Integrating Technology Into Enquiries

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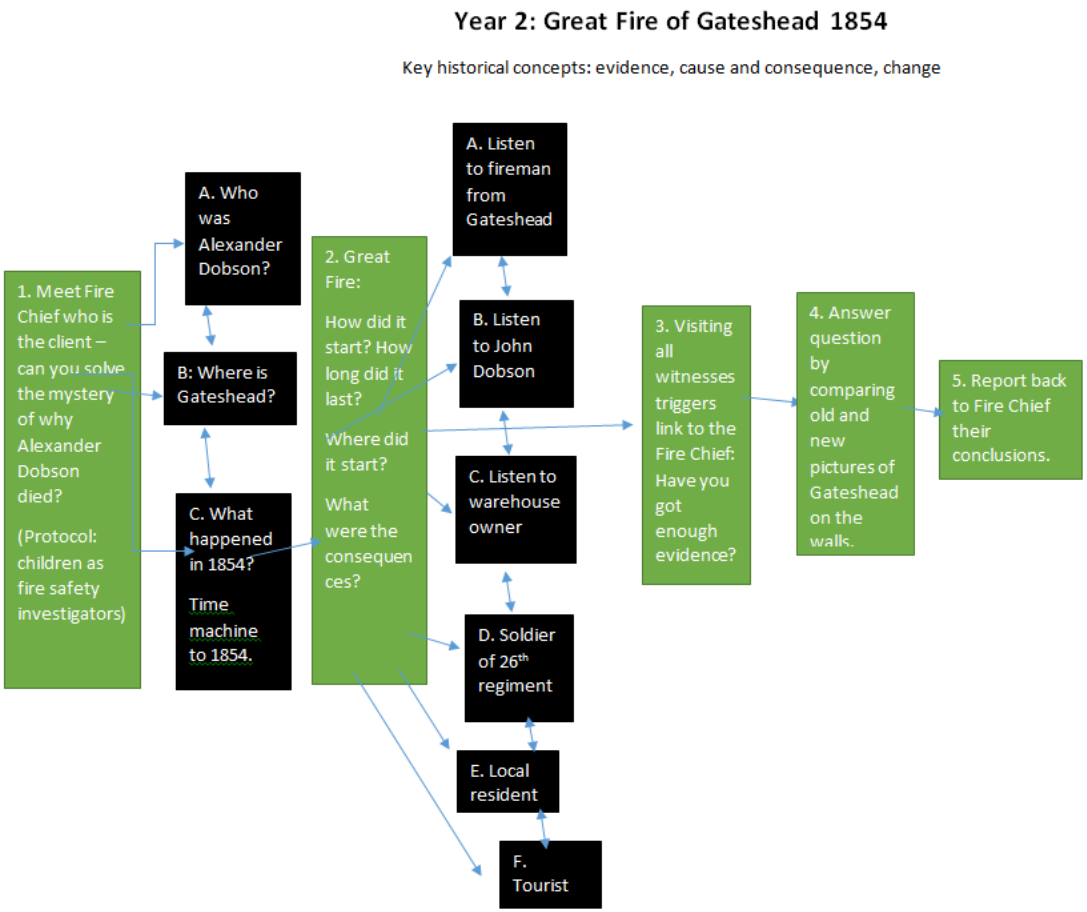
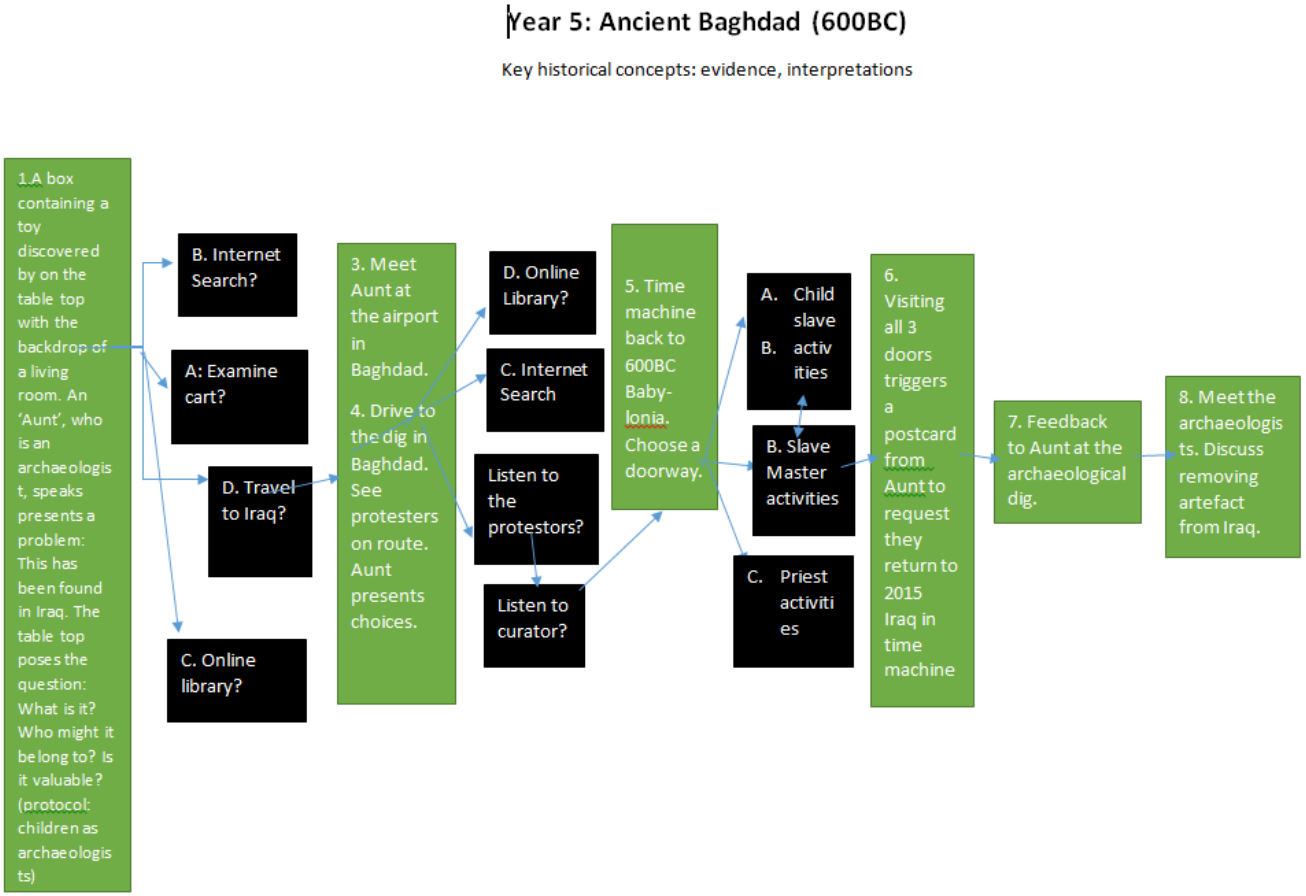
Aims

