

Think, Compute, Grow!

**A strategy for teaching computing
and ICT through sustainable
agriculture**

PART 2- RESOURCE GUIDE



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Created by Owen Dobbing, 2026

REQUIRED RESOURCES

Resource	Needed for
Laptops with mice and mouse pads	All aspects of the strategy
Wi-Fi internet connection	All aspects of the strategy
Libre Office (Free document, presentation and spreadsheet software). Ensure shortcuts are on all laptops.	Creating documents, presentations and spreadsheets
Free accounts in Typing.com . Place shortcut on laptop desktops.	Developing children's touch typing skills
Scratch desktop version (place shortcuts on laptop desktops). Children do not need accounts and save their work locally.	Teaching children to program using block-based code
Accounts created in code.org for teacher and students. This is free website and is one of the best in the world for teaching computer science and digital literacy.	Teaching children about computer science and digital literacy
Shortcut to web version of Google Earth and Google Maps on laptop desktops.	Researching local geography, finding directions
Shortcut to web version of Google Translate on laptop desktops.	Supporting English learning, accessing resources in other languages
Shortcut to Wikipedia on desktops.	Research in English and Nepali
Shortcut to OLE E-Paath on all desktops	English, Maths, Science and Nepali
Shortcut to OLE E-Pustakalaya on all desktops	Accessing digital media, including materials related to agriculture
OLE Maths games (link on desktop)	Developing understanding Maths
OLE literacy resources (link on desktop)	Developing literacy in Nepali
British Council downloaded apps and links to learning English page on desktops.	Accessing materials to learn English
Chrome browser	Accessing online resources, creating bookmarks
Shortcuts to https://makecode.microbit.org/ and https://python.microbit.org/v/3/reference	Programming Microbits using block-based coding and Python
Microbit servo motors, crocodile leads, battery packs	Physical projects using Microbits
Tinkercad accounts for teacher and students	3D design projects and simulations of Arduino systems.
Security/monitoring software (i.e. Cloudflare families).	Ensuring that children do not access illegal, offensive or inappropriate material
(Depending on expertise and availability) Set up of Google accounts to allow access to Google Classroom. These could be generic user accounts (i.e. user1@gmail.com)	Creating a virtual learning environment (VLE) including Google Classroom, where children can access resources and share work.

RESOURCE GUIDE – TYPING.COM

<https://www.typing.com/>

Teaching children to touch type enables them to use computers at the speed of thought. It allows them to focus on expressing their ideas, without needing to think about the keys they are typing on the keyboard.

There are several websites that teaching touch-typing. Typing Club is useful, but the free version includes advertisements that can be distracting.

Typing.com is free to use and allows teachers to set up logins and track student progress.

