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| **DIGITAL LITERACY** | **FOOD AND TEXTILE** | **TECHNOLOGICAL DEVELOPMENTS IN SOCIETY AND BUSINESS** | **CRAFT, DESIGN AND ENGINEERING** | **COMPUTING SCIENCE** |

**LEARNING AND TEACHING IN TECHNOLOGIES DEVELOPS THE FOLLOWING SKILLS:**

* Knowledge and understanding of the key concepts in the technologies
* Curiosity, exploration and problem-solving skills
* Planning and organisational skills in a range of contexts
* Creativity and innovation
* Skills in using tools, equipment, software, graphic media and materials
* Critical thinking through exploration and discovery within a range of learning contexts
* Discussion and debate
* Searching and retrieving information to inform thinking within divers learning contexts
* Making connections between specialist skills developed within learning and skills for work
* Evaluating products, systems and services
* Presentation and communication skills

Awareness of sustainability.

This pathway supports practitioners’ understanding of progression within and through all levels of Technologies. It provides a framework for planning learning and teaching which ensures that learners are progressing within and across the levels of the experiences and outcomes for Technologies. The document helps practitioners to ensure sufficient breadth, challenge and application is offered to learners. The Pathway also supports staff in building their pupils’ understanding of Technologies. so that they can be actively involved in the planning and development of their own next steps and goals, in line with the principles of Curriculum for Excellence, Getting it Right for Every Child, and the United Nations Convention on the Rights of the Child.

The Falkirk Technologies pathway is arranged (in the same way as the experiences and outcomes and national benchmarks) according to the 5 **main organisers**:

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| **Digital Literacy** – sub-organisers  | **Food & Textile Technology-** sub-organisers | **Craft, Design, Engineering & Graphics-** sub-organisers | **Computing Science -** sub-organiser |
| * Using digital products & services in a variety of contexts to achieve a purposeful outcome
* Searching, processing & managing information responsibly
* Cyber resilience & internet safety
 | * Food & textile
 | * Design & construct models/products
* Exploring uses of materials
* Representing ideas, concepts & products through a variety of graphic media
* Application of engineering
 | * Understanding the world through computational thinking
* Understanding & analysing computing technology
* Designing, building & testing computing solutions
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| **Technological Developments in Society & Business** - sub-organisers | * Awareness of technological developments (Past, Present & future), including how they work
* Impact, contribution & relationship of technologies on business, the economy, politics & the environment
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 Learner progress within and across the breadth of the experiences and outcomes **is not linear** and this pathway will help practitioners plot the most appropriate pace and challenge for individuals, groups, and classes. This pathway helps schools to define **what** needs to be taught in Technologies. so that practitioners can decide **how** to make this learning as progressive, active and engaging as possible for their learners. **Please note that practitioners will not be able to “cover” all experiences and outcomes or their progression statements every session and should select those which they feel will help their learners’ progress in the most appropriate and effective way without leaving “significant gaps”.**

**Each section of this pathway is arranged to** give details of **what progress within each experience or outcome looks like.** The final column shows **the benchmarks which define how a pupil can demonstrate achievement of a level.**

Falkirk Progression Pathways will help all staff to improve attainment by:

1. Developing a shared understanding of what progression looks like – within and across levels – in line with the national benchmarks
2. Supporting the planning and delivery of consistent, high quality learning & teaching which meets the principles of curriculum design
3. Providing a focus for dialogue about planning, assessment, moderation, and tracking
4. Pulling key information & guidance into one flexible, adaptable document – easing workload, streamlining bureaucracy, and maximising resources

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| **SECOND LEVEL** | **TECHNOLOGIES** |
| **Experiences and Outcomes** | **Progression**  | **Benchmarks** |
| **Organiser – Digital Literacy** | **Using digital products and services in a variety of contexts to achieve a purposeful outcome** | I can extend and enhance my knowledge of digital technologies to collect, analyse ideas, relevant information and organise these in an appropriate way. **TCH 2-01a****Continued on following page** | **I can/am able to:** * Create & save documents using Word, Publisher, Power Point
* Create & save documents in formats suitable for other devices e.g. Pages, Keynote, Book Creator
* Create a document in a cloud (Office 365 e.g. Word Online through GLOW) & invite a partner to collaborate at the same time.
