

Enrichment Day Teaching Guide.



App in a Day: Apps for Good Taster Workshop

Introduction

“Apps have been changing the way people communicate, work and play. Traditional businesses, from media to retail, have been seeing their business models disrupted by start-ups that amass millions of users within the space of a few months with minimal marketing budgets.” (Vision Mobile, 2014) Apps have become an important part of our digital world today and the industry attracts developers and designers from across all age groups, from teenagers to 65+.

This workshop has been developed in collaboration with Highgate Wood School Digital Schoolhouse and Apps for Good; a school based open source technology movement which aims to develop a generation of problem solvers and digital makers.

The workshop takes the key elements from their 32 week programme and waters it down into a one day taster workshop, suitable for pupils from Key Stage 2 upwards. The day takes pupils through an iterative development model where they begin with an idea and end with a pitch outlining their final prototype. Collaborative working, problem solving, research and communication skills are all encouraged and developed during this innovative workshop.

Fully mapped onto the new computing programmes of study, this workshop will leave your pupils inspired and set on the path to becoming young digital makers.

Write a general introduction to the nature and rationale of the workshop here. Outline key content and expectations of achievement

Computing Programmes of Study Links

2. Key Stage 2 pupils should be taught to:

- 2.1. design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- 2.3. use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- 2.4. understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration
- 2.6. select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
- 2.7. use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

3. Key Stage 3 pupils should be taught to:

- 3.1. design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems
- 3.5. understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems
- 3.7. undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users
- 3.8. create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability
- 3.9. understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct and know how to report concerns.

Progression Pathway bands covered

Write band abbreviation, full name followed by coloured levels/paths i.e.

ALG = Algorithms: Pink, Yellow, Orange, Blue

Reference

PA2	Understands that computers need precise instructions.
YA1	Understands that algorithms are implemented on digital devices as programs
OA2	Uses diagrams to express solutions.
OA3	Uses logical reasoning to predict outputs, showing an awareness of inputs.
BA2	Designs solutions by decomposing a problem and creates a sub-solution for each of these parts.
BA3	Recognises that different solutions exist for the same problem.

C&N = Communication & Networking: Pink, Orange, Blue

Reference

PC1	Obtains content from the world wide web using a web browser.
OC3	Shows an awareness of, and can use a range of internet services e.g. VOIP.
BC2	Selects, combines and uses internet services.
BC3	Demonstrates responsible use of technologies and online services, and knows a range of ways to report concerns.

IT = Information Technology: Pink, Yellow, Orange, Blue

Reference

PI2	Understands that people interact with computers.
PI4	Knows common uses of information technology beyond the classroom
PI5	Talks about their work and makes changes to improve it.
YI4	Shares their experiences of technology in school and beyond the classroom.
YI5	Talks about their work and makes improvements to solutions based on feedback received.
OI2	Creates digital content to achieve a given goal through combining software packages and internet services to communicate with a wider audience e.g. blogging.
OI3	Makes appropriate improvements to solutions based on feedback received, and can comment on the success of the solution.
BI1	Makes judgements about digital content when evaluating and repurposing it for a given audience.
BI2	Recognises the audience when designing and creating digital content.
BI3	Understands the potential of information technology for collaboration when computers are networked.
BI4	Uses criteria to evaluate the quality of solutions, can identify improvements making some refinements to the solution, and future solutions

Computational Thinking Strands

AL – Algorithmic Thinking

Ref. Activity

AL1	Writing instructions that if followed in a given order (sequences) achieve a desired effect
AL4	Writing instructions that choose between different constituent instructions (selection) to achieve a desired effect;
AL5	Writing instructions that repeat groups of constituent instructions (loops/iteration) to achieve a desired effect;
AL10	Using a standard notation to represent each of the above;
AL13	Creating algorithmic descriptions of real world processes so as to better understand them (computational modelling);

- AL14 Designing algorithmic solutions that take into account the abilities, limitations and desires of the people who will use them;