- Separate Content and Functionality
- Separate Functionality by “Technology”
  - Video Walls
  - Table
  - Facilitators
- Unpick Enquiries to create underlying functionality structure.
- Structure should be re-usable and independent of content.

Enquiries (1)


Year 2: Great Fire of Gateshead 1854
Key historical concepts: evidence, cause and consequence, change
1. Meet Fire Chief who is the client – can you solve the mystery of why Alexander Dobson died?
(Protocol: children as fire safety investigators)
A. Who was Alexander Dobson?
B: Where is Gateshead?
C. What happened in 1854?
Time machine to 1854.
2. Great Fire:
How did it start? How long did it last?
Where did it start?
What were the consequences?
A. Listen to fireman from Gateshead
B. Listen to John Dobson
C. Listen to warehouse owner
D. Soldier of 26th regiment
E. Local resident
F. Tourist
3. Visiting all witnesses triggers link to the Fire Chief: Have you got enough evidence?
4. Answer question by comparing old and new pictures of Gateshead on the walls.
5. Report back to Fire Chief their conclusions.

Enquiries (2)


Year 5: Ancient Baghdad (600BC)
Key historical concepts: evidence, interpretations
1.A box containing a toy discovered by on the table top with the backdrop of a living room. An 'Aunt', who is an archaeologist, speaks presents a problem: This has been found in Iraq. The table top poses the question: What is it? Who might it belong to? Is it valuable? (protocol: children as archaeologists)
B. Internet Search?
A: Examine cart?
D. Travel to Iraq?
C. Online library?
3. Meet Aunt at the airport in Baghdad.
4. Drive to the dig in Baghdad. See protesters on route. Aunt presents choices.
D. Online Library?
C. Internet Search
Listen to the protestors?
Listen to curator?
5. Time machine back to 600BC Baby-lonia. Choose a doorway.
A. Child slave
B. activities
B. Slave Master activities
C. Priest activities
6. Visiting all 3 doors triggers a postcard from Aunt to request they return to 2015 Iraq in time machine
7. Feedback to Aunt at the archaeological dig.
8. Meet the archaeologists. Discuss removing artefact from Iraq.