 | **I can/am able to:** * Create & save documents using additional features e.g. insert tables, graphics & hyperlinks of familiar & new software (Sway, DoInk)
* Describe how to save my documents in different file formats to make them smaller
* Save my files in formats which are secure & cannot be changed
* Change file formats to make these easier to share/access
* Create a document in a cloud Office 365 e.g. Word Online through GLOW & invite a partner to collaborate at home or at different times
 | **I can/am able to:** * Create & save documents in standard file formats e.g. Word, Publisher, Power Point, Sway, JPEG, GIF, PDF forma
* Save documents in other formats & give reasons for these choices e.g. Word to PDF to prevent edits, or to shrink the file size
* Make informed decisions about how and where to file my documents so that I can retrieve/share these efficiently
* Save documents in formats which suit their purpose
* Create a document in a cloud Office 365 e.g. Word Online through GLOW & invite several partners to collaborate at different times.
* Save and/or export files from devices to Cloud-based storage e.g. OneDrive in Glow
 | * Identifies and saves in a range of standard file formats
* Saves files using an organised filing system.
* Stores, shares and collaborates using an online cloud based service for example, Glow or other platforms
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| **SECOND LEVEL** | **TECHNOLOGIES** |
| **Experiences and Outcomes** | **Progression**  | **Benchmarks** |
| **Organiser – Digital Literacy** | **Using digital products and services in a variety of contexts to achieve a purposeful outcome** | **Continued from previous page**I can extend and enhance my knowledge of digital technologies to collect, analyse ideas, relevant information and organise these in an appropriate way. **TCH 2-01a** | **I can/am able to:*** Give examples of input devices e.g. mouse, keyboard, microphone, digital camera & output devices e.g. monitor, printer, speakers.
* Use selected software to create & capture text, images, sound & video.
* Capture image & text from an online source e.g. "save as" function, download and save.
 | **I can/am able to:*** Identify & use a range of storage devices e.g. pen drive, Cloud, hard drive. My Documents, shared area
* Use a range of software to create & capture text, images, sound & video with some support to identify the best choice of software for a given task.
 | **I can/am able to**: * Begin to identify & discuss the limitations of storage e.g. file sizes and capacity of the device.
* Select & explain how different software allows me to modify & store text, images, sound & video & can justify my decision.
 | * Identifies the key features of input, output and storage devices.
* Selects and use applications and software to capture, create and modify text, images, sound and video.
* Selects the most appropriate digital software to perform a task.
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| **SECOND LEVEL** | **TECHNOLOGIES** |
| **Experiences and Outcomes** | **Progression**  | **Benchmarks** |
| **Organiser – Digital Literacy** | **Searching, processing and managing information responsibly** | I can use digital technologies to search, access and retrieve information and am aware that not all of this information will be credible. **TCH 2-02a****Links to:**Literacy & English - Listening & Talking – Finding and using informationLIT 2-04a, LIT 2-06a Reading –Finding and using information LIT 2-14aReading – Understanding, analysing and evaluatingLIT 2-18a | **I can/am able to:** * Identify different examples of browser software e.g. Internet Explorer, Safari, Chrome, Firefox.
* Know how to use reader view in browser to help retrieve information.
* Access a website using a search engine.
* Navigate the World Wide Web using refresh button, address bar, forward/back arrows.
* Understand & use the correct terminology for these navigation functions.
* Create & retrieve bookmarks/favourites
* Select information appropriate to the task.
* Recognise that not all search results are credible.
* Recognise that not all online material is free for use e.g. watermarks on images.
 | **I can/am able to:** * Access a website directly using the address bar.
* Use a search engine containing more than one criteria.
* Compare related searches by exploring a range of search terms.
* Work between multiple open tabs/windows
* Recognise that search results are ordered in certain ways & can explain why.
* Within Literacy contexts, explore the credibility of online materials i.e. fake news.
* Select relevant information from a range of sources
 | **I can/am able to:** * Use the favourites, feeds & history tools to access websites
* Explain why search results may be ordered in certain ways
* Use strategies to improve the relevance of my searches
* Explain which material I can use freely & say what is ok and what isn’t l(legal & illegal)
* Select information based on how credible & relevant it is to my task
 | * Uses search engines to search the internet for specific or relevant information for example, using quotation marks to narrow the results.