AB – Abstraction

Ref. Activity

- | | |
|-----|---|
| AB2 | Choosing a way to represent artefacts (whether objects, problems, processes or systems) to allow it to be manipulated in useful ways; |
|-----|---|

EV – Evaluation

Ref. Activity

- | | |
|------|---|
| EV7 | Assessment of whether a system is easy for people to use (usability) |
| EV8 | Assessment of whether a system gives an appropriately positive experience when used (user experience) |
| EV16 | Assessing whether a product meets general performance criteria (heuristics) |

GE – Generalisation

Ref. Activity

- | | |
|-----|---|
| GE3 | Transferring ideas and solutions from one problem area to another |
|-----|---|

DE – Decomposition

Ref. Activity

- | | |
|-----|--|
| DE1 | Breaking down artefacts (whether objects, problems, processes, solutions, systems or abstractions) into constituent parts to make them easier to work with |
|-----|--|

Learning Outcomes

1. Understand what an App is and that they usually solve specific single problems
2. Be able to collaborate effectively with members of their team and take on responsibilities and tasks for the benefit of their team
 - 2.1. To be able to carry out research to help develop their ideas further
 - 2.2. To be able to take on a leadership role to steer their team towards a final outcome by making decisions
 - 2.3. To be able to gather and make use of peer feedback to review their designs and ideas
 - 2.4. To be able to present their ideas to the class
3. To further develop their problem solving skills
4. To understand the structure of an app and be able to apply this to their own designs
5. To be able to develop initial ideas to create/modify an app based on an initial suggestion
6. To be able to make use of peer feedback and research to review their initial ideas and develop them into a prototype of a completed app
7. To understand that apps are aimed at specific users
 - 7.1. To be able to identify the user profile for their app
 - 7.2. To be able to design their app prototype around the needs of the users
8. To be able to select and use digital tools to prepare the group presentation/pitch to the class

Session Overview

SESSION 1

Session Content / Activity	Resources Used	Prog. Pathway	Comp. Thinking	Computing POS Link
Welcome and introduction. Use slides 1 to 3 to introduce Apps and set the context for the day. What is an app and how does it work? Introduce it as a program which follows a series of steps to work. Can they think of any of their own examples?	DSH_WelcomeIntroduction.pptx			
Use slide 4 to start thinking of good ideas and where they come from. Perhaps a brief discussion around this to ask the pupils if they have ever had a good idea.	App in a day.pptx	<u>IT</u> PI4 <u>C&N</u> OC3	GE3	2.1, 3.7
Divide the class into teams of 4-5 people (this may have already been done at primary school). Use slides 5 and 6 to discuss team roles and what they entail. Encourage the group to appoint their own roles (these may change through the day).	App in a day.pptx			2.1, 3.1, 3.7
Use slide 7 to highlight the different ideas that pupils can choose from. Very briefly outline each one (do not go into too much detail; leave this brief enough to allow pupils to fill the gaps with their own ideas). Ensure that each group has chosen one of the ideas	App in a day.pptx	<u>IT</u> BI1	GE3, AB2	2.1, 3.1, 3.7
Display slide 8 and give pupils the worksheet "Activity 1 – Initial App idea..." It may be	App in a day.pptx	<u>ALG</u>	AL13, AL1	2.1, 3.1, 3.7

