Digital Technologies Primary Progression Planner

Make It Happen Club in association with St. Joseph's Primary School Digital Literacy Working Party ERC

Make it Happen

Early level

Early Level - Using digital products and services in a variety of contexts to achieve a purposeful outcome

Experiences and Outcomes	Benchmarks
I can explore digital technologies and use what I learn to solve problems and share ideas and thoughts. TCH 0-01a	• Recognises different types of digital technology. • Identifies the key components of different types of digital technology. • Logs on to a preferred device with a given password. • Identifies icons for different applications. • Opens and close a pre-saved file. • Identifies and consistently use the close icon. • Uses digital technologies in a responsible way and with appropriate care

Suggested Resources

- Age appropriate devices including tablets, iPads and apps for media capture, editing and presentation.
- Digital cameras

Collecting

- **Sort Shapes** http://www.primaryresources.co.uk/online/simpleshapesort.swf This is a simple online sorting activity based upon the number of sides a shape has.
- **Pictograph** http://primaryschoolict.com/pictograph/ An easy-to-use program for learners to create pictographs using predefined tables or blank formats. (Note: This website uses the American spelling of favourite).

Analysing

- **Catch and Count** www.toytheater.com/fishing.php Children click on the hook to catch fish in each colour. They then need to count how many they caught in order for graph to be completed. Need counting skills to 9.

Early Level - Searching, processing and managing information responsibly

Experiences and Outcomes	Benchmarks
I can use digital technologies to explore how to search and find information. TCH 0-02a	• Identifies and uses images and key words when searching for specific information. • Demonstrates an understanding of how information can be found on websites as text, audio, images and video. • Demonstrates an understanding of how they should not use materials owned by others without permission.

Suggested Resources

- Age appropriate devices including tablets, iPads and apps for media capture, editing and presentation.
- Digital cameras
- F**ind the Letter -** Learners have 30 seconds to match the letter on the display with the letter on the keyboard. This could be used as an effective warm-up activity. www.freewebs.com/weddell/findtheletter.html
- **Doorway Typing** doorwayonline.org.uk/texttype2.html
- The touch typing tutor
- **Comic Life -** A great tool for making comic strips.
- **Wordle -** www.wordle.net/
- **Microsoft Word**
- **Shape Collage -** Application that allows you to use photographs and digital images to create shapes and text for display purposes
- **ABC Paint -** www.abcya.com/abcya_paint.htm A web based application which allows users to learn basic skills in creating a digital picture. All basic drawing features are available. The learner can save the picture and edit the picture. The application does not allow users to open saved images.
- **Simple Animation Maker-http://**www.abcya.com/animate.htm - This application allows you to build simple backgrounds and objects in a frame to quickly create an animation

Early Level - Cyber Resilience and Internet Safety

Experiences and Outcomes	Benchmarks
I can explore, play and communicate using digital technologies safely and securely. TCH 0-03a	• Demonstrates an understanding of appropriate behaviour and language in the digital environment. • Demonstrates an understanding of the importance of passwords and passcodes for example access to school building.

Suggested Resources

- CBBC
- Kidsmart
- Campus Cop
- Online Communication Safety www.thinkuknow.co.uk/5_7/hectorsworld/ Cartoon clips with information about e-communication: Hector's World, and Lee and Kim for 5-7s
- Safe use of e-communication www.getsafeonline.org/safeguarding-children/ A good source of advice for teachers and carers.
- Using online resources safely www.kidsmart.org.uk/teachers/ks1/sources/projet/The-Adventures-of-Smartie-the-Penguin.pdf A story to help young children make good choices about when to ask for help.

Early Level - Understanding the world through computational thinking

Experiences and Outcomes	Benchmarks
I can explore computational thinking processes involved in a variety of everyday tasks and can identify patterns in objects or information TCH 0-13a	• Identifies and sequences the main steps in an everyday task to create instructions/an algorithm for example, washing hands. • Classifies objects and groups them into simple categories for examples, groups toy bricks according to colour. • Identifies patterns, similarities and differences in objects or information such as colour, size and temperature and simple relationships between them.

Suggested Resources

- Materials for creating repeated pattern. E.g. counting beads, numeral cards, number lines etc.
- Dash & Dot (programmable workshop)
- 'Go' iPad app
- Scratch Kids/Juniors

<u>Kodable –</u>

Robotics 1 – Introduction

(K-2nd Grade)

https://dashboard.kodable.com/#/curriculum/lesson/24/79/

Sequence 1: Introduction (K-5th grade)

https://dashboard.kodable.com/#/curriculum/lesson/1/2/

Sequence 2: Algorithms (K-2nd Grade)
https://dashboard.kodable.com/#/curriculum/lesson/1/31/

If Flash, then Clap (K-2nd Grade) https://dashboard.kodable.com/#/curriculum/lesson/28/97/

Pizza Party (Pre-reader) (K-1st Grade)
https://dashboard.kodable.com/#/curriculum/lesson/26/102/

Maze Maker Challenges (K-5th Grade)
https://dashboard.kodable.com/#/curriculum/lesson/30/103/

Hour of Code: Beginner (Kindergarten)
https://dashboard.kodable.com/#/curriculum/lesson/19/58/

Early Level - Understanding the world through computational thinking

Suggested Resources

- Hour of Code: ELA Integration (Kindergarten) https://dashboard.kodable.com/#/curriculum/lesson/22/65/
- Hour of Code: Advanced (Kindergarten) https://dashboard.kodable.com/#/curriculum/lesson/20/66/
- Coding Explained by Child-Friendly Video Clips www.bbc.co.uk/education/topics/zs7s4wx
- Mouse Control www.doorwayonline.org.uk/movingtargets.html This website encourages learners to develop mouse control skills. Learners should control the mouse in order to click on still and moving objects
- Arrow Key Control www.iboard.co.uk/teacher/jlisaw8/2 Five games to develop skills in controlling a character/object using arrow keys. The objectives for each game encourage children to plan their route. These games also introduce children to language such as compass points, quarter and half turn and diagonal.
- BeeBot in the Early Years http://elresources.skola.edu.mt/wp-content/uploads/2010/06/doc_669_2468_beebotguideA4v2.pdf "ICT Learning Innovation Centre's Guide to using Bee-Bots in the Early Phase"