* Access websites and use navigation skills to retrieve information for a specific task.
* Demonstrates an understanding of usage rights and can apply these within a search for example creative commons
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| **SECOND LEVEL** | **TECHNOLOGIES** |
| **Experiences and Outcomes** | **Progression**  | **Benchmarks** |
| **Organiser – Digital Literacy** | **Cyber resilience and internet safety** | I can explore online communities demonstrating an understanding of responsible digital behaviour and I’m aware of how to keep myself safe and secure.**TCH 2-03a****Links to:**Health & Wellbeing - Mental, social, emotional & physical wellbeing – Physical Wellbeing**HWB 2-16a & 2-17a** | **I can/am able to:** * Say what a password is for & why I should not share my passwords
* Name an online community
* Say what is good & bad about online communities e.g. school or class social media, gaming communities
* Explain why it could be dangerous to share personal information online
* Say how the things I do online are observed & can be traced back to me e.g. Microsoft Teams
* Talk about things that happen online which are illegal
* Talk about rules & responsibilities online by looking at privacy & acceptable use policies
* Say why there are age limits on games & online communities
 | **I can/am able to:** * Describe how to choose a good password e.g. Glow
* Describe a range of online communities
* Say how online friends are different from “real” friends
* Show awareness that people I speak to online may not be who they say they are
* Describe what kind of online behaviour is ok
* Understand the legal, safety or privacy rules of different social networks/communities
* Say what I should do if I am worried about something which happens online
 | **I can/am able to:** * Show what a safe personal profile should contain
* Describe the purposes of selected online communities
* Say whether an online community is closed or open – how to make profiles/details private
* Recognise who can see things I share online
* Recognise that some information can stay online forever
* Identify ways to report concerns I have about what happens to me online e.g. CEOP ( ), “Report concern” button, etc
* Say how I could evidence illegal or upsetting online experiences e.g. take a screenshot
 | * Uses strong passwords.
* Demonstrates an understanding of the content they should include in an online profile.
* Discusses the importance of being a responsible digital citizen, giving examples of appropriate online behaviours and actions.
* Identifies appropriate ways to report concerns.
* Has an understanding of the law as it relates to inappropriate or illegal online behaviours, for example, the sharing of inappropriate images
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| **SECOND LEVEL** | **TECHNOLOGIES** |
| **Experiences and Outcomes** | **Progression**  | **Benchmarks** |
| **Organiser – Food and Textile** | **Food and Textile** | I am developing dexterity, creativity and confidence when preparing and cooking food**TCH 2-04a**I am developing dexterity, creativity and confidence when working with textiles**TCH 2-04b**I can extend and explore problem solving strategies to meet increasingly difficult challenges with a food or textile focus**TCH 2-04c**I can discuss, debate and improve my ideas with increasing confidence and clear explanations**TCH 2-04d** | **I can/am able to:** * Measure & weigh ingredients accurately when preparing, baking & cooking food e.g. using measuring spoons, jugs, digital & balance scales, following recipes.
* Measure & cut fabric with increasing accuracy & confidence for a range of purposes.
* Decorate & join fabric pieces using simple stitches with needle & thread.
* Begin to use a simple design process to solve increasingly challenging food or textile problems e.g. investigating the design brief, considering the possible ways to meet the criteria, planning & making my solution.
* Begin to evaluate my own design ideas and those of others e.g. applying assessment criteria & debating pros & cons.

**Links to HWB Food and Health, The Food experience HWB 2-29a, Developing Healthy Choices HWB 2-30a, Keeping Safe & Hygienic HWB 2-33a, The Journey of Food HWB 2-35a** | **I can/am able to:** * Apply my practical food preparation, baking & cooking skills with increasing dexterity & confidence
* Measure & cut increasingly intricate fabric shapes & designs.
* Decorate & join fabric pieces using a wider range of stitching & sewing equipment.
* Begin to explore ways to knot, knit & crochet textile objects
* Use a simple design process to solve increasingly challenging food or textile problems e.g. identify & investigate the problem in a variety of ways
* Select appropriate resources/methods to solve the challenge or problem.