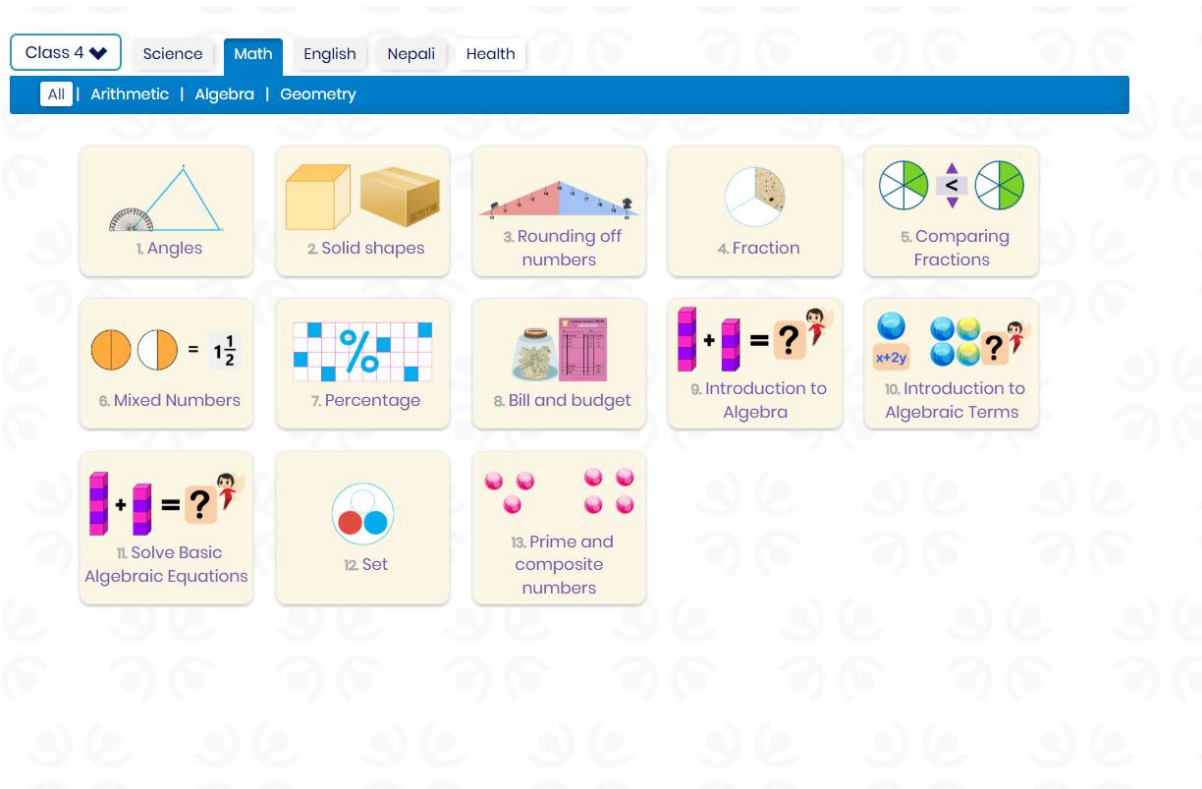
Touch typing should be done at the start of lesson, as a starter activity, not as something that takes a whole lesson. Shorter periods of 10-15 minute practise are much more enjoyable than longer periods.

It is a good idea to ask children to cover up their hands while typing with a cloth. This will develop muscle memory more quickly.



RESOURCE GUIDE – E-PAATH

<https://epaath.olenepal.org/>



Interface screenshot and learning content sourced from E-Paath, developed by OLE Nepal (ole.org.np)
Used under non-commercial open educational terms.

E-Paath is the collection of academic resources created by the **OLE Nepal**. It features resources to help students practice work in Science, Maths, English and Nepali.

Many of the learning activities will teach children skills that are directly related to work in agriculture, including billing purchasing and measuring. Children can also develop their English by taking part in the activities.

The lessons range from Year 1 to 8 and are a good way of supplementing teaching in lessons.