Early Level - Understanding and analysing computer technology

Experiences and Outcomes	Benchmarks
I understand that sequences of instructions are used to control computing technology. TCH 0-14a I can experiment with and identify uses of a range of computing technology in the world around me. TCH 0-14b	• Demonstrates an understanding of how symbols can represent process and information. • Predicts what a device or person will do when presented with a sequence of instructions for example, arrows drawn on paper. • Identifies computing devices in the world (including those hidden in appliances and objects such as automatic doors).

Suggested Resources

- BBC Bitesize
- Nina and the Neurons https://www.bbc.co.uk/cbeebies/shows/nina-and-the-neurons
- Computing in the National Curriculum in England http://www.computingatschool.org.uk/data/uploads/CASPrimaryComputing.pdf
- Computing Science resources available in the National Technologies Community on Glow

Early Level – Designing, building and testing computing solutions

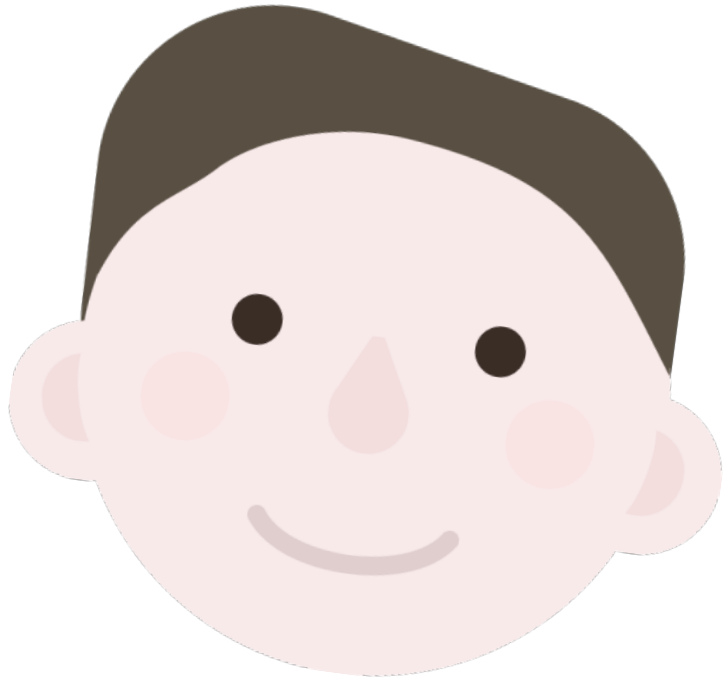
Experiences and Outcomes	Benchmarks
I can develop a sequence of instructions and run them using programmable devices or equivalent TCH 0-15a	• Designs a simple sequence of instructions/algorithm for programmable device to carry out a task for example, directional instructions: forwards/backwards. • Identifies and corrects errors in a set of instructions.

Suggested Resources

- Computing Science Resources and guidance available from Barefoot Computing https://barefootcas.org.uk/activities/
- Quickstart Computing http://primary.quickstartcomputing.org , BBC and the National Technologies Community on Glow.
- Beebot, Blue Bot
- Kodable – See above
- Hour of Code - https://code.org/learn
- Code Combat https://codecombat.com/play

Make it Happen

First level



First Level – Searching, processing and managing information responsibly

Experiences and Outcomes	Benchmarks
Using digital technologies responsibly I can access, retrieve and use information to support, enrich or extend learning in different contexts. TCH 1-02a	• Demonstrates an understanding of the concept of ownership of material and ideas. • Demonstrates an understanding of the different functions of a browser and search engine. • Recognises what should and shouldn't be searched for on the Internet.

Suggested Resources

- Digital devices including tablets, age appropriate apps and software for media capture, editing and presentation
- Word Play
- Linking in ICT to consolidate learning in on-going literacy work is always useful; learners typing their name when they arrive in class; manipulating CVC words in Wordle; adding High Frequency / Topic words into a Word document and editing etc.
- Interactive Games There are a huge number of interactive typing games that are both fun and appropriate at Early level. It is a good idea to find a 'breadth' of resources within this area for use in the classroom. Some further ideas to get you started; http://games.sense-lang.org/ http://www.abcya.com/kids_typing_games.htm http://www.freetypinggame.net/play.asp
- Doorway Typing http://doorwayonline.org.uk/texttype2.html This resource teaches how to touch type
- Dancemat Typing www.bbc.co.uk/schools/typing/levels/level1.shtml Keyboard typing training with a clear progression of skills.
- Comic Life A great tool for making comic strips.
- Wordle www.wordle.net/ Learners can add word lists, Wordle then generates a visual display with them.
- Microsoft Publisher
- Microsoft Word

First Level - Searching, processing and managing information responsibly

Suggested Resources

- Shape Collage
- Application that allows you to use photographs and digital images to create shapes and text for display purposes
- ABC Paint www.abcya.com/abcya_paint.htm A web based application which allows users to learn basic skills in creating a digital picture. The learner can save the picture and edit the picture.
- PowToon http://www.powtoon.com/ Powtoon is a free online animated presentation tool
- Microsoft Office 365 Onenote
- Incompetech Royalty Free Music http://incompetech.com/music/royalty-free/ Royalty free music. A great resource to find backing tracks to animations or mini-movies.
- SoundBible- Free Sound FX http://soundbible.com/free-sound-effects-1.html Sound effects for everyone. Great for spicing up animations or mini-movies.
- Canva- Poster Creation Tool www.canva.com/ A free online tool for creating mini-posters from a range of templates.
- Mindomo www.mindomo.com Mindomo is an online mind mapping tool
- Voki Character Animation www.voki.com/create.php This application allows you to make a character speak.
- http://www.prezi.com/