Unpicking – Green Blocks

1. Meet Fire Chief who is the client – can you solve the mystery of why Alexander Dobson died? (Protocol: children as fire safety investigators)
2. Great Fire: How did it start? How long did it last? Where did it start? What were the consequences?
3. Visiting all witnesses triggers link to the Fire Chief: Have you got enough evidence?
4. Answer question by comparing old and new pictures of Gateshead on the walls.
5. Report back to Fire Chief their conclusions.
1. A box containing a toy discovered by on the table top with the backdrop of a living room. An 'Aunt', who is an archaeologist, speaks presents a problem: This has been found in Iraq. The table top poses the question: What is it? Who might it belong to? Is it valuable? (protocol: children as archaeologists).
3. Meet Aunt at the airport in Baghdad. 4. Drive to the dig in Baghdad. See protesters on route. Aunt presents choices.
5. Time machine back to 600BC Babylonia. Choose a doorway
6. Visiting all 3 doors triggers a postcard from Aunt to request they return to 2015 Iraq in time machine
7. Feedback to Aunt at the archaeological dig.
8. Meet the archaeologists. Discuss removing artefact from Iraq.

Unpicking - Green Blocks

- Characteristics & Purpose
  - Communicate information
  - Ask Questions
  - Setup next actions
  - Others?
- Classification: Scene

Scenes - Generalised

- Purpose:
  - Communicate information
  - Ask Questions
  - Setup next actions
  - Others?
- *Technology*
  - *Video Sequence or images*
  - *Displayed on video walls*
- *Interaction Requirements*
  - *Repeatable? (Can be replayed) How to control? Timed Loop?*

Unpicking – Black Blocks

1A. Who was Alexander Dobson?	1A: Examine cart?
1B: Where is Gateshead?	1B. Internet Search?
1C. What happened in 1854? Time machine to 1854.	1C. Online library?
2A. Listen to fireman from Gateshead	1D. Travel to Iraq?
2B. Listen to John Dobson	2A. Listen to the protestors?
2C. Listen to warehouse owner	2B. Listen to curator?
2D. Soldier of 26th regiment	2C. Internet Search
2E. Local resident	2D. Online Library?
2F. Tourist	3A. Child slave activities
	3B. Slave Master activities
	3C. Priest activities

Unpicking Black Blocks

- Are they all serving the same purpose?
- Can some of them be classified as Scenes? albeit not key scenes? Perhaps Audio only?
- Others can be classed as “activities”.
- Activities include:
  - Decide to progress
  - Answer Question
  - Search Internet
  - Other?

Proposal: Activity Classification

- Activities can be sub-classified:
  - "table activities"
    - occur collaboratively on the table
  - "classroom activities"
    - Using normal teaching facilities / materials / (technology?)
- Why?
  - Table/Collaborative activities are *expensive* in terms of time to develop, and should be simple and limited.
  - We should choose a small set of types of activity for this purpose, I would suggest one or two.
  - Using "normal" teaching materials in the class is not detrimental to the project, in fact *integration* is a key requirement for *sustainability.*