* Evaluate my solution using given criteria & in relation to my own criteria or goals.
 | **I can/am able to:** * Prepare & cook food with dexterity & confidence & begin to creatively adapt recipes & ideas.
* Cut, manipulate & embellish fabric with dexterity & confidence to follow & adapt simple patterns & ideas.
* Join & decorate fabric objects by sewing most simple stitches.
* Demonstrate manual dexterity when tying, knotting, knitting & crocheting textile objects
* Use each stage of the design process to meet food & textile challenges & solve problems related to real life. e.g. investigate, research, identify & explore potential solutions, select appropriate resources & plan how to solve the problem.
* Evaluate my solution against given & own criteria & suggest possible improvements.
 | * Demonstrates an increasing range of practical skills and cooking techniques for example accurate weighing and measuring, kneading, chopping, baking, grilling
* Demonstrates manual dexterity , for example, cutting more intricate shapes, manipulating fabrics and embellishments to create designs on fabric, using a needle and thread, attaching designs onto fabric
* Investigates a challenge / problem
* Identifies and demonstrates ways to solve the challenge / problem
* Identifies and selects appropriate resources to solve the challenge/problem
* Plans and makes the solution
* Assesses solution against own criteria
* Identifies at least one possible improvement
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| **SECOND LEVEL** | **TECHNOLOGIES** |
| **Experiences and Outcomes** | **Progression**  | **Benchmarks** |
| **Organiser – Technological Developments in Society and Business** | **Awareness of technological developments (Past, Present and Future), including how they work** | I can investigate how product design and development have been influenced by changing lifestyles.**TCH 2-05a****Links to:**Social Studies - People, past events & societies SOC 2-01aPeople, society, economy & businessSOC 2-15a | **Through a range contexts across my learning, I can/am able to**:* Investigate & show how the design process is used to create the products, objects & technologies around me e.g. follow the journey of an everyday product from design to manufacture
* Talk about the links between a design brief & the target audience who will buy the product or technology being designed.

  | **Through a range contexts across my learning, I can/am able to**:* Investigate & show how peoples’ lifestyles have changed the design of products, objects & technologies around them e.g. the evolution of clocks & watches towards smart wrist devices which also track fitness
* Write, draw or show how the invention of new power sources, materials, or fashions have changed product design & development.
 | **Through a range contexts across my learning, I can/am able to**:* Investigate & show how peoples’ lifestyles & trends have changed the design of the products, objects & technologies around them e.g. study the evolution of a product, object or piece of technology which is important in my life or in society
 | * Gives examples of how our changing lifestyles have impacted on product design.
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| **SECOND LEVEL** | **TECHNOLOGIES** |
| **Experiences and Outcomes** | **Progression**  | **Benchmarks** |
| **Organiser – Technological Developments in Society and Business** | **Impact, contribution, and relationship of technologies on business, the economy, politics, and the environment.** | I can analyse how lifestyles can impact on the environment and Earth’s resources and can make suggestions about how to live in a more sustainable way.**TCH 2-06a**I can make suggestions as to how individuals and organisations may use technologies to support sustainability and reduce the impact on our environment.**TCH 2-07a****Links to:**People place & environment SOC 2-08a & 2-08b, SOC 2-09a, SOC 2-12a & SOC 2-13aPeople in society, economy & business SOC 2-16a & SOC 2-20a | **I can/am able to:*** Analyse then share how my own lifestyle impacts on the environment & Earth’s resources
* Understand the terms “sustainable” & “unsustainable” as these apply to the use of Earth’s resources & energy
* Explore & analyse how sustainable the technologies used by organisations & businesses in my local area or wider environment are e.g. how are local businesses developing sustainable practices? How does our local council encourage us to reduce negative impact on our environment?
 | **I can/am able to:*** Give examples of lifestyle choices which are sustainable & unsustainable
* Analyse how my/our lifestyle choices impact on the lifestyles & choices available to others e.g. ways to travel impact on air quality, destruction of forest for palm oil production increases climate change
* Explore how individuals & organisations use technologies to reduce their impact on our environment, then share my evidence & opinions about how sustainable these practices are e.g. reduction of plastic packaging, wind power vs nuclear energy production

  | **I can/am able to:** * Explain and/or share an example of how the continuation of unsustainable lifestyle choices impacts on the environment and Earth’s resources
* Identify & discuss the advantages & disadvantages of energy technologies e.g. compare the pros & cons of renewable & other forms of power
* Make suggestions for ways in which individuals & organisations could use technologies to improve the sustainability of their practices & reduce their impact on our environment
 | * Explains how and why it is important to conserve energy.