First Level - Using digital products and services in a variety of contexts to achieve a purposeful outcome

Experiences and Outcomes	Benchmarks
I can explore and experiment with digital technologies and can use what I learn to support and enhance my learning in different contexts. TCH 1-01a	• Communicate and collaborate with others using digital technology for example, email, Glow or other platforms. • Opens and saves a file to and from a specific location. • Identifies the key components of frequently used digital technology and whether it is a piece of hardware or software. • Uses digital technology to collect, capture, combine and share text, sound, video and images.

Suggested Resources

- Digital devices including tablets, age appropriate apps and software for media capture, editing and presentation
- Collecting
- Organising Data www.bbc.co.uk/schools/teachers/ks1_lessonplans/maths/organising_data.shtml
- Create A Graph http://nces.ed.gov/nceskids/graphing/classic/ This website allows learners to input data into the computer for it to be displayed in Area, Bar, Line and Pie charts and graphs. The created graphs can then be printed and analysed.
- Analysing Data Handling http://topicbox.net/mathematics/data_handling/ A great range of resources for creating and interpreting different graph types.
- The Garden Data Sheet http://home.freeuk.net/elloughton13/woods17.htm This webpage contains information that can be used to create your own database, graphs or charts.
- Kids Biology.com Database www.kidsbiology.com/animals-for-children.php This example of a database can be used to provide experiences and discussions around databases.
- Microsoft Word

First Level - Cyber Resilience and Internet Safety

Experiences and Outcomes	Benchmarks
I can extend my knowledge of how to use digital technology to communicate with others and I am aware of ways to keep safe and secure. TCH 1-03a	• Demonstrates understanding of my rights and responsibilities as a digital citizen. • Demonstrates understanding of the potential dangers online and who to go to for advice and who to report a concern to. • Demonstrates an understanding for the need for strong passwords. • Explains the need to get a person's permission before taking a picture or video of them.

Suggested Resources

- CBBC
- Kidsmart
- NSPCC
- Childnet
- Simple Wikipedia
- Campus Cop
- Thinkuknow www.thinkuknow.co.uk/5_7/ This website contains many informative child friendly sections on electronic communication. Aimed at 5-7 yr olds.
- Internet Safety For Kids www.thinkuknow.co.uk/8_10/cybercafe/Cyber-Cafe-Base/ This website contains many informative child friendly sections on electronic communication. Aimed at 8-10 year olds.
- Adventures of Kara, Winston and the SMART crew www.childnet.com/resources/the-adventures-of-kara-winston-and-the-smart-crew Movies in sections about aspects of internet safety.
- Digiduck's Big Decision www.kidsmart.org.uk/teachers/ks1/sourcesDuck/index.htm Online story about the consequences of forwarding a photo that ridicules someone.
- Cyberbullying www.digizen.org/resources/cyberbullying/interactive Online scenario and quizzes. Pupils make choices about appropriate online behaviour.
- Caught in the Web www.bbc.co.uk/newsround/13908828 News round special programme all about staying safe on the internet. Voiced by David Tennant, it tells the story of Lost Princess, who gets into danger after meeting someone in a chat room. It also has lots of tips on how to be safe, and case studies of children with real-life experiences of how things can go wrong.
- Keep Dodge safe online www.bbc.co.uk/cbbc/games/keep-dodge-safe-online A quiz to check your knowledge about staying safe online.
- Who do you share your details with https://www.bbc.co.uk/programmes/p014q4xk

First Level - Understanding the world through computational thinking

Experiences and Outcomes	Benchmarks
I can explore and comment on processes in the world around me making use of core computational thinking concepts and can organise information in a logical way TCH 1-13a	• Follows sequences of instructions/algorithms from everyday situations for example, recipes or directions, including those with selection and repetition. • Identifies steps in a process and describes precisely the effect of each step. • Makes decisions based on logical thinking including IF, AND, OR and NOT for example, collecting balls in the gym hall but NOT basketballs, line up if you are left-handed OR have green eyes. • Collects, groups and orders information in a logical, organised way using my own and others‟ criteria (MNU 1-20a and b).

Suggested Resources

- Hour of Code - https://code.org/learn
- Code Combat https://codecombat.com/play
- Daisy the Dinosaur for iPad
- Scratch Kids/Juniors
- Microbits
- Beebots, Blue Bots
- iPad apps

Kodable –

Maze Maker Challenges (K-5th Grade)
https://dashboard.kodable.com/#/curriculum/lesson/30/103/

Conditions 1: Introduction (K-5th Grade)
https://dashboard.kodable.com/#/curriculum/lesson/2/4/