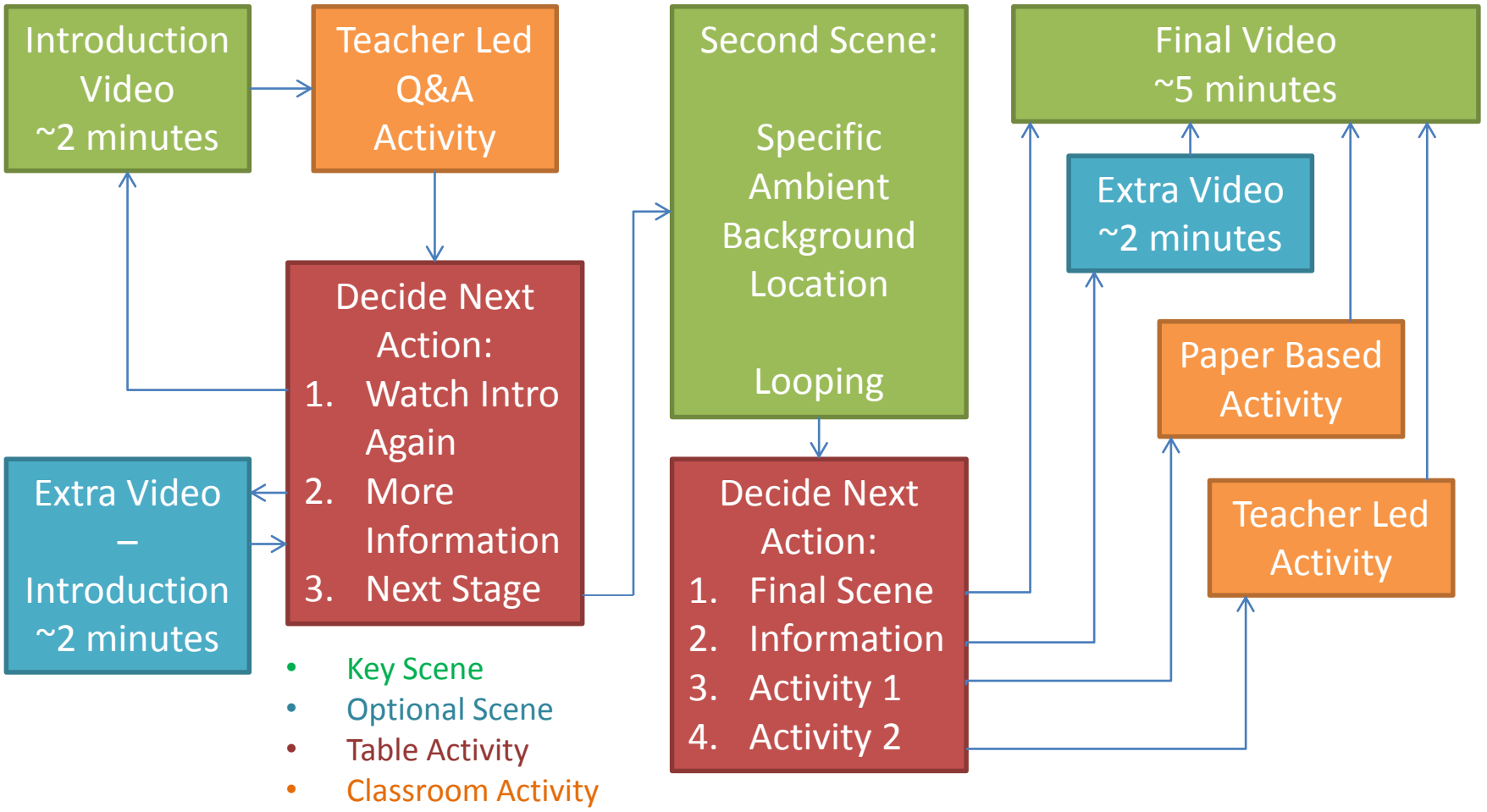
An Abstract Structure

- We can now have a first stab at making an abstract structure for an enquiry.
- Using the classifications we have derived from the blocks – we can come up with several “types” of block:
- Key Scene – Media that communicates information or asks questions for the task.
- Optional Scene – as above but not required to complete the task.
- Table Activity – Collaborative Activity using the table – designed explicitly.
- Classroom Activity – Activity using “normal” classroom materials – how is result fed back into system? Teacher interface?

