Plan and program a dialogue

Computing Science Concepts

-Sequence

-Order is important for some sequences

-Algorithm

-Four levels of abstraction

-Parsons problem

National Curriculum Programs of Study

Pupils should be taught to:

design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts

use sequence, selection, and repetition in programs; work with variables and **various forms of input and output**

use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs

Research Focus

This planning uses a **parsons problem** where the code is provided but pupils need to assemble it in the right order. This one has a twist as they are provided with the idea and algorithm to help them construct the programs.

Computer scientists have **four levels of abstraction**. The ideas level, Planning level (which includes the algorithm), code level, and execution level (testing the code)

Dialogue Planning Version A Parsons Problem

Overview

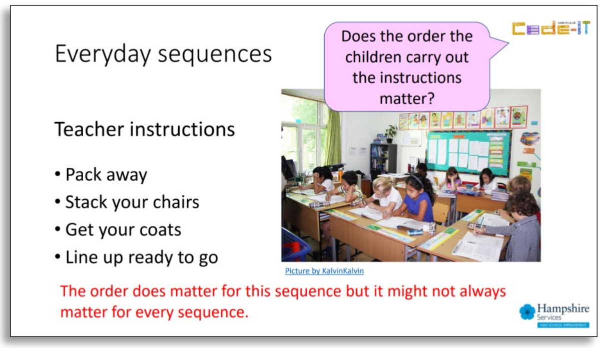
1. Introduce the concept of sequence through everyday examples
2. Extend the concept of sequence through role play
3. Introduce the challenge by sharing the idea, algorithm and unfinished code [Parsons problem]
5. Pupils plan their own short dialogue around a theme of yours or their choosing
6. Pupils turn their algorithmic planning into their own programmed dialogue
7. Pupils fill in the summative assessment form

1. Introduce the concept of sequence through everyday examples

Download **Everyday computing concepts PDF** from http://code-it.co.uk/knowledge or directly from http://code-it.co.uk/wp-content/uploads/2019/04/everydaycomputingconcepts.pdf

If pupil used this material when creating a monologue skip this step.

Use the first eight slides to introduce the idea of sequence in our everyday lives. The answer mostly appear in red text. There are some sequences



Everyday sequences

Does the order the children carry out the instructions matter?

Teacher instructions

- Pack away
- Stack your chairs
- Get your coats
- Line up ready to go

Picture by KalvinKalvin

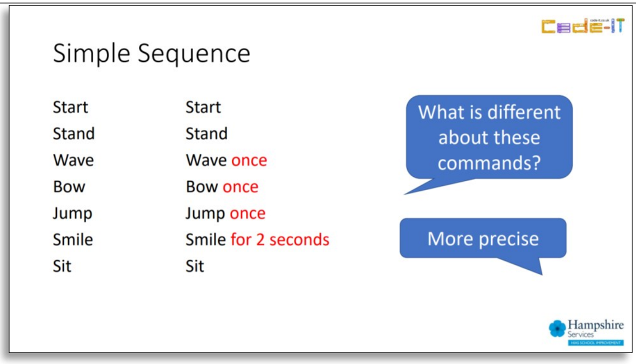
The order does matter for this sequence but it might not always matter for every sequence.

where the order is less important and some where the order is paramount. The same will be true for programming sequences. By linking the concept to its everyday use you are linking to known knowledge which means pupils are more likely to assimilate the idea.

2. Extend the concept of sequence through role play

Download Concepts before coding PDF from http://code-it.co.uk/

knowledge or directly from http://code-it.co.uk/wp-content/uploads/2019/04/conceptbeforecoding.pdf Follow the links in the menu to simple sequence. Use those six slides to roleplay and write simple fun sequences. These slides introduce the idea that the more precise a sequence is the more useful it is. Stop when you get to the dance slide.



Simple Sequence

Start	Start
Stand	Stand
Wave	Wave once
Bow	Bow once
Jump	Jump once
Smile	Smile for 2 seconds
Sit	Sit

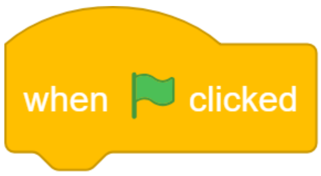
What is different about these commands?
More precise

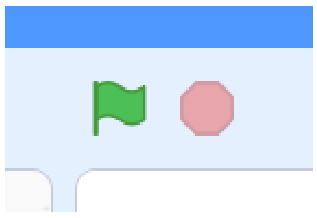
If pupils used this material as part of their monologue planning then skip to the sequence dance challenge which was not included in the monologue planning.

Formative assessment opportunity

While pupils are writing their own sequences go round and check them all. Is anyone struggling? Have they copied the one on the board exactly? This is often an indication that they are not sure how to create their own or that spelling is an issue. A good supportive activity is to get them to tell you about their own sequence that you scribe for them.