Conditions 2: Conditional Statements (K-2nd Grade)

https://dashboard.kodable.com/#/curriculum/lesson/2/5/

Hour of Code: Beginner (1st Grade)

https://dashboard.kodable.com/#/curriculum/lesson/19/59/

Hour of Code: Advanced (1st Grade)

https://dashboard.kodable.com/#/curriculum/lesson/20/67/

Hour of Code: ELA Integration (1st Grade)

https://dashboard.kodable.com/#/curriculum/lesson/22/72/

First Level - Understanding the world through computational thinking

Kodable Lessons Continued Maze Maker Challenges (K-5th Grade) https://dashboard.kodable.com/#/curriculum/lesson/30/103/ Loops 1: Introduction (1st-5th Grade) https://dashboard.kodable.com/#/curriculum/lesson/3/8/ Hour of Code: Beginner (2nd Grade) https://dashboard.kodable.com/#/curriculum/lesson/19/60/ Hour of Code: Advanced (2nd Grade) https://dashboard.kodable.com/#/curriculum/lesson/20/68/ Hour of Code: ELA Integration (2nd Grade) https://dashboard.kodable.com/#/curriculum/lesson/22/73/ • Women in Tech (3rd-5th Grade) https://dashboard.kodable.com/#/curriculum/lesson/29/105/	Functions 1: Introduction (2nd-5th Grade) https://dashboard.kodable.com/#/curriculum/lesson/4/12/ String Variables 1: Introduction (3rd-5th Grade) https://dashboard.kodable.com/#/curriculum/lesson/5/16/ Maze Maker Challenges (K-5th Grade) https://dashboard.kodable.com/#/curriculum/lesson/30/103/ Choose Your Own Adventure (3rd-5th Grade) https://dashboard.kodable.com/#/curriculum/lesson/31/104/ Hour of Code: Beginner (3rd Grade) https://dashboard.kodable.com/#/curriculum/lesson/19/61/ Hour of Code: Advanced (3rd Grade) https://dashboard.kodable.com/#/curriculum/lesson/20/69/ Hour of Code: ELA Integration (3rd Grade) https://dashboard.kodable.com/#/curriculum/lesson/22/74/ Coding Explained by Child-Friendly Video Clips www.bbc.co.uk/education/topics/zs7s4wx

First Level - Understanding and analysing computer technology

Experiences and Outcomes	Benchmarks
I understand the instructions of a visual programming language and can predict the outcome of a program written using the language. TCH 1-14a I understand how computers process information. TCH 1-14b	• Demonstrates an understanding of the meaning of individual instructions when using a visual programming language (including sequences, fixed repetition and selection). • Explains and predicts what a program in a visual programming language will do when it runs for example, what audio, visual or movement effect will result. • Demonstrates an understanding that computers take information as input, process and store that information and output the results.

Suggested Resources

- BBC Bitesize
- Quickstart Computing http://primary.quickstartcomputing.org
- Computing Science Unplugged http://csunplugged.org/activities/
- Computing in the National Curriculum in England http://www.computingatschool.org.uk/data/uploads/CASPrimaryComputing.pdf
- Computing Science resources available in the National Technologies Community on Glow

First Level – Designing, building and testing computing solutions

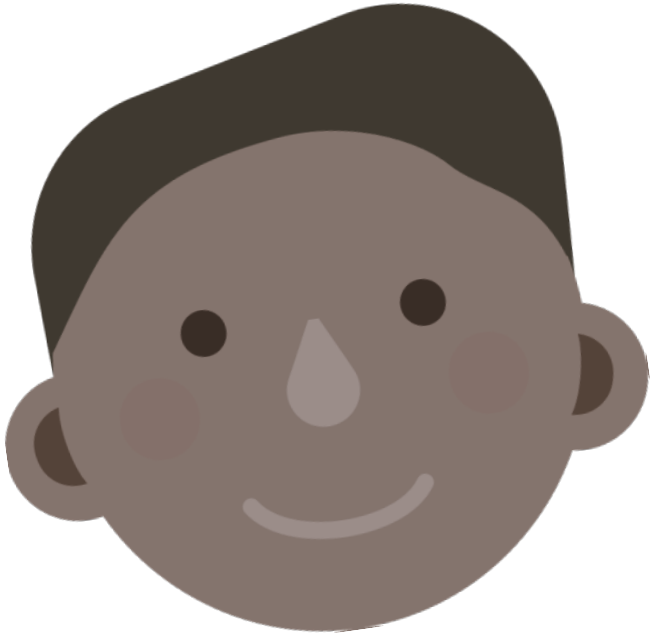
Experiences and Outcomes	Benchmarks
I can demonstrate a range of basic problem solving skills by building simple programs to carry out a given task, using an appropriate language. TCH 1-15a	• Simplifies problems by breaking them down into smaller more manageable parts. • Constructs a sequence of instructions to solve a task, explaining the expected output from each step and how each to contributes towards solving the task. • Creates programs to carry out activities (using selection and fixed repetition) in an visual programming language. • Identifies when a program does not do what was intended and can correct errors/bugs. • Evaluates solutions/programs and suggests improvements.

Suggested Resources

- Computing Science Resources and guidance available from Barefoot Computing https://barefootcas.org.uk/activities/
- Quickstart Computing http://primary.quickstartcomputing.org , BBC and the National Technologies Community on Glow.
- Kodable – See above
- Daisy the Dinosaur app for iPad
- Beebot, Blue Bot, Dash & Dot, iPad apps
- Hour of Code - https://code.org/learn
- Code Combat https://codecombat.com/play

Make it Happen

Second level



Second Level - Searching, processing and managing information responsibly

Experiences and Outcomes	Benchmarks
I can use digital technologies to search, access and retrieve information and are aware that not all of this information will be credible. TCH 2-02a	• 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
<u>Suggested Resources</u> • Digital devices (i.e. tablets, laptops, computers, cameras, microphones) and applications for media capture and editing • Microsoft Office, GLOW (office tools) • GCC based projects (Determined to Animate, Determined to Make Movies) Serif software • Doorway Typing http://doorwayonline.org.uk/texttype2.html This resource teaches how to touch type • Dancemat Typing www.bbc.co.uk/schools/typing/levels/level1.shtml Keyboard typing training with a clear progression of skills. This can be an effective warm-up activity to compliment other ICT experiences. • Tagxedo www.tagxedo.com/ Tagxedo takes Wordle a step further, allowing users to shape their word clouds. Users can upload their own picture or photo to design.	• Comic Life A great tool for making comic strips. • Pixlr http://www.pixlr.com/ A web based application for editing digital images. There are three levels of complexity and learners can have opportunities to explore the different functions. The easiest setting is suitable for second level. • Shape Collage It teaches learners how images can be used to make interesting graphics. • Incompetech Royalty Free Music http://incompetech.com/music/royalty-free/ A great resource to find backing tracks to animations or mini-movies. • SoundBible- Free Sound FX http://soundbible.com/free-sound-effects-1.html Great for spicing up animations or mini-movies. • One drive • Google Drive/Google Sites

Second Level – Using digital products and services in a variety of contexts to achieve a purposeful outcome

Experiences and Outcomes	Benchmarks
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	• 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. • 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.