* Discusses the advantages and disadvantages of how technologies impact on the environment for example, renewable energy technologies.
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| **SECOND LEVEL** | **TECHNOLOGIES** |
| **Experiences and Outcomes** | **Progression**  | **Benchmarks** |
| **Organiser – Craft, Design, Engineering and Graphics** | **Design and constructing models/product** | I can extend and enhance my design skills to solve problems and can construct models. **TCH 2-09a****Links to** TCH 2-10a & TCH 2-11a belowNumeracy & Maths -Number, money, measure – MeasurementMNU 2-11a & bExpressive Arts – Art & DesignEXA 2-06a & 2-07a | **Through a range of tasks and activities I can/am able to:** * Follow instructions to use new tools & construction equipment correctly & safely e.g. rulers, vices/clamps, cutting knives, glue guns
* Estimate and/or measure with some accuracy using appropriate units when I solve problems & construct models
* Routinely create more than one potential idea to meet a design challenge so that I can consider & justify my best solution
 | **Through a range of tasks and activities I can/am able to:** * Use tools & build my products safely & with increasing care & skill
* Explore & demonstrate how to join or change materials to build strong models & solutions e.g. folding & scoring paper & card, adding struts & supports to constructions, etc.
* Use rulers, tape measures & other methods of estimating & making increasingly accurate measurements during planning & construction of design solutions
* Make evaluative comments about my own processes & design solutions & those of others
 | **Through a range of tasks and activities I can/am able to:** * Routinely demonstrate safe practices with tools & equipment when carrying out construction tasks
* Apply my knowledge of joining & strengthening methods when building things from a range of materials
* Estimate sizes & quantities appropriately & measure accurately in centimetres & millimetres when constructing models
* Analyse & talk about my design ideas & solutions (& those of others) & evaluate my successes & potential improvements
 | * Uses tools and equipment in order to carry out a task safely.
* Uses a range of methods to join and strengthen materials.
* Estimates and then measures accurately using appropriate units and tools.
* Creates a range of ideas and chooses a suitable solution
* Evaluates solutions and explains why they are or are not suitable
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| **SECOND LEVEL** | **TECHNOLOGIES** |
| **Experiences and Outcomes** | **Progression**  | **Benchmarks** |
| **Organiser – Craft, Design, Engineering and Graphics** | **Exploring uses of materials** | I can recognise basic properties and uses for a variety of materials and can discuss which ones are most suitable for a given task. **TCH 2-10a****Links to** TCH 2-09a above & TCH 2-11a belowLiteracy & English – Listening & Talking – Enjoyment & Choice LIT 2-01a Creating Texts LIT 2-09aScience – Materials – Properties & uses of substances SCN 2-15a & Earth’s Materials SCN 2-17aExpressive Arts – Art & Design - EXA 2-02a  | **Through a range of tasks and activities I can/am able to:** * Describe the basic properties of wood, metal & plastic
* Compare & contrast how these properties are used in the world around me
* Share my thoughts about which materials would be most suitable for a range of tasks & purposes
* Apply my knowledge of the properties of materials to help me solve a design problem or fulfil a design brief
 | **Through a range of tasks and activities I can/am able to:** * Research then share how the properties of materials such as wood, plastic & metal are used in the world around us e.g. the properties of different types of wood, metal & plastic
* Explore & describe the special skills & methods needed to work with groups of materials such as wood, plastic & metal
* Describe, write about or show how designers & craft’s people make use of the properties of wood, plastic & metal
* Evaluate how I have applied my knowledge of the properties of materials to fulfil a design brief
 | **Through a range of tasks and activities I can/am able to:** * Research the group of materials I am most interested in, then share what I have learned about their properties & the skills & methods needed to make things from these materials
* Demonstrate my understanding of the properties of my chosen material by analysing & evaluating an object designed by someone else, or by designing & creating an object of my own
* Evaluate how the properties of a material have been used to fulfil a design brief or challenge e.g. my own object or one designed by someone else
 | * Recognises characteristics of groups of materials such as wood, plastic and metal.