3, Introduce the challenge by sharing the idea, algorithm and unfinished code [Parsons problem]





Scratch basics

If pupils have never used Scratch before it is worth going over the basics. I have included some videos here Scratch 2.0 https://youtu.be/bNoyArexVns or Scratch 3.0 https://youtu.be/gtqMauyKE_w but I recommend that you watch them but introduce it yourself in short bursts.

Repeat until basic Scratch introduced

Show pupils basic feature

Pupils have time to try it out

Introducing Scratch algorithm

There are lots of different types of blocks and they are colour coded with similar blocks. Many of these blocks will contain ideas that we won't know how to use until upper KS2 or KS3.

Starting blocks have a curved top and can be found in the events section. Drag out the when green flag clicked starting block and show pupils where this can be triggered on the Scratch display.

Which challenges to use

Use the bat timed say blocks **dialogueVAbat_parson** and the evacuation non timed say example **dialogueVAevac_parson_alt** in that order. You can leave the other one for those who finish early. Make sure pupils look at the idea and algorithm while they fix the code.

What challenge to use

This module comes with three pre-made challenges.

Bat Conversation

(Timed say blocks)

Evacuation Conversation

Version 1 (Timed say blocks)

Version 2 (Non timed say blocks)

You can of course make your own really easily. Scratch supports copy and paste. Make sure you muddle the blocks up.

Opening the parsons problem

Direct pupils to open the template files. This can be found either on the Scratch website at
https://scratch.mit.edu/projects/304268472/
https://scratch.mit.edu/projects/304269260/
https://scratch.mit.edu/projects/304269632/

Or as a downloadable Scratch 2 or 3 files to put on your network.

Introducing the challenge

Show pupils the idea and algorithm **dialoguealgorithmexampleplanner** from the one you have chosen to do first. Explain that the author got as far as creating their planning and they have created the blocks but the blocks are not in the right order. Point out that each character has a column and that when one character is talking the other one is waiting without talking. It can be good to model this with the class.

Model switching between the code attached to both characters and show pupils that there is no code in the stage area.

4. Introduce new challenges to those who complete the earlier ones

Tell pupils that if they finish one they can test it by left clicking on the green flag. Once they have tested it and it makes sense they can ask for another idea and algorithm from you.

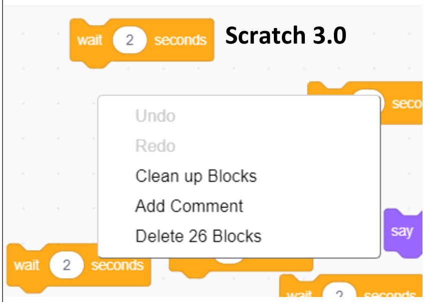
When pupils say they have finished one ask them if they gave adjusted the times to match the algorithm? Very few pupils will notice this.

An extra challenge can be had improving the evacuation program as it has original grammar and punctuation issues as well as times which are all the same.

Summative assessment

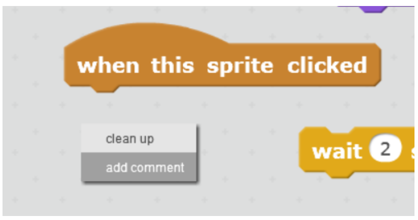
Why not have a class list and a list of the challenges that pupils can tick off as they complete them including creating an algorithm and their own dialogue.

After the majority of pupils have created and tested a say and wait and timed say blocks version move on.

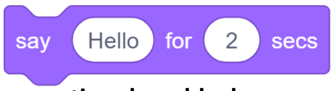


Scratch 3.0

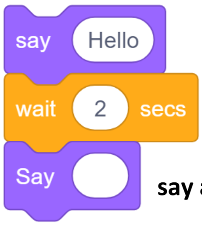
At some point you may wish to show pupils how they can clean up their code



Scratch 2.0



timed say block



say and wait

Idea and algorithm planners

If pupils are only writing a dialogue use the **A4 dialogue planner.**

If pupils are going to complete the stage and sound module then use the left half of the **A3 dialogue planner.**

Character 1 Modern Girl	Time secs	Character 2 Viking Boy	Time secs
Do your parents know you have that sharp knife?	3	Wait	3
Wait Zig Zag Pattern	3 Total Time	All the children in our village carry knives apart from the slaves.	3 Total Time
You have slaves, that is so wrong!	3 Total Time	Wait	3 Total Time

5. Pupils plan their own short dialogues

Print out the idea and algorithm planner. You can simplify this by giving pupils an idea. This could have any cross curricular theme.

Formative assessment

Check pupils algorithms as they are creating. Do they make sense? Have they kept to their idea? Have they included punctuation? Have they included timings? Does the character that is waiting match the character speaking? Is there a zig zag pattern?

6, Pupils turn their algorithmic planning into their own programmed dialogue

Give pupils time to do this. Those that finish earlier than others can create a different type of monologue.