Suggested Resources

- Digital devices (i.e. tablets, laptops, computers, cameras, microphones) and applications for media capture and editing
- Microsoft Office, GLOW (office tools)
- GCC based projects (Determined to Animate, Determined to Make Movies) Serif software

Collecting

- Create A Graph www.nces.ed.gov/nceskids/createagraph/default.aspx Allows learners to create a range of graphs and charts using easy to follow steps.
- Survey Monkey www.surveymonkey.com/mp/education-surveys/ This resource allows you to create a set of questions for a class survey. It then has the ability to analyse and display the data for you to interpret. Users need to register (free) before using
- Maths is Fun www.mathsisfun.com/data/data-graph.php This website allows users to input data into a table, then quickly change to graphs or charts.

Analysing

- Topmarks Data Handling: www.topmarks.co.uk/interactive.aspx?cat=28 A fantastic range of resources to support learning on graphs and charts.
- Interpreting Data www.bbc.co.uk/bitesize/ks2/maths/data/interpreting_data/read/1/ Step by step guidance on reading and understanding data from different sources.
- Spreadsheet Game www.what2learn.com/spreadsheet-game-ks3/ An interactive 'snakes and ladders game' with questions based on knowledge of how to use Excel.
- Lunar Theme Park- A problem solving task that requires children to apply their skills and knowledge of analysing data. www.teachingideas.co.uk/maths/files/lunarthemepark.pdf

Second Level - Cyber Resilience and Internet Safety

Experiences and Outcomes	Benchmarks
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	• 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. • Uses strong passwords. • Has an understanding of the law as it relates to inappropriate or illegal online behaviours, for example, the sharing of inappropriate images

Suggested Resources

- CBBC, Kidsmart, NSPCC, Childnet, Simple Wikipedia, Google Sites
- Wild Web Woods www.wildwebwoods.org/popup.php?lang=en
- In order to get to e-city, you need to collect info, security, privacy and awareness tokens to reach the target.
- Who's Ya Buddy? www.thinkuknow.co.uk/8_10/control/Whos-Ya- Buddy/ Instant messaging explained in a child friendly context.
- Thinkuknow Cybercafe www.thinkuknow.co.uk/8_10/cybercafe/Cyber-Cafe- Base/ This website contains many informative child friendly sections on electronic communication. Aimed at 8-10 year olds.
- Safe or unsafe? Email game www.thinkuknow.co.uk/8_10/Games/EmailQuiz/ A quiz to practise the safe use of email.
- First to a Million www.thinkuknow.co.uk/11_13/ Ever posted something you regret? Find out how to get help when things go too far. You choose what happens in this interactive film! Content 11+.
- Let's fight it together http://old.digizen.org/cyberbullying/fullfilm.aspx Excellent video vividly portraying effect of cyberbullying. Includes short interviews with all the characters involved.
- Netiquette www.tes.co.uk/Download.aspx?storycode=6071671&type=X&id=6118393 Pupils can produce a netiquette leaflet/Do & don't sheet

Second Level – Understanding the world through computational thinking

Experiences and Outcomes	Benchmarks
I understand the operation of a process and its outcome. I can structure related items of information. TCH 2-13a	• 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 worlds objects for examples, books in a library or trading cards.
Suggested Resources • Hour of Code - https://code.org/learn • Code Combat https://codecombat.com/play • Hopscotch for iPad • Programmable robots E.g. sphero, BB-8, Dash & Dot • iPad apps **Kodable** Integer Variables 1: Introduction (4th-5ht Grade) https://dashboard.kodable.com/#/curriculum/lesson/6/19/ Array Variables: Introduction (4th-5th Grade) https://dashboard.kodable.com/#/curriculum/lesson/7/22/	Properties 1: Introduction (5th Grade) https://dashboard.kodable.com/#/curriculum/lesson/10/28/ Pizza Party (4th-5th Grade) https://dashboard.kodable.com/#/curriculum/lesson/26/90/ Hour of Code: Beginner (4th Grade) https://dashboard.kodable.com/#/curriculum/lesson/19/62/ Hour of Code: Advanced (4th Grade) https://dashboard.kodable.com/#/curriculum/lesson/20/70/ Hour of Code: Advanced (4th – 5th Grade) https://dashboard.kodable.com/#/curriculum/lesson/20/71/ Hour of Code: ELA Integration (4th Grade) https://dashboard.kodable.com/#/curriculum/lesson/22/75/ Assessment – OOP1: Concept Review https://dashboard.kodable.com/#/curriculum/lesson/8/44/