* Selects suitable materials to use in a task
* Discuss the uses of materials
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| **SECOND LEVEL** | **TECHNOLOGIES** |
| **Experiences and Outcomes** | **Progression**  | **Benchmarks** |
| **Organiser – Craft, Design, Engineering and Graphics** | **Representing ideas, concepts and products through a variety of graphic media** | I can use a range of graphic techniques, manually and digitally, to communicate ideas, concepts or products, experimenting with the use of shape, colour and texture to enhance my work.**TCH 2-11a****Links to:** TCH 2-09a & TCH 2-10a aboveExpressive Arts – Art & DesignEXA 2-02a & EXA 2-03aNumeracy & Maths – Shape, position & movement – Properties of 2 shapes & 3 D objects - MTH 2-16a, b & cAngles, symmetry & transformation MTH 2-19a | **Through a variety of experiences across my learning I can/am able to:** * Draw geometric shapes with increasing accuracy i.e. using manual & digital tools with increasing skill & dexterity
* Use a range of drawing tools to explore the properties of line, tone, shape, pattern & texture e.g. light & dark pencils, different pens & software effects
* Use a range of graphic techniques to plan & share my ideas for a specific design challenge
* Design a product or ideas for a specific customer(s)
 | **Through a variety of experiences across my learning I can/am able to:** * Use tone & colour to create the illusion of light, space & form when drawing 3 D objects
* With support, begin to represent 3 dimensional shapes & spaces using simple single-point perspective drawing techniques and/or digital software & applications
* Explore & use primary & secondary colours to create mood in a design or product, or to appeal to the feelings of a targeted audience e.g. design a breakfast cereal box which helps people feel awake & happy
* Explore & use manual & digital methods of adding pattern & texture to designs for a targeted audience
 | **Through a variety of experiences across my learning I can/am able to:** * Use manual and/or digital methods to represent 3 dimensional shapes & spaces using single-point perspective drawing techniques
* Draw accurate geometric shapes
* Represent 2 & 3 D shapes in my design work
* Produce designs & drawings which show that I have selected colours, lines, patterns & textures for a targeted audience
* Describe how I can use primary & secondary colours within my sketches & designs to appeal to the mood or feelings of an audience
 | * Sketches geometric shapes to create objects.
* Produces sketches to communicate ideas that include pattern and texture
* Draws geometric shapes accurately.
* Sketches 2D and 3D drawings of objects
* Describes primary and secondary colours and the moods/feeling associated with each.
* Demonstrates planning for a targeted audience when creating a graphic display
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| **SECOND LEVEL** | **TECHNOLOGIES** |
| **Experiences and Outcomes** | **Progression**  | **Benchmarks** |
| **Organiser – Craft, Design, Engineering and Graphics** | **Application of Engineering** | I can extend my knowledge and understanding of engineering disciplines to create solution.**TCH 2-12a****Links to:** Literacy & English – Listening & Talking – Creating Texts – LIT 2-10aScience – Planet Earth - Energy sources & sustainabilitySCN 2-04a Forces, electricity & waves – Forces SCN 2-07a, SCN 2-08a & b Electricity SCN 2-09a & SCN 2-10a  | **Through a variety of experiences across my learning I can/am able to:** * Describe, write about or show how mechanical & structural engineering affects our lives
* Use my knowledge of scientific forces to design & build/simulate an object which would move well through air or water
* Research different engineering disciplines & match these correctly to real life objects, structures, problems & projects
 | **Through a variety of experiences across my learning I can/am able to:** * Describe, write about or show how electrical engineering affects our lives
* Use what I know about electricity to design & build/simulate a solution to a simple electrical problem
* Use what I know about energy & forces to design & create an object which uses sustainable power
 | **Through a variety of experiences across my learning I can/am able to:** * Investigate then explain or demonstrate the impact of a local or national civil engineering project e.g. The Queensferry Crossing, HS 2, the Forth & Clyde Canal
* Use what I know about magnetic & gravitational forces to design & build/simulate a solution of my choice
* Use what I know about floating & sinking to design & build/simulate a solution of my choice which is buoyant
* Describe, write about or show the differences between engineering disciplines
 | * Understands the difference between different engineering disciplines
* Understands different energy types.