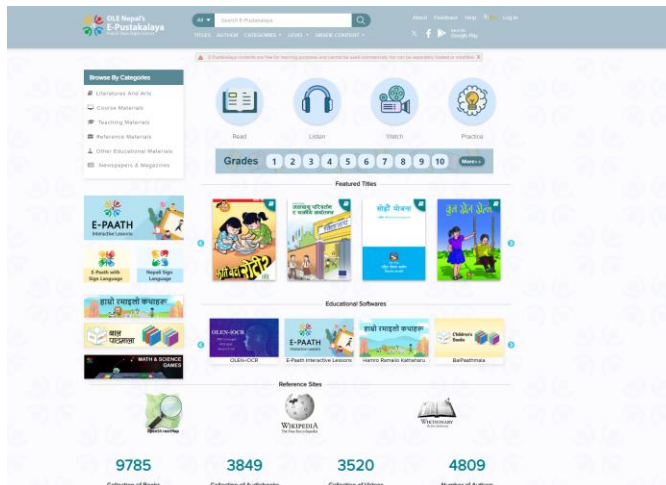
RESOURCE GUIDE – E-PUSTAKALAYA

pustakalaya.org/en/

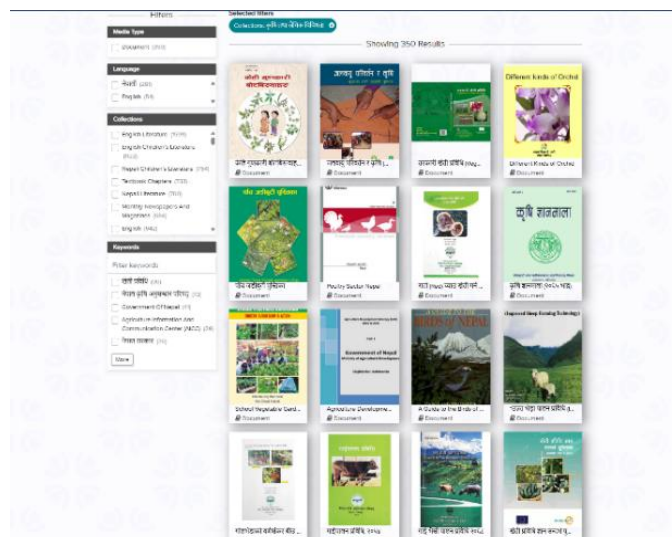
E-Pustakalaya is the collection of video resources, reading materials and audiobooks provided by the **OLE Nepal**.

The website features a huge range of other types of materials, including teaching guides and textbook chapters.

Currently, a security warning pops up when trying to access the website.



One of the sections contains a wide range of materials about agriculture.



Interface screenshots and learning content sourced from E-Pustakalaya, developed by OLE Nepal (ole.org.np) Used under non-commercial open educational terms.

RESOURCE GUIDE – LIBRE OFFICE

<https://www.libreoffice.org/>

Libre Office is a free version of popular office tools, including Word, PowerPoint and Excel.

The LibreOffice tools feature most of the same functionality as these programs, although the interface looks slightly more old fashioned than the newest versions of Office.



RESOURCE GUIDE – SCRATCH (DESKTOP VERSION)

<https://scratch.mit.edu/download>

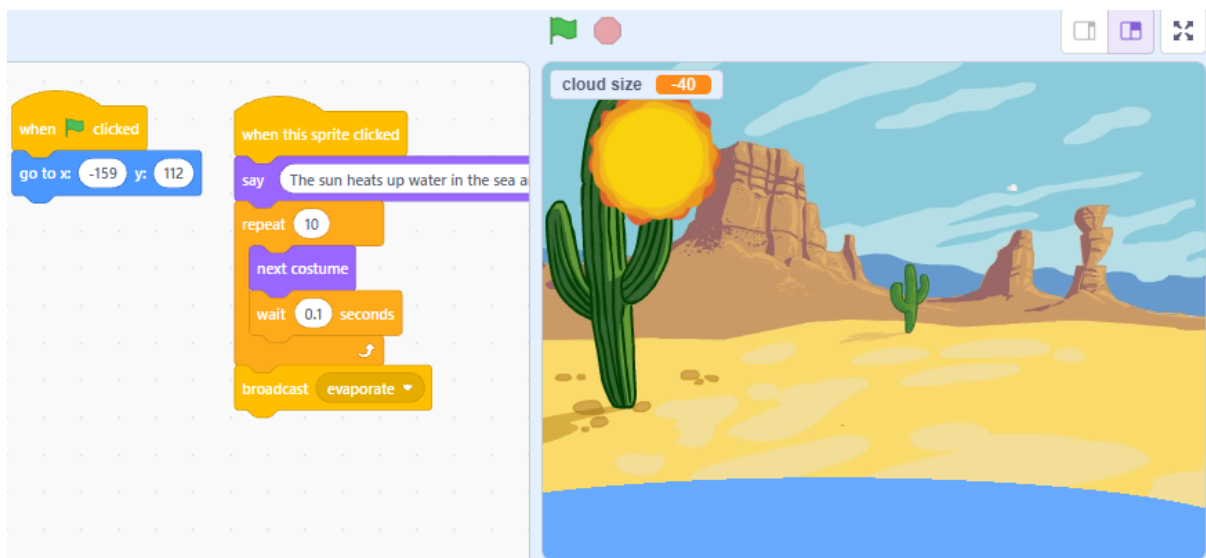
Scratch is one of the most widely used tools for teaching young people to program. Instead of typing code, children use blocks of pre-made code to program sprites on the screen.

By creating programs using Scratch, children learn how programming can be used as a tool to express their ideas. They also develop logical skills, thinking skills and their maths skills.

It can be very difficult for children to know where to start with Scratch. Children will benefit from being given example projects by the teacher, to discuss, modify and explore.

There are two versions of Scratch: **online**, available via Scratch.com and **offline**, available to download.