Second Level - Understanding the world through computational thinking

Scratch	Python
Rock Band https://codeclubprojects.org/en-GB/scratch/rock-band/	https://www.cyberskillslesson.com/
Paint box https://codeclubprojects.org/en-GB/scratch/paint-box/	Every Picture Tells a Story https://www.cyberskillslesson.com/lesson-picture/#
Chatbot https://codeclubprojects.org/en-GB/scratch/chatbot/	Cracking one in a million passwords https://www.cyberskillslesson.com/lesson1/
Ghostbusters https://codeclubprojects.org/en-GB/scratch/ghostbusters/	How to Rob a Bankhttps://www.cyberskillslesson.com/lesson2/
Lost in space https://codeclubprojects.org/en-GB/scratch/lost-in-space/	Encrypting Files http://lessons.cyberskillslesson.com/?lesson=encryption
Memory https://codeclubprojects.org/en-GB/scratch/memory/	Ring of Firewalls http://lessons.cyberskillslesson.com/?lesson=firewall
Dodge ball https://codeclubprojects.org/en-GB/scratch/dodgeball/	Photo Detective http://lessons.cyberskillslesson.com/?lesson=forensics
Brain Game https://codeclubprojects.org/en-GB/scratch/brain-game/	Database Clean Up http://lessons.cyberskillslesson.com/?lesson=database
Catch the dots https://codeclubprojects.org/en-GB/scratch/catch-the-dots/	Coding Explained by Child-Friendly Video Clips
Clone wars https://codeclubprojects.org/en-GB/scratch/clone-wars/	www.bbc.co.uk/education/topics/zs7s4wx
Create your own world https://codeclubprojects.org/en-GB/scratch/create-your-own-world/	

Second Level - Understanding the world through computational thinking

HTML and CSS

Happy Birthday https://codeclubprojects.org/en-GB/webdev/happy-birthday/

Tell a story https://codeclubprojects.org/en-GB/webdev/tell-a-story/

Wanted https://codeclubprojects.org/en-GB/webdev/wanted/

Recipe https://codeclubprojects.org/en-GB/webdev/recipe/

Mystery Letter https://codeclubprojects.org/en-GB/webdev/mystery-letter/

Project Showcase https://codeclubprojects.org/en-GB/webdev/project-showcase/

Build a Robot https://codeclubprojects.org/en-GB/webdev/build-a-robot/

Stickers - https://codeclubprojects.org/en-GB/webdev/stickers/

Sunrise - https://codeclubprojects.org/en-GB/webdev/sunrise/

Linked Rooms - https://codeclubprojects.org/en-GB/webdev/linked-rooms/

Magazine - https://codeclubprojects.org/en-GB/webdev/magazine/

Pixel Art - https://codeclubprojects.org/en-GB/webdev/pixel-art/

Second Level - Understanding and analysing computer technology

Experiences and Outcomes	Benchmarks
I can explain core programming language concepts in appropriate technical language. TCH 2-14a I understand how information is stored and how key components of computing technology connect and interact through networks. TCH 2-14b	• 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 • Demonstrates an understanding that all computer data is represented in binary for example, numbers, text, 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.

Suggested Resources

- BBC Bitesize
- Quickstart Computing http://primary.quickstartcomputing.org
- Computing Science Unplugged http://csunplugged.org/activities/
- Computing in the National Curriculum in England http://www.computingatschool.org.uk/data/uploads/CASPrimaryComputing.pdf
- Computing Science resources available in the National Technologies Community on Glow

Second Level - Designing, building and testing computing solutions

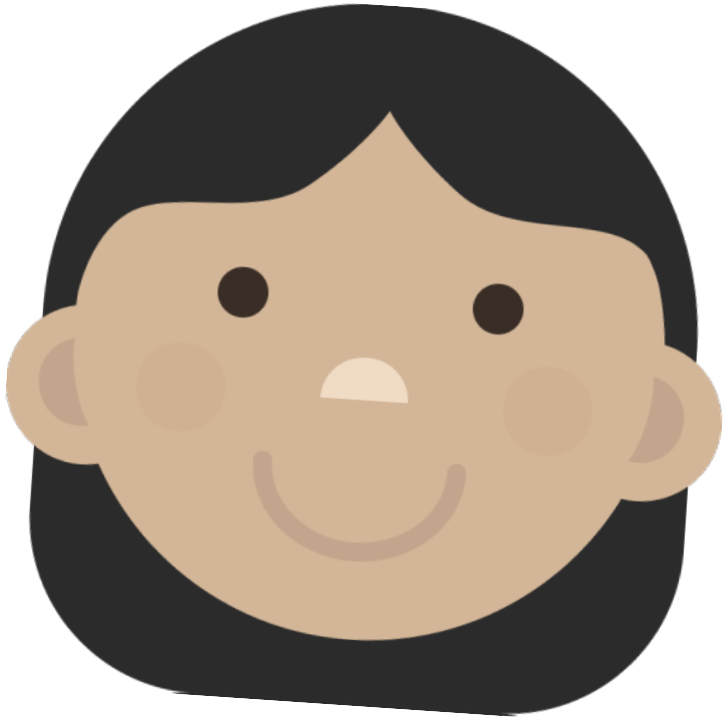
Experiences and Outcomes	Benchmarks
I can create, develop and evaluate computing solutions in response to a design challenge TCH 2-15a	• Creates programs in a visual programming language including variables and conditional repetition. • Identifies patterns in problem solving and reuses aspects of previous 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.

Suggested Resources

- Computing Science Resources and guidance available from Barefoot Computing https://barefootcas.org.uk/activities/
- Quickstart Computing http://primary.quickstartcomputing.org , BBC and the National Technologies Community on Glow.
- Scratch, – See above
- HTML and CSS – See above
- Cyber Skill Lessons - see above
- Programmable robots – Sphero, Dash & Dot
- iPad apps
- Hour of Code - https://code.org/learn
- Code Combat https://codecombat.com/play

Make it Happen

Third level



Third Level - Using digital products and services in a variety of contexts to achieve a purposeful outcome

Experiences and Outcomes	Benchmarks
I can explore and use the features of a range of digital technologies, integrated software and online resources to determine the most appropriate to solve problems. TCH 3-01a	• Uses the most appropriate applications and software tools to capture, create and modify text, images, sound, and video to present and collaborate
	• Demonstrates an understanding of file handling for example, uploading, downloading, sharing and permission setting, for example within Glow or other platforms.