7, Pupils fill in the summative assessment form

You can find a summative assessment quick Kahoot Quiz linked at http://code-it.co.uk/gold/

Whilst Kahoot is a limited assessment tool it is free and it is easy for teachers to pass the results back to code-it via phil.bagge@code-it.me so I can look at which method provides best short test results. Not conclusive but useful.

If you pass the results back please

1, Anonymise the results by removing the names

2, Ask the head teacher for permission

3, In the email title say which module you are doing (ie Animation D)

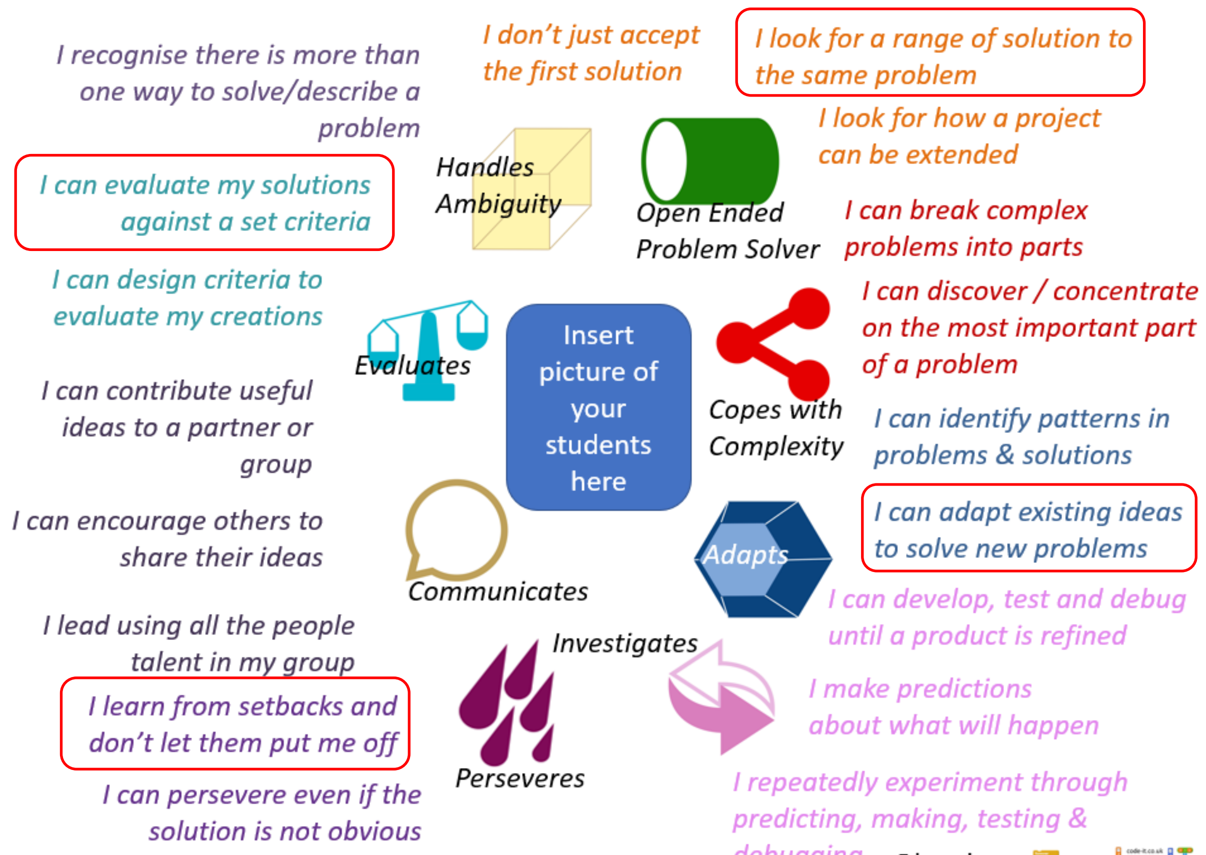
Research References

[1] Parsons problems https://www.computingatschool.org.uk/news_items/365

[2] Four levels of abstraction

This article includes an example of the four levels of abstraction and sign posts the work of Waite and Armoni in using them with school age pupils.

http://code-it.co.uk/algprogdiff/



I recognise there is more than one way to solve/describe a problem

I don't just accept the first solution

I look for a range of solution to the same problem

I look for how a project can be extended

I can evaluate my solutions against a set criteria

I can break complex problems into parts

I can design criteria to evaluate my creations

I can discover / concentrate on the most important part of a problem

I can contribute useful ideas to a partner or group

I can identify patterns in problems & solutions

I can encourage others to share their ideas

I can adapt existing ideas to solve new problems

I can develop, test and debug until a product is refined

I lead using all the people talent in my group

I make predictions about what will happen

I learn from setbacks and don't let them put me off

I repeatedly experiment through predicting, making, testing & debugging

I can persevere even if the solution is not obvious

Inspired by Behaviour Rubric created with @MarkDorling and linked at http://code-it.co.uk/attitudes/

@baggiepr Code-IT