This strategy recommends using the offline version, which can be downloaded to laptops. The advantage of the offline version is that it does not need children to create accounts. If children create accounts in the online version, there is no way for the teacher to effectively monitor who they communicate with if they publish their projects.



Scratch is a project of the Scratch Foundation. It is available for free at <http://scratch.mit.edu>. Interface screenshot used under Creative Commons Attribution-ShareAlike terms.

RESOURCE GUIDE – BRITISH COUNCIL APPS AND WEBSITE

<https://learnenglish.britishcouncil.org/free-resources/general>

<https://learnenglishkids.britishcouncil.org/listen-watch/short-stories>

The resources on the British council website are aimed at helping English learners to improve their familiarity with English and ability to use English in everyday situations.

There are online materials, including videos, magazines and audio files, as well as apps that can be downloaded to devices.

There are also free online English tests available, as well as a range of paid courses.

Choose a section



Video zone

Do you enjoy watching YouTube videos in English? Watch our videos that are specially selected for learners at B2 English level (upper intermediate) and C1 English level (advanced).



Audio zone

Do you want to listen to engaging and interesting audio recordings on a wide range of topics? Listen to audio recordings for upper intermediate and advanced level learners.



Magazine zone

Do you want to practise your reading and learn about global issues, special days and festivals? Read our articles that are written for intermediate and upper intermediate level learners.

Screenshot of the British Council website <https://learnenglish.britishcouncil.org/free-resources/general>. © British Council. Used under global educational free dealing for non-commercial use and classroom instruction.

RESOURCE GUIDE – CODE.ORG (CODE AI)

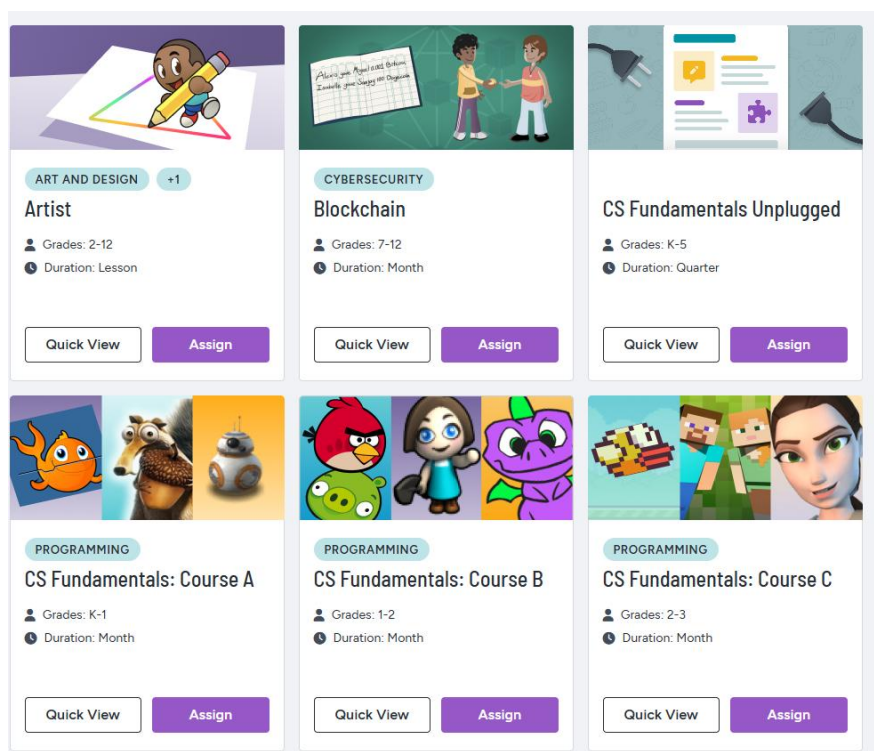
<https://code.org/en-US/teachers>

<https://studio.code.org/catalog>

Code.org, now known as Code AI, is one of the leading platforms for teaching students about computer science and digital literacy.

Teachers are required to sign up and create classes. They will then be given student logins, which can feature picture passcodes or word passcodes. Once teachers have done this, they can assign courses and track the progress of their students.

Code.org has recently shifted its focus heavily to teaching children about AI. This strategy does not currently recommend giving children access to AI tools, but advocates that children can be taught to discuss and recognise AI around them.



Interface screenshot from code.org learning activities © Code.org. Used under non-commercial fair use terms.