Suggested Resources

- Google Docs, Google Sites, Google Shared Drive
- Microsoft office – word and PowerPoint
- One Drive
- I- movie
- Vimeo
- Interpreting Data www.bbc.co.uk/bitesize/ks2/maths/data/interpreting_data/read/1/ Step by step guidance on reading and understanding data from different sources
- Spreadsheet Game www.what2learn.com/spreadsheet-game-ks3/ An interactive 'snakes and ladders game' with questions based on knowledge of how to use Excel
- Lunar Theme Park- A problem solving task that requires children to apply their skills and knowledge of analysing data. www.teachingideas.co.uk/maths/files/lunarthemepark.pdf
- Code Club Projects using Blender for 3D models and animation https://projects.raspberrypi.org/en/projects?software%5B%5D=blender
- Create your own Google Logo https://csfirst.withgoogle.com/c/cs-first/en/create-your-own-google-logo/create-your-own-google-logo/create-your-own-google-logo.html

Third Level – Searching, processing and managing information responsibly

Experiences and Outcomes	Benchmarks
Having used digital technologies to search, access and retrieve information I can justify my selection in terms of validity, reliability and have an awareness of plagiarism. TCH 3-02a	• Gathers and combines data and information from a range of sources to create a publication, presentation or information resource
	• Uses applications to analyse data and identify trends/make predictions based on source data
	• Demonstrates efficient searching techniques for example using „and", „or", "not"

Suggested Resources

- 12 Cool Google Search Tricks You Should Be Using! - https://www.youtube.com/watch?v=7ond5eF7L-I
- Refine web searches https://support.google.com/websearch/answer/2466433?hl=en
- How to Do a Boolean Search in Google - These tips will maximize your Google searches https://www.lifewire.com/boolean-search-terms-google-1616810
- Boolean Search Operators Quiz https://www.proprofs.com/quiz-school/story.php?title=mtqymtiynaf6cd
- Data Science Folder on CSS Scotland website has various resources and ppts free to use – Email darren.brown@highland.gov.uk with your glow/google email to be granted access
- Data Representation - https://www.bbc.co.uk/bitesize/topics/zxnfr82

Third Level - Cyber resilience and internet safety

Experiences and Outcomes	Benchmarks
I can keep myself safe and secure in online environments and I am aware of the importance and consequences of doing this for myself and others. TCH 3-03a	• Demonstrates an understanding of the legal implications and importance of protecting their own and others‟ privacy when communicating online.
	• Evaluates online presence and identifies safe guards.
	• Present relevant ideas and information to explain risks to safety and security of their personal devices and networks including encryption.
	• Applies appropriate online safety features when becoming involved with online communities such as online gaming, chat rooms, forums and social media.
	• Demonstrate an understanding of different cyber threats, for example, viruses, phishing, identity theft, extortion and sextortion.
	• Demonstrates understanding of device security including personal and domestic devices

Suggested Resources

- Reeboot the Rules - Digital Footprint https://sites.google.com/dresscode.org.uk/reboottherules-crashcourse/introduction-to-cyber/digital-footprint
- Reeboot the Rule – Cipher activities https://sites.google.com/dresscode.org.uk/reboottherules-crashcourse/introduction-to-cyber
- Cyber Skills Live - Code a data selfie - https://cyberskillslesson.com/activity/code-a-data-selfie/
- Cyber Skills Live - How to Stop a Data Leak https://cyberskillslesson.com/activity/how-to-spot-a-data-leak/
- BBC Bitesize – Safety and Responsibility - https://www.bbc.co.uk/bitesize/topics/z67ncdm
- CSS Scotland Shared Drive - various free resources and ppts – Email darren.brown@highland.gov.uk with your glow/google email to be granted access
- Phishing Quiz - https://phishingquiz.withgoogle.com/
- Think you know - https://www.thinkuknow.co.uk/
- Bebras Computing Challenge - https://www.bebras.uk/

Third Level - Understanding the world through computational thinking

Experiences and Outcomes	Benchmarks
I can describe different fundamental information processes and how they communicate and can identify their use in solving different problems. TCH 3-13a I am developing my understanding of information and can use an information model to describe particular aspects of a real world system. TCH 3-13b	• Recognises and describes information systems with communicating processes which occur in the world around me
	• Explains the difference between parallel processes and those that communicate with each other
	• Demonstrates an understanding of the basic principles of compression and encryption of information
	• Identifies a set of characteristics describing a collection of related items that enable each item to be individually identified
	• Identifies the use of common algorithms such as sorting and searching as part of larger processes.

Suggested Resources

- Cyber Skills Live - Encrypting Files https://cyberskillslesson.com/activity/encrypting-files/
- Reeboot the Rules - What is an algorithm? https://sites.google.com/dresscode.org.uk/reboottherules-crashcourse/introduction-to-coding/algorithms
- BBC Biteszie Algorithms - https://www.bbc.co.uk/bitesize/topics/z7d634j
- CSS Scotland Shared Drive - various free resources and ppts – Email darren.brown@highland.gov.uk with your glow/google email to be granted access

Third Level – Understanding and analysing computing technology

Experiences and Outcomes	Benchmarks
I understand language constructs for representing structured information TCH 3-14a I can describe the structure and operation of computing systems which have multiple software and hardware levels that interact with each other. TCH 3-14b	• Understands that the same information could be represented in more than one representational system
	• Understands that different information could be represented in exactly the same representation
	• Demonstrates an understanding of structured information in programs, databases or webpages
	• Describes the effect of mark-up language on the appearance of a webpage, and understand that this may be different on different devices
	• Demonstrates an understanding of the von Neumann architecture and how machine code instructions are stored and executed within a computer system
	• Reads and explains code extracts including those with variables and data structures
	• Demonstrate an understanding of how computers communicate and share information over networks including the concepts of sender, receiver, address and packets
	• Understands simple compression and encryption techniques used in computing technology