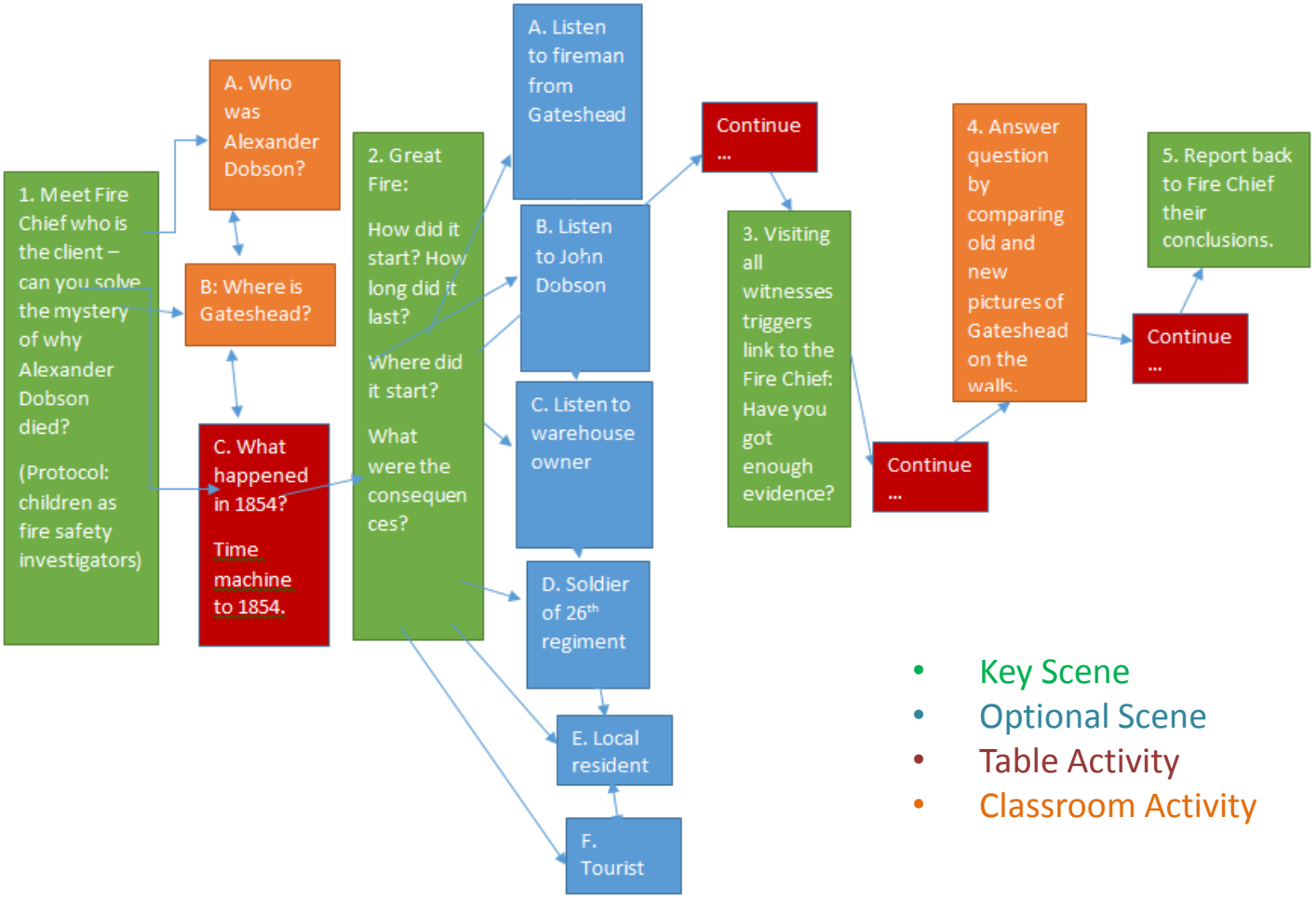
Technology Specifics

- What does this mean for the technology?
- Scenes – Media player for wall screens (i.e. 4 simultaneous displays)
- Table Activity – Specific interaction design for each type of activity…
- Class Room Activity - A “remote control”/schedule manager for the teacher – to pause interaction / displays, go to specific items in the schedule, override schedule / progress students etc. – control from laptop or tablet? Ultimately teachers should be able to write a “script” or “storyboard” for the lesson that the technology understands.
- Each one of these is a significant project in itself…

Example Abstract Structure



Abstract Structure Applied To Enquiry – A Quick 1st Attempt!



- Key Scene
- Optional Scene
- Table Activity
- Classroom Activity

Table Activities - Challenges

- To make table activity worthwhile it needs to be collaborative.
  - i.e. participants need to be able to engage with the table and each other during the activity – their actions on the table are visible and changeable – the table forms a channel of communication.

- Avoid activities where the interface enforces roles by limiting resources – roles should develop socially if required.

- Avoid making multiple copies of parts of the interface so that each participant can work individually, e.g. multiple keyboards, "displays" etc.– may as well have separate computers in this case.