RESOURCE GUIDE – GOOGLE EARTH/GOOGLE MAPS

<https://earth.google.com/web>

There are two versions of **Google Earth**: the online version and the app downloaded to computers.

This strategy recommends the online version, if a reliable Wi-Fi connection is available. This is because the locally installed version is a huge file and will take up a lot of space on devices.

Children can use Google Earth to learn about the geography of their location. They can learn to identify features of where they live, including settlements, rivers and mountains. Children can also learn to use Google Earth for navigating their local area, although **Google Maps** might be a more simple alternative if simple direction are needed.

In Google Earth, children can add '**data layers**' providing information about agriculture and other aspects of geography. Some of these are free and some require a subscription.



RESOURCE GUIDE – GOOGLE TRANSLATE

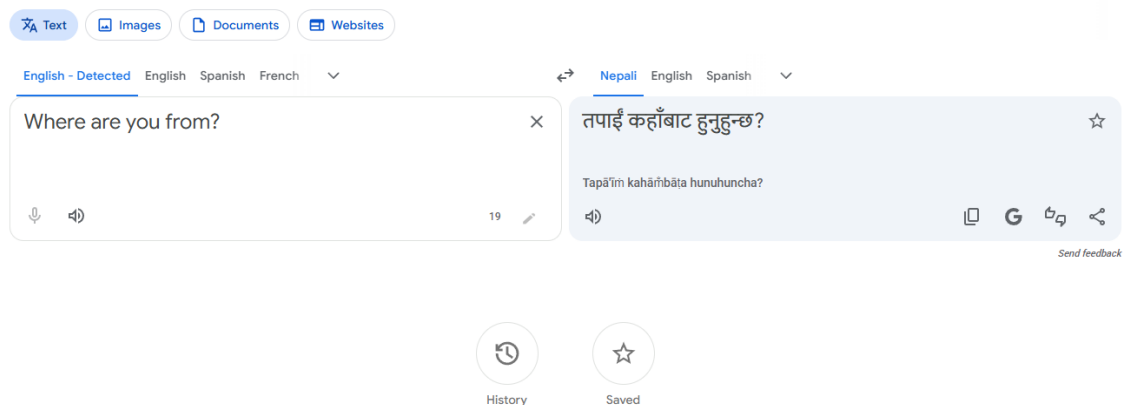
<https://translate.google.co.uk/>

Google Translate is a powerful tool that children can learn to use to help them learn English, and access resources written in other languages.

By storing phrase in the history, children can practise phrases repeatedly, gradually building up a digital phrase bank. Children can also practise their pronunciation by listening to and repeating phrases.

While translation in Google Translate is powerful, it can sometimes be quite literal, and so translations should always be checked before they are used.

In Google Translate, it is also possible to scan documents directly, which can make it a powerful tool for accessing resources written in another language.



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RESOURCE GUIDE – CLOUDFLARE FAMILIES

<https://blog.cloudflare.com/introducing-1-1-1-1-for-families/>

It is important that children are supervised when using the internet. They should also follow rules of using the internet and should receive teaching about the risks of working online, including downloading malware, contacting strangers and viewing inappropriate or illegal content.

Cloudflare Families is a free, privacy-first DNS service that blocks malicious sites and adult content across a network. It can be set to block malware only, or malware and adult content.

One of the disadvantages of Cloudflare Families is that it is basic and as such, does not allow for custom whitelists, blacklists or activity logging since it prioritises user privacy.

For step-by-step instructions, administrators can follow the Cloudflare set up guide.



RESOURCE GUIDE - MICROBIT

Microbits are programmable controllers that children can use to explore physical computing (programming a physical device). This is very motivating and exciting for children and is a great introduction into electronics.

Microbits feature a 25 LED screen. LEDs can be programmed to turn on and off together, or individually. The Microbit also features a temperature sensor, a movement sensor and a light sensor, meaning that children can program useful tools.

Microbits can be connected to computers with a USB cable and programmed using the MakeCode website above.

Microbits can be programmed using both **block-based coding** and **Python** using the MakeCode website.