* Builds/simulates solutions to engineering problems.
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| **SECOND LEVEL** | **TECHNOLOGIES** |
| **Experiences and Outcomes** | **Progression**  | **Benchmarks** |
| **Organiser – Computing Science** | **Understanding the world through computational thinking** | I understand the operation of a process and its outcome.I can structure related items of information.**TCH 2-13a****Link to:** Numeracy & Maths – Number, Money & Measure – Patterns & relationshipsMTH 2-13aInformation Handling – Data & Analysis – MNU 2-20a & b & MTH 2-21a | **I can/am able to**:* Take part in activities which involve breaking down a familiar process into a sequence of steps e.g. make a sandwich, journey to school.
* With support, record the sequence of steps e.g pictorial, written instructions, basic flow diagram.
* Identify familiar routines & sequences of instructions - *algorithms* e.g. lines, cloakroom, into class, deal with bags, dinners, etc & when they are repeated.
* Describe the outcomes of an observed process e.g. mixing paint colours
* Use and follow a range of diagrams & process which arrange related items of information
* Explore & use systems used in school to sort real-life objects e.g. resources in classroom.
 | **I can/am able to**:* Plan & carry out a single sequence of steps for a familiar process in various contexts e.g. recipe, story, direction, drawing task, listening skills task.
* Record the sequence of steps e.g. pictorial, written instructions, basic flow diagram.
* Identify further routines & sequences of algorithms& when they are repeated a fixed number of times – *a loop*. e.g. Scottish country dance
* Predict the outcome of a given process such as rock, paper, scissors – win, lose or draw e.g. “If' statement.
* With support, make decisions about how to arrange & structure related items of information e.g. flow diagrams for making lunch choices.
* Explore & use more sophisticated ways in which information is sorted & stored e.g. Trading cards
 | **I can/am able to**: * Take part in activities which involve comparing single sequences of steps which run alongside each other - *are multiple parallel steps,* e.g. dancing & playground games.
* Record examples of multiple processes which happen at the same time e.g. pictorial, written instructions, basic flow diagram.
* Identify a loop that repeats until a condition is met e.g. roll the dice until you get a 6 to start a game.
* Identify when a process is not predictable because there is a random element e.g. a board game which uses dice.
* Independently make decisions about how to arrange & structure related items of information e.g. build a family tree of own family tree of a fictional/historical character
* Identify & demonstrate algorithms which are useful in everyday life e.g. Library books, filing systems
 | * Compares activities consisting of a single sequence of steps with those consisting of multiple parallel steps, for example, making tomato sauce and cooking pasta to be served at the same time.
* Identifies algorithms/instructions that include repeated groups of instructions a fixed number of times and/or loops until a condition is met.
* Identifies when a process is not predictable because it has a random element for example, a board game which uses dice.
* Structures related items of information for example, a family tree (MNU 2- 20b).
* Uses a recognised set of instructions/ an algorithm to sort real world objects for example, books in a library or trading cards.
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| **SECOND LEVEL** | **TECHNOLOGIES** |
| **Experiences and Outcomes** | **Progression**  | **Benchmarks** |
| **Organiser – Computing Science** | **Understanding and analysing computing technology** | I can explain core programming language concepts in appropriate technical language.**TCH 2-14a****Links to** – Numeracy & Maths – Shape, position & movement MTH 2-17cIdeas of chance & uncertainty – MNU 2-22a | **I can/am able to:*** Talk through a simple program including appropriate technical vocabulary e.g. v**ariables** (storing a value) **sequence** (steps), **selection** (potential lines to be executed if a condition is met) & **repetition** (repeating a loop a fixed number of times).
* Read a visual program & predict output e.g. a simple program in a visual program such as Scratch.
 | **I can/am able to:*** Talk through an increasingly complex program including appropriate technical vocabulary e.g. v**ariables** (storing a value) **sequence** (steps), **selection** (potential lines to be executed if a condition is met) & **repetition** (repeating a loop a fixed number of times).
