help us to make or create something<br>- An algorithm is a precise step-by-step set of instructions used to solve a problem or achieve an objective<br><br>**Outcome:** Children will follow precise instructions to play a game. | **Lesson Question**<br>How can I move an image around a screen? (Challenge 1 and 2)<br>**Substantive Knowledge**<br>- An image can move forwards, backwards, right and left<br>- A route is a way to move from one place to another<br><br>**Procedural Knowledge**<br>- Click on a direction and click go to make an image move.<br><br>**Outcome:** Children will use the direction keys in 2Go to move their character forwards, backwards, left and right. | **Lesson Question**<br>What is an e-book?<br>**Substantive Knowledge**<br>- An e-book is a book which is displayed on a digital screen<br>- e-books are sometimes images of a traditional book or they are digital versions; sometimes they contain animations<br>- an animation is a digital image which moves<br><br>**Procedural Knowledge**<br>- Press the undo button to undo the last action<br>-Press the redo button if you change your mind and want the action back.<br><br>**Outcome:** Children will use different tools to add pictures and texts to a page. |
| | **Lesson Question**<br>What happens if I follow an algorithm?<br>**Substantive Knowledge**<br>- An algorithm is a precise step-by-step set of instructions used to solve a problem or achieve an objective<br>- If you follow an algorithm you will create a product or achieve an objective<br>- A program is an algorithm that has been coded into something that can be run by a machine<br><br>**Procedural Knowledge**<br>- Images are coloured in by selecting the colouring tool, clicking and dragging on the trackpad.<br>- Press the "hand in" button to submit work.<br><br>**Outcome:** Children will follow an algorithm in a computer program. | **Lesson Question**<br>What instructions do I need to give to move an image on a digital screen? (Challenge 3 and 4)<br>**Substantive Knowledge**<br>- Distance can be measured using numbers; a higher number moves an object further than a smaller number<br>- The button 'play' tells a program to run, the button 'stop' stops a program from completing an algorithm<br>- If an algorithm doesn't work it needs to be changed by debugging it<br><br>**Procedural Knowledge**<br>- Create an instruction by dragging a direction followed by a number into the first box.<br><br>**Outcome:** Children will create a simple algorithm and use diagonal direction keys to move their characters in the right direction. | **Lesson Question**<br>How do I create an animation?<br>**Substantive Knowledge**<br>- Images can be transformed into an animation<br>- Animations are digital images which move<br>- Animations can move in lots of different directions and they can appear and disappear from the screen in different ways<br><br>**Procedural Knowledge**<br>- Click the "animate" tool to create an animation.<br>- Click to play button to see the animation.<br><br>**Outcome:** Children will add animations to their pictures. |

Nechells Primary
E-ACT Academy

# Medium Term Overview for Computing
# Year 1

E-ACT

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|---|---|---|---|
| | **Lesson Question**<br>How do I change an algorithm if it doesn't work?<br>**Substantive Knowledge**<br>- A recipe is an algorithm for making something we can eat or drink<br>- If an algorithm is wrong or not precise enough it will not have the correct outcome<br>- When you debug a program, you look for any bugs (problems) in the code and try to fix them<br><br>**Procedural Knowledge**<br>- Clicking the green + button shows a gallery of pictures.<br>**Outcome:** Children will understand how the order in which the steps of a recipe are presented affects the outcome | **Lesson Question**<br>How do I give longer instructions? (Challenge 5 and 6)<br>**Substantive Knowledge**<br>- An image can move diagonally as well as forwards, backwards and right, left<br>- If an image needs to move further or across a more complex route more instructions need to be given<br>- If an algorithm doesn't work it needs to be changed by debugging it<br><br>**Outcome:** Children will use additional direction keys to create a new algorithm | **Lesson Question**<br>How do I add a sound to an animation?<br>**Substantive Knowledge**<br>- A sound can be recorded using an object called a microphone, lots of technology have microphones built-in<br>- Sounds can be added to images to make it seem more real<br>- Sounds can be created digitally using a digital musical instrument<br><br>**Procedural Knowledge**<br>- Use the "choose sound" tool to select a sound.<br>- Press "record" to record your own sound.<br><br>**Outcome:** Children will add sound to their animations. |
| | | **Lesson Question**<br>How do I design a route for someone to create directions for?<br>**Substantive Knowledge**<br>- A background image is a large image which fills a page<br>- A background image can be changed by adding smaller images<br><br>**Procedural Knowledge**<br>- Click on the white arrows to browse through background images.<br><br>**Outcome:** Children will change the background images in their chosen challenge and try their peers' challenge | **Lesson Question**<br>How do I create my own background image?<br>**Substantive Knowledge**<br>- A background image can make a story more interesting to read<br>- Some background images suit a story better than others<br>- You can use a mouse to create a background image and choosing different colours or patterns on a digital page<br>**Procedural Knowledge**<br>- Press the background image tool to design a background<br><br>**Outcome:** Children will add backgrounds and pages to their books. |
| | | | **Lesson Question**<br>How do I copy text and paste it into a new document?<br>**Substantive Knowledge**<br>- Using a mouse, text can be copied by holding a button over text and dragging the mouse across all the text you wish to copy<br>- If you paste text it will add it to a new screen<br>**Procedural Knowledge**<br>- Right click your mouse/track pad and select "copy" to copy and "paste" to paste.<br><br>**Outcome:** Children will add backgrounds and pages to their books. |