MakeCode – block-based programming:

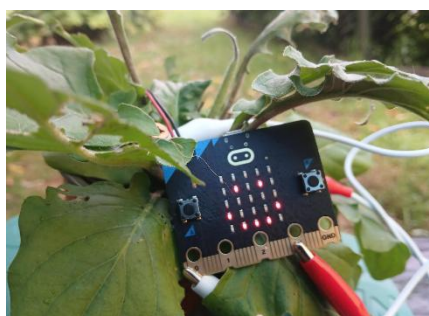
<https://makecode.microbit.org/>

Microbit Python – Python coding:

<https://python.microbit.org/v/3>

In the **Foundation** and **Intermediate** stages of this strategy, children will use block-based programming to program Microbits, before using Python in the **Advanced** stage. This means that schools can use the same electronics equipment for all stages. Schools will also need to buy some additional equipment, including **crocodile wires**, **servo motors** and **external batteries** for the Intermediate and Advanced-stage projects.

Giga Ventures is a Nepal-based store that advertises Microbits and peripheral equipment.



RESOURCE GUIDE - MAKECODE

<https://makecode.microbit.org/>

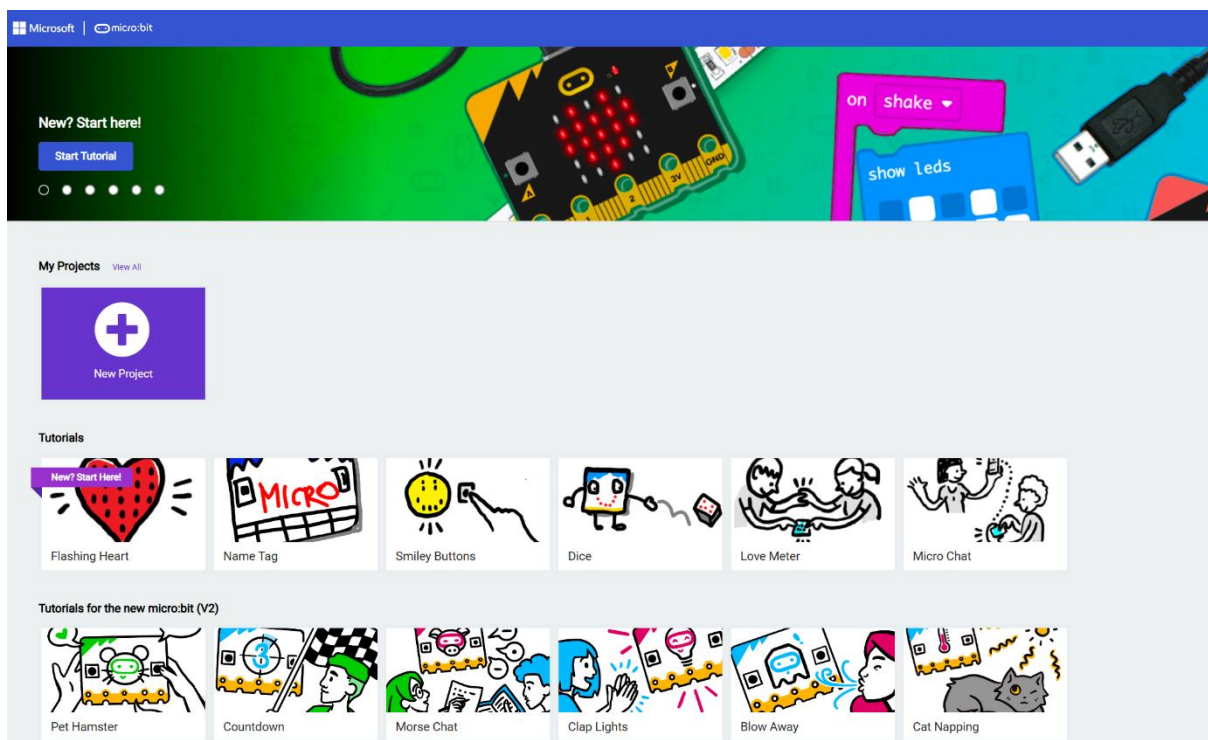
Microsoft MakeCode is a website that allows Microbits (below) to be programmed, using simple block-based programming.

The MakeCode website is also brilliant, in that it features lots of engaging projects that children can try out.

If you click on most of the project on MakeCode, there are also tutorial videos. These are particularly useful for students to follow at their own pace.