<p>useful to have these enlarged to A3 size and allow groups to brainstorm their ideas on this sheet to help them present back to the class. During the presentations encourage other groups to give their initial response to the pupils ideas (as a form of feedback)</p>	<p>Activity 1 – Initial App Idea Worksheet</p>	<p>BA2, BA3 <u>IT</u> PI5, Y14, Y15, BI1, BI2</p>	
<p>Give groups the information pack for the app that they chose. Each group should use the information provided to develop their ideas further. Encourage each group to make at least three adjustments of their own choosing to the design. The aim here is to enable the groups to personalise the idea to make it their own. The groups may divide the roles as they wish. Ensure pens and papers are available. Give pupils access to enlarged copies of “Activity 2 – Design Sheet” to help them brainstorm and sketch out their ideas</p>	<p>App in a day.pptx Activity 2 – Design Sheet</p>	<p><u>ALG</u> YA1, OA2, BA2, BA3 <u>IT</u> PI5, Y14, Y15, BI1, BI2</p>	<p>AL14, AB2, EV7, EV8, GE3, DE1 2.1, 2.3, 3.1, 3.7, 3.8</p>
<p>At least some members of each group should be assigned the responsibility of identifying the user profile for the groups app. This section can be delivered in multiple ways. Either stop and describe user profiles (using slides 10 and 11) with the whole class, or call together members of each group responsible for this task and describe user profiles to them. It is then the responsibility of these pupils to feed the information back to their groups and ensure that the designs take into account the user profile.</p>	<p>App in a day.pptx Activity 2 – User Profile Worksheet</p>	<p><u>ALG</u> YA1, OA2 <u>IT</u> PI2, PI4, PI5, Y14, Y15, OI3, BI1, BI2 <u>C&N</u> PC1, OC3, BC2, BC3</p>	<p>AL14, AB2, EV7, EV8, GE3, DE1 2.1, 2.3, 3.1, 3.7, 3.8</p>
<p>Before the pupils break for the session encourage each group to quickly present their ideas and modifications to the class. Within the presenting group it should be the responsibility of at least one pupil to jot down the feedback provided by the class. Therefore, perhaps 2 presenters and 2 scribes. Encourage each listening group to contribute and provide feedback on</p>	<p>App in a day.pptx</p>	<p><u>ALG</u> YA1, OA2 <u>IT</u> PI2, PI4, PI5, Y14, Y15, OI3, BI1, BI2</p>	<p>AL14, AB2, EV7, EV8, GE3, DE1 2.1, 2.3, 3.1, 3.7, 3.8</p>

strengths and areas for improvement on the design being presented.

C&N

PC1, OC3, BC2, BC3

SESSION 2

Session Content / Activity	Resources Used	Prog. Pathway	Comp. Thinking	Computing POS Link
<p>Groups should gather together to discuss their findings so far. Use slide 13 to help them divide the upcoming jobs between them. You may wish to supply the groups with additional copies of “Activity 2...” worksheets to help them refine their ideas. At this point the pupils responsible will need to access “Activity 3 – App Review Worksheet” to record their responses and suggestions of related apps that they have explored.</p> <p>Allow for a significant amount of time to enable groups to work individually on their responsibilities.</p>	<p>App in a day.pptx</p> <p>Activity 3 – App Review Worksheet</p>	<p><u>ALG</u></p> <p>YA1, OA2</p> <p><u>IT</u></p> <p>PI2, PI4, PI5, YI4, YI5, OI3, BI1, BI2</p> <p><u>C&N</u></p> <p>PC1, OC3, BC2, BC3</p>	<p>AL14, AB2, EV7, EV8, GE3, DE1</p>	<p>2.1, 2.3, 2.4, 2.7, 3.1, 3.7, 3.8, 3.9</p>
<p>Encourage groups to come together to share their findings (slide 15). As a group they should now make some decisions and use “Activity 4 – App design template” to draw out their final ideas.</p>	<p>App in a day.pptx</p> <p>Activity 4 – App design template</p>	<p><u>IT</u></p> <p>PI2, PI4, PI5, YI4, YI5, OI3, BI1, BI2, BI3, BI4</p>	<p>AL14, AB2, EV7, EV8, GE3, DE1</p>	<p>2.1, 2.3, 3.1, 3.7, 3.8</p>
<p>Use slides 16 to 18 to introduce the concept of paper prototypes. Encourage the groups to collectively develop their prototypes (using enlarged copies of “Activity 5 – Paper Prototype”)</p>	<p>App in a day.pptx</p> <p>Activity 5 – Paper Prototype</p>	<p><u>ALG</u></p> <p>PA2, YA1, OA2, OA3, BA2, BA3</p>	<p>AL1, AL4, AL5, AL10, AL13, AL14</p>	<p>2.1, 2.3, 3.1, 3.7, 3.8</p>