* Predict what individual elements of increasingly complex programs will do as they run e.g. programs with conditional (“If” statements), repetition & variables.

  | **I can/am able to:*** Explain the meaning of conditional repetition (repeating an action until a condition is met = true) e.g. such as continue to throw a dice until the number 6 is shown.
* Identify parallel processes & the points at which they may interact e.g. two sprites in a Scratch program.
 | * Explains the meaning of individual instructions (including variables and conditional repetition) in a visual programming language
* Predicts what a complete program in a visual programming language will do when it runs, including how the properties of objects for example, position, direction and appearance change as the program runs through each instruction.
* Explains and predicts how parallel activities interact
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| **SECOND LEVEL** | **TECHNOLOGIES** |
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| **Organiser – Computing Science** | **Understanding and analysing computing technology** | I understand how information is stored and how key components of computing technology connect and interact through networks.**TCH 2-14b****Links to:** TCH 2-01a above | **I can/am able to*** Say that computers hold all information using binary numbers 1 or 0.
* Talk about the basic functions of the various internal parts of a computer e.g. processor = brain, memory = short term memory, back up storage = filing cabinet
* Demonstrate how information is stored on school networks (wired and wireless, server, router, cabinet) & explain the journey data takes & how it is stored e.g. My Documents, shared area.
 | **I can/am able to:*** Explore how this information is translated into denary numbers through activities e.g. <https://classic.csunplugged.org/binary-numbers/>
* Begin to use the correct terminology to describe parts of the computer e.g. RAM, CPU, hard drive, memory stick, SD cards.
* Demonstrate how information is stored on remote servers (e.g. One Drive accessed through Glow) & explain how this can be accessed from different locations & devices.
 | **I can/am able to*** Understand how a black & white graphic is represented by a computer.
* Demonstrate an understanding of the purpose &relationship of the processor, memory and storage.
* Communicate & share information via networks or online e.g. Glow email & One Drive applications.
 | * Demonstrates an understanding that all computer data is represented in binary for example, numbers, text, and black and white graphics.
* Describes the purpose of the processor, memory and storage and the relationship between them
* Demonstrates an understanding of how networks are connected and used to communicate and share information, for example the internet.
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| **SECOND LEVEL** | **TECHNOLOGIES** |
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| **Organiser – Computing Science** | **Designing, building and testing computing solutions** | I can create, develop and evaluate computing solutions in response to a design challenge**TCH 2-15a****Links to:** TCH 2-14aNumeracy & Maths, Angles, Symmetry & transformation MTH 1-17a Information Handling – Data & analysis – MNU 2-20a & bLiteracy & English – Listening & talking – Creating texts LIT 2-09aReading – Understanding, evaluating & analysing LIT 2-16a  | **In response to design challenges, I can/am able to:*** Use familiar/given code in a visual (block coding) programming language that follows a process to repeat an action (repeat loops) e.g. Scratch or block code tutorials in Hour of Code
* Begin to recognise opportunities to create code which reuses repeat loops within a new context.
* Evaluate programmed solutions & identify any errors to debug.
 | **In response to design challenges, I can/am able to**:* Use familiar/given code in a visual programming language that includes variables to hold values e.g. a countdown timer.
* Use familiar/given code that includes IF statements e.g. increasing/ decreasing a score if a condition is met.
* Reuses familiar variables & IF statements within a new context.
* Evaluate & identify mismatches between the design challenge task criteria & the programmed solution.
 | **In response to design challenges, I can/am able to:** * Create a program in a visual programming language that includes conditional repetition e.g. a loop that continues to loop until a correct password is given or a sound is played until a specific button is pressed.
* Reuse & edit familiar variables & conditional loops appropriately within a new context e.g. edit the conditional loop from a previous program so that a different button stops the sound playing.
* Identify mismatches between the design challenge task criteria & the programmed solution & indicate how to fix these.
 | * Creates programs in a visual programming language including variables and conditional repetition.
* Identifies patterns in problem solving and reuses aspects of previous solutions appropriately for example, reuse code for a timer, score counter or controlling arrow keys.
* Identifies any mismatches between the task description and the programmed solution, and indicates how to fix them.
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