Make Code YouTube channel:

<https://www.youtube.com/@MicrosoftMakeCode>



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RESOURCE GUIDE – MICROBIT: PYTHON EDITOR

<https://python.microbit.org/v/3/reference>

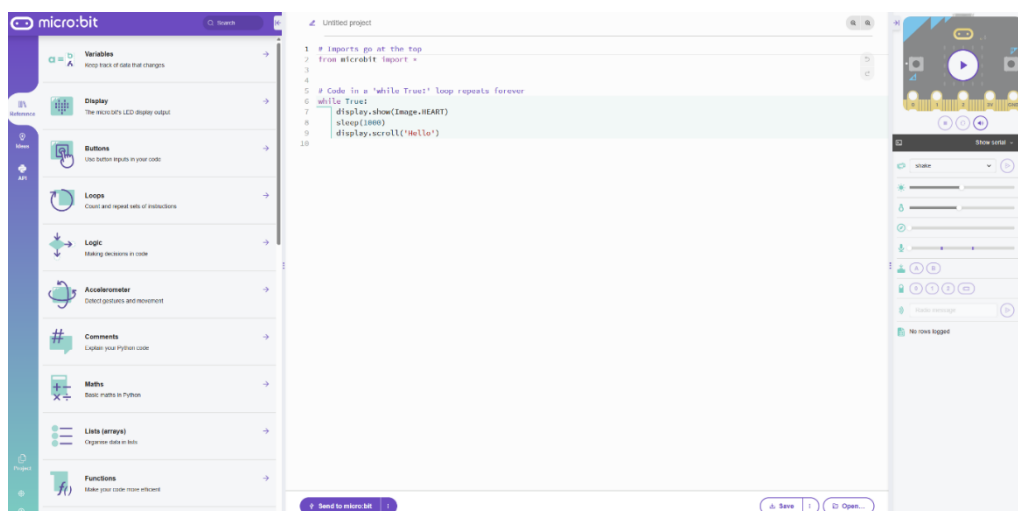
As well as coding Microbits using the MakeCode clock-based editor, children can also use Python to program the Microbits using the Python Microbit editor.

Python is a programming language that is designed to closely resemble spoken English. For this reason, it is one of the best choices of text-based programming languages for children to learn.

The syntax of Python is relatively straight forward. Capitalisation is important and lines need to be indented the correct amount (using the ‘tab’ key). However, Python does not require semi-colons at the ends of lines like C++.

The **Advanced-level projects** of this strategy teach children how to use Python to program both on-screen and with physical devices.

Python is not only an accessible language to learn, but a powerful language used in the many industries and academic settings. Programming in Python is therefore an excellent skill for children to develop.



BBC Microbit Python Editor screenshot used courtesy of the Micro:bit Educational Foundation (microbit.org). Micropython is licenced under the MIT licence. ‘Python’ is a registered trademark of the Python Software foundation.

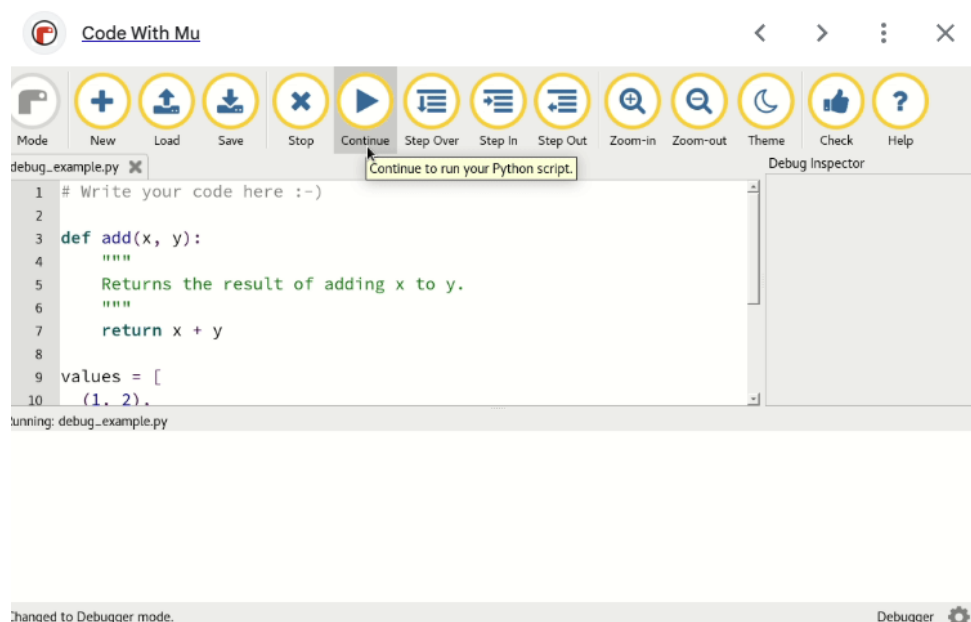
RESOURCE GUIDE – MU (FOR LEARNING PYTHON)