Nechells Primary
E-ACT Academy

# Medium Term Overview for Computing
# Year 1

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| **Vocabulary** | Instructions, algorithms, follow, objective, precise, product, machine, program, debug, fix, outcome, intended | Direction, algorithm, forwards, backwards, right, left, turn, move, image, background, diagonal, debug, challenge, page | Animation, sound, digital, image, background, record, microphone, move, flash, instrument, noise, copy, paste, click, cursor, mouse, button, screen |
| **Resources** | 2Quiz<br>Paint Projects<br>Writing Templates | 2 Go | 2 Create A Story |
| **Curriculum Progression (including coverage of National Curriculum)** | A unit of work where children will be taught what algorithms are and how to debug simple programs | A unit of work where children create and debug simple programs; children will understand how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions | A unit of work where children recognise common uses of information technology beyond school. |
| **Coherence (links to other subjects & prior learning)** | **Prior Learning -**<br><br>**Subject Links** – English- instruction writing and recipes | **Prior Learning** – Y1 Unit 4- creating algorithms and debugging them for an intended outcome<br><br>**Subject Links** – Maths- position and direction | **Prior Learning –** Y1 Unit 2- using a mouse to move and drag an image, Y1 Unit 5- background images<br><br>**Subject Links** – English- reading, e-books |

Nechells Primary
E-ACT Academy

# Medium Term Overview for Computing
# Year 1

E-ACT

| Summer | Unit 7 – Coding | Unit 8 – Spreadsheets | Unit 9 – Technology outside School |
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| **Number of Lessons** | **6** | 3 | 2 |
| **Outcome** | Children will have changed background and characters in a game and will begin to understand code by adding a movement of a character and an outcome for when two characters collide. | Children will add information (text and images) to a spreadsheet in order to calculate and count. | Children will explore what technology is and be able to recognise different types of technology in and beyond school. |
| **Curriculum Content: Substantive Knowledge** | **Lesson Question**<br>How do I give instructions to achieve a desired outcome?<br>**Substantive Knowledge**<br>- Coding is the way that computer programmers input instructions into computers<br>- A coder is a person who inputs a computing code<br>- Coding will often use symbols rather than whole sentences<br><br>**Procedural Knowledge**<br>- Drag and drop blocks to join them.<br>**Outcome:**<br>Children will be able to explain what coding means. | **Lesson Question**<br>How do I add information into a spreadsheet so that it calculates?<br>**Substantive Knowledge**<br>- Spreadsheets are computer programs which organise information<br>- A spreadsheet can help you to calculate<br>-Spreadsheets have rows and columns like a table (a row goes horizontally; a column goes vertically)<br><br>**Procedural Knowledge**<br>- Click on the tab to give a range of different sheet choices.<br><br>**Outcome:**<br>Children will navigate around spreadsheets | **Lesson Question**<br>What is technology?<br>**Substantive Knowledge**<br>- Technology is the 'application of scientific Substantive Knowledge for practical purposes, especially in industry' (Dictionary definition)<br>- There are different forms of technology at school to at home<br>- Technology is invented to help solve a problem by creating a solution or to ease a complex system/procedure<br><br>**Outcome:**<br>Children will consider types of technology used in school and out of school. |
| | **Lesson Question**<br>What coding blocks can I input to a script to get a game to work?<br>**Substantive Knowledge**<br>- A script is a set of instructions (code) which is followed by a computer<br>- Coding blocks can be dragged in and out of a script<br><br>**Procedural Knowledge**<br>- Press the design view button in the top right hand corner to show the look of the program. #<br>- Press the play button to run the code.<br>**Outcome:**<br>Children will be able to explain what a block of code is. | **Lesson Question**<br>How do I add an image to a spreadsheet?<br>**Substantive Knowledge**<br>- Clipart is a collection of images which can be added to a document<br>- A cell is one box within a spreadsheet<br>- An image or colour can be added in a cell<br><br>**Procedural Knowledge**<br>- Click on the clipart button to select clipart<br>**Outcome:**<br>Children will add clipart and other images to spreadsheets. | **Lesson Question**<br>What technology is there in your home?<br>**Substantive Knowledge**<br>- There are different forms of technology in every room of our homes<br><br>**Outcome:**<br>Children will record 4 examples of where technology is used away from school |