Suggested Resources

- BBC Bitesize – Programming https://www.bbc.co.uk/bitesize/topics/zhy39j6
- Google for Education Advanced- Sports - https://csfirst.withgoogle.com/c/cs-first/en/sports/overview.html
- Google for Education Advanced- Game Design - https://csfirst.withgoogle.com/c/cs-first/en/game-design/overview.html
- CSS Scotland Shared Drive - various free resources and ppts – Email darren.brown@highland.gov.uk with your glow/google email to be granted access
- CSS Scotland Shared Drive - intro to HTML and CSS
- Code Combat (using Python, JavaScript, and C++ programming languages) https://codecombat.com/play
- Thunkable (Free to use for real life app design) - https://thunkable.com/#/
- Khan Academy - Computer programming lessons - https://www.khanacademy.org/computing/computer-programming
- Raspberry Pi Projects - https://projects.raspberrypi.org/en (projects for a variety of different types of Hardware e.g. micro:bit, Raspberry Pi)

Third Level - Designing, building and testing computing solutions

Experiences and Outcomes	Benchmarks
I can select appropriate development tools to design, build, evaluate and refine computing solutions based on requirements. TCH 3-15a	• Designs and builds a program using a visual language combining constructs and using multiple variables.
	• Represents and manipulates structured information in programs, or databases for example, works with a list data structure in a visual language, or a flat file database.
	• Interprets a problem statement, and identifies processes and information to create a physical computing and/or software solution.
	• Can find and correct errors in program logic. • Groups related instructions into named subprograms (in a visual language).
	• Writes code in which there is communication between parallel processes (in a visual language).
	• Writes code which receives and responds to real world inputs (in a visual language).
	• Designs and builds web pages using appropriate mark-up languages.

Suggested Resources

BBC Bitesize - What is a bug - https://www.bbc.co.uk/bitesize/clips/zy2tn39

Google for Education Advanced- Sports - https://csfirst.withgoogle.com/c/cs-first/en/sports/overview.html

Google for Education Advanced- Game Design - https://csfirst.withgoogle.com/c/cs-first/en/game-design/overview.html

CSS Scotland website has various resources and ppts free to use – Email darren.brown@highland.gov.uk with your glow/google email to be granted access

Code Combat (using Python, JavaScript, and C++ programming languages) https://codecombat.com/play

Trinket https ://codeclubprojects.org/en-GB/resou rces/python-intro/
Thunkable (Free to use for real life app design) - https://thunkable.com/#/

Additional links & Resources

Additional Links and Resources

This list is far from exhaustive but have been tried and tested by the staff at St Josephs Primary to support Computing Science and digital learning across all stages.

Name	About	Website
Make It Happen	Make It Happen Club (SCIO) is a charity with the aim to inspire children's digital learning! We run an innovative and exciting App Design competition for entire Primary Schools across the United Kingdom and the United States of America. In 2021 we started a Make It Happen High program for secondary pupils S1-2.	• https://makeithappen.club/ • For more info contact info@makeithappen.club
Smart STEMs	Events with the aim of inspiring and engaging young people aged 10-14 with the range of careers in the four STEM pillars – Science, Technology, Engineering and Mathematics.	• https://www.smartstems.org/
Cyber Skills Live	Live lessons and cyber security resources (Target 2nd/3rd Level)	• https://cyberskillslesson.com/
Reboot the Rules	Reboot the Rules has created a **free** resource that anybody can use to learn about some of the basic factors of computing science with an exciting primary school competition to follow.	• https://sites.google.com/dresscode.org.uk/rebootherules-crashcourse/home
dressCode	Aim to bridge the gap between education and industry and create opportunities for young girls to see the opportunities in tech. Through our network we will help to flood the talent pipeline in tech.	• https://dresscode.org.uk/
Computing Science Scotland Drive	A shared Google Drive with free computing science materials covering Primary and Secondary school Experiences and outcomes	• Email darren.brown@highland.gov.uk with your glow/google email to be granted access
CS for Anyone/Everyone	A bank of video tutorials and resources to support Computing Science regardless of teachers previous experience	• Email darren.brown@highland.gov.uk with your glow/google email to be granted access
Barefoot Computing	Free workshops, online guides and engaging lessons for teachers.	• https://www.barefootcomputing.org/
Code Club	A network of Coding Clubs 9-13 year olds as well as resources/projects for Scratch, Python and HTML & CSS	• https://codeclub.org/en/
BBC MicroBit	This website has resources to get pupils excited about technology and supports the use of the BBC MicroBit	• https://microbit.org/projects/

Additional Links and Resources

This list is far from exhaustive but have been tried and tested by the staff at St Josephs Primary to support Computing Science and digital learning across all stages.

Name	About	Website
Microsoft MakeCode	Online resource to support the use of Micro:bit powered by Microsoft MakeCode.	• https://makecode.microbit.org/
Hour of Code	Tutorial activities to support learning I Computing Science (Pre Reader – P7)	• https://hourofcode.com/uk
Kodable	Games that help pupils develop the foundations of coding and computer programming even prior to reading	• https://www.kodable.com/
Thunkable	A platform using block code when anyone can build mobile apps. Tutorials are available on the website	• https://thunkable.com/#/
Scratch	A platform to code or remix interactive stories, games and animations using block code.	• https://scratch.mit.edu/
Google for Education	Resources and lessons to support Coding and computer Science at all levels	• https://csfirst.withgoogle.com/c/cs-first/en/curriculum.html#
Code.org	Coding Projects for all ages	• https://code.org/
Think U Know	Online Safety Resources	• https://www.thinkuknow.co.uk/
Raspberry Pi	Project for a variety of Hardware including Rspberry Pi, micro:bit, 3D printer and more	• https://projects.raspberrypi.org/en