<https://codewith.mu/>

Children who have been learning to code for several years, using tools like Scratch and activities in code.org, should have a good understanding of concepts like loops, variables and conditionals. These children should then be ready to move from dragging blocks of code to typing their own code.

Python is arguably the best language for children learning to code in text-based code. The syntax of Python is simpler than languages like JavaScript or C++. Furthermore, Python is used in industry, making it a valuable skill to learn.

Coding in Python requires an **interactive development environment (IDE)**. Mu is an example of an IDE for Python. It is simple and user friendly, and although now discontinued, is still available to download. Other IDEs include Thonny and Visual Studio Code.



Mu Editor screenshot used under open-source educational guidelines (codewith.mu). Mu is licenced under the GNU General Public Licence v3.0. 'Python' is a registered trademark of the Python Software Foundation.

REFERENCES AND ACKNOWLEDGEMENTS

This scheme of work references third-party interactive educational software, applications, platforms and media resources:

Productivity, Graphics design and desktop software

- **LibreOffice** (The Document Foundation) – Free and open-source office suite used under the Mozilla Public Licence v2.0 (MPLv2).
- **Microsoft Word, PowerPoint, Excel** (Microsoft Corporation) – Referenced for word processing, presentation creation and spreadsheet creation instruction

Coding, AI and Physical Computing

- **Code.org (AI for Oceans)** – Used under Code.org’s free educational terms
- **Microsoft MakeCode** (Microsoft Corporation) – Used under Microsoft’s free educational terms
Microsoft makecode screenshots used with permission from Microsoft Corporation. Interface images © Microsoft. Microsoft and makecode are trademarks of the Microsoft group of companies.
- **Micro:bit Python Editor** (Microbit Educational Foundation) – Used for educational coding under the Micro:bit Educational Foundation terms
- BBC Microbit Python Editor screenshots used courtesy if the Micro:bit Educarional Foundation (microbit.org). Micropython is licences under the MIT licence. ‘Python’ is a registered trademark of the Python Software foundation.
- **Mu** (Code with Mu) – Free, open-source Python IDE used under the GNU General Public Licence v3 (GPLv3).
- **Scratch** (MIT Media lab) – Used under MIT’s free educational terms and Creative Commons Attribution-ShareAlike 2.0 licence

Scratch is a project of the Scratch Foundation. It is available for free at <http://scratch.mit.edu>. Interface screenshots used under Creative Commons Attribution-ShareAlike terms.

Interactive Geography, Learning platforms, Research and Practise tools

- **E-Paath and E-Pustakalaya** (OLE Nepal) – Licenced under CC BY-NC-SA 3.0
- **Google Earth** (Google LLC) – mapping and spatial exploration tool used under Google Earth’s standard permissions for educational reference
- **LearnEnglish Kids** (British Council) – Used for educational classroom reference
- **Typing.com** (Teaching.com) – used for educational touch-typing instruction and practice

Information and Media Resources

- **Wikipedia** (Wikimedia Foundation) – Content referenced under the Creative Commons Attribution ShareAlike 4.0 (CC BY-SA 4.0) Licence
- **Pixabay** – Stock images and visual assets used under the Pixabay Content Licence (free for educational and commercial use)
- **United Nations Sustainable Development Goals** – (United Nations) - <https://www.un.org/sustainabledevelopment> - Used according to the guidelines on the United Nations website, for non-commercial, educational purposes. The content of this publication has not been approved by the United Nations and does not reflect the views of the United Nations or its officials or Member States.
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