Nechells Primary
E-ACT Academy

# Medium Term Overview for Computing
## Year 1

E-ACT

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| | **Lesson Question**<br>How do I design the background and characters of a game?<br>**Substantive Knowledge**<br>- The properties of a game allows us to change the background image and characters<br>- When we design a game, we can change the character and background<br><br>**Procedural Knowledge**<br>- Press "exit design" to return to code view.<br><br>**Outcome:**<br>Children will add background images and characters. | **Lesson Question**<br>How does a computer count in a spreadsheet, so I don't have to?<br>**Substantive Knowledge**<br>- An algorithm can be added to a spreadsheet so that it will count information you have entered<br>- A formula is entered into a spreadsheet to tell it what to do<br><br>**Procedural Knowledge**<br>- Click on the image and give it a value by typing into the "=" box in the toolbar.<br>**Outcome:**<br>Children will give images a value that the spreadsheet can use to count them | |
| | **Lesson Question**<br>How do I move a character on-screen without having to use my mouse?<br>**Substantive Knowledge**<br>- We can add code to make a character (image) move across the screen<br>- Characters (image) can move left and right, up and down and can flip.<br><br>**Procedural Knowledge**<br>- Drag and drop code blocks to make characters move.<br>**Outcome:**<br>Children will design a simple program | | |
| | **Lesson Question**<br>What commands prompt a character to move?<br>**Substantive Knowledge**<br>- A command, action or event can be a prompt for a character to make a movement<br><br>**Procedural Knowledge**<br>- Press the When Clicked or When Swiped buttons to make the characters move.<br>**Outcome:**<br>Children will program a character to move given a variety of input events | | |
| | **Lesson Question**<br>How do I stop two images on screen from moving when they collide?<br>**Substantive Knowledge**<br>- A collision is when two or more things bump into each other<br>- A code can be added to stop things moving if they collide<br><br>**Procedural Knowledge**<br>- Insert Collision Detection by dragging it into the code window. The boxes with ? will need to be filled in.<br>**Outcome:** | | |

Nechells Primary
E-ACT Academy

# Medium Term Overview for Computing
# Year 1

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| | Children will use collision detection to make objects interact. | | |
| **Vocabulary** | Code, program, symbols, instructions, outcome, objective, blocks, script, move, character, image, collide, action, command | Spreadsheet, image, calculate, count, cell, row, column, formula, organise, table, document | Technology, uses, home, school, helpful, industry, application, problem, solution, system, procedure |
| **Resources** | 2 Code | 2 Calculate | Writing Templates |
| **Curriculum Progression (including coverage of National Curriculum)** | A unit of work in which children will understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions | A unit of work for children to organise and store digital content; increasing their ability to recognise a common use of information technology beyond school. | A unit of work where children explore different uses of technology beyond school. |
| **Coherence (links to other subjects & prior learning)** | **Prior Learning -** Y1 Unit 5- adding code, Y1 Unit 6- designing backgrounds<br><br>**Subject Links** – Maths- instructions for position and direction | **Prior Learning** – Y1 Unit 3- adding, collecting and organising data<br><br>**Subject Links** – Maths- calculating, counting | **Prior Learning –** Y1 Unit 2- using a mouse to move and drag an image, Y1 Unit 5- background images<br><br>**Subject Links** – English- reading, e-books |