SESSION 3

Session Content / Activity	Resources Used	Prog. Pathway	Comp. Thinking	Computing POS Link
Using slide 19 encourage pupils to stop and review. They should appoint a researcher and a scribe, the researcher and scribe should visit other groups and find out about their ideas being developed as well as present their own ideas and ask for feedback. The scribe should jot down key findings and information to feedback to their own group.	App in a day.pptx Activity 5 – Paper Prototype	<u>ALG</u> PA2, YA1, OA2, OA3, BA2, BA3	AL1, AL4, AL5, AL10, AL13, AL14	2.1, 2.3, 3.1, 3.7, 3.8
Groups will need to discuss and share their findings, using the research to improve their prototype. If there is time the groups may wish to create an electronic prototype of their app. For this you may wish to give them the following options: Appshed - http://appshed.com/ In Vision - http://www.invisionapp.com/ Axure - http://www.axure.com/ Proto - https://proto.io/	App in a day.pptx Activity 5 – Paper Prototype	<u>ALG</u> PA2, YA1, OA2, OA3, BA2, BA3 <u>IT</u> PI2, PI4, PI5, YI4, YI5, OI3, BI1, BI2 <u>C&N</u> PC1, OC3, BC2, BC3	AL1, AL4, AL5, AL10, AL13, AL14, AB2, EV7, EV8, GE3, DE1	2.1, 2.3, 2.4, 2.6, 2.7, 3.1, 3.5, 3.7, 3.8, 3.9
The prototypes are complete. It's time to present back to the class the final finished product. Encourage groups to collaboratively prepare their pitch and decide on the best way to present it. They should explain their final outcome and what they learnt along the way	App in a day.pptx Activity 5 – Paper Prototype	<u>ALG</u> PA2, YA1, OA2, OA3, BA2, BA3 <u>IT</u>	AL1, AL4, AL5, AL10, AL13, AL14, AB2, EV7, EV8, GE3, DE1	2.1, 2.3, 2.4, 2.6, 2.7, 3.1, 3.5, 3.7, 3.8, 3.9

<p>along with a comparison of their final app with the original idea that they were presented with.</p>	<p>PI2, PI4, PI5, YI4, YI5, OI3, BI1, BI2</p>	<p><u>C&N</u></p>	<p>PC1, OC3, BC2, BC3</p>	
<p>This is a great opportunity to carry out some assessment if you wish. Recording the presentations or using them to note progress will help identify key learning outcomes being achieved by pupils.</p>				
<p>As a plenary for the day, finish with key points about what pupils can take away from the day. Use the final slides to point them in the right direction of what they should do if they wish to continue developing along with a description of Apps for Good as a programme.</p>	<p>App in a day.pptx Activity 5 – Paper Prototype</p>	<p><u>ALG</u> PA2, YA1, OA2, OA3, BA2, BA3</p>	<p>AL1, AL4, AL5, AL10, AL13, AL14, AB2, EV7, EV8, GE3, DE1</p>	<p>2.1, 2.3, 2.4, 2.6, 2.7, 3.1, 3.5, 3.7, 3.8, 3.9</p>
		<p><u>IT</u></p>	<p>PI2, PI4, PI5, YI4, YI5, OI3, BI1, BI2</p>	
		<p><u>C&N</u></p>	<p>PC1, OC3, BC2, BC3</p>	

Files/Resources

Filename	Resource Type	Purpose/Description
App in a Day	Presentation	Main teaching PowerPoint presentation slides
Activity 1 – Initial App Idea Worksheet	Worksheet	Worksheet for pupils to complete
Activity 2 – Design Sheet	Worksheet	Worksheet for pupils to complete
Activity 3 – App Review Worksheet	Worksheet	Worksheet for pupils to complete
Activity 4 – App Design Template	Worksheet	Worksheet for pupils to complete
Activity 5 – Paper Prototype	Worksheet	Worksheet for pupils to complete
Student App Profiles	Information Sheet	List of existing Apps selected by Apps for Good

PLEASE NOTE: The activities outlined in this workshop pack are a suggested outline of how the workshop can be delivered. It is envisaged that teachers will adapt the resources and the organisation of them according to the needs of their class.