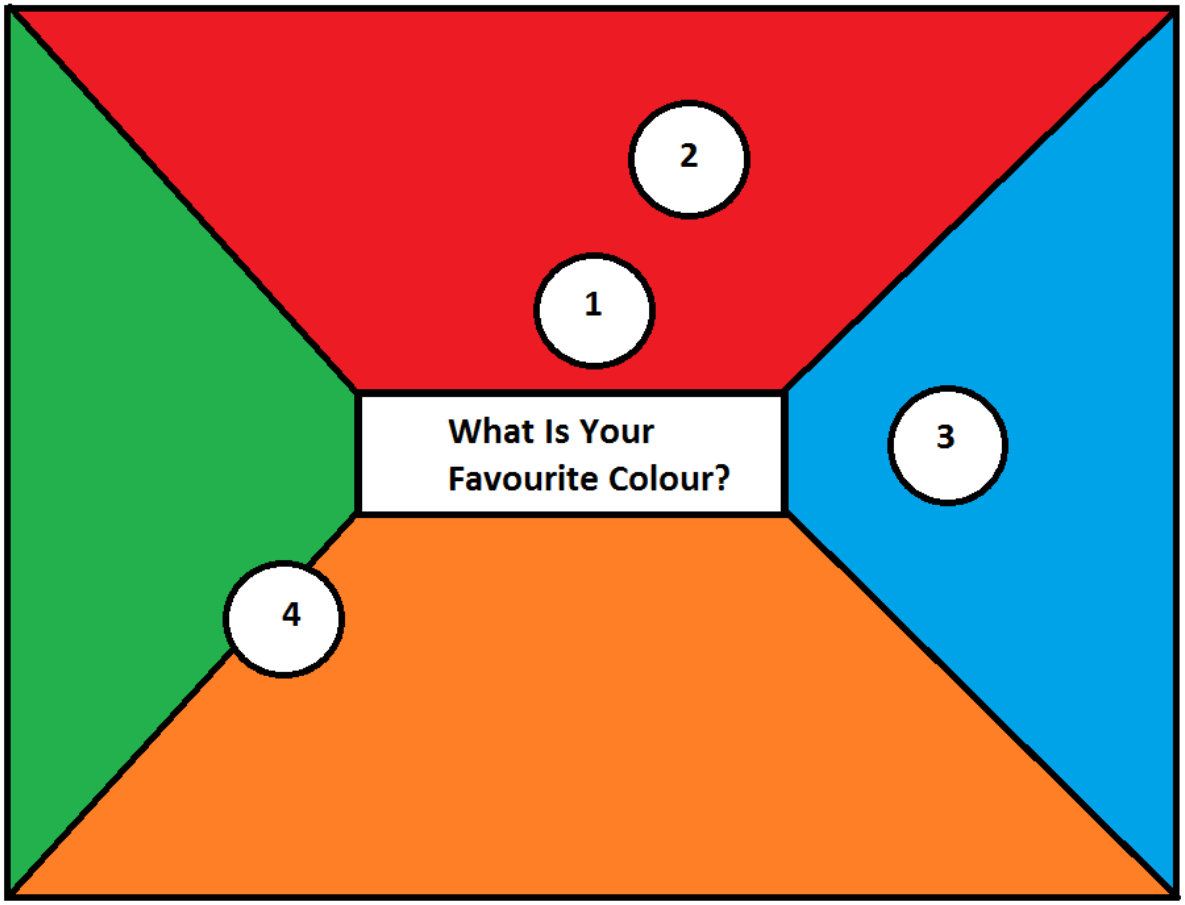
- E.g. **"Internet Search"** is hard to design for as a collaborative tool in the traditional sense – i.e. a text box that is typed into from a keyboard.
  - It is either:
    - A single resource that excludes other participants.
  - Or:
    - A copied resource that individualises/territorialises the activity.

- How might "search" be designed for collaboration? *collaborative search is still an "unsolved" HCI problem in its own right…*

An example table activity – voting / deciding

- Participants are given several options to choose from.
- They can be answers to a question, or a decision to move on.
- They cast their vote by moving a marker on the table over their choice.
- Once it is unanimous (Majority? Teacher Decides?), the choice is made – i.e. consensus.

Example Table Activity cont.



Questions from design

- How do you make sure participant does not move incorrect marker? Teacher supervision?
- How do you proceed if consensus can’t be reached? Teacher Intervention?
- How do you avoid accidental decisions? Timer before accepting?
- How do you feed back if the participants were correct? Teacher?

Final Questions

- Is the abstract model sufficient? Other Blocks?
- Where is the content coming from?
- How many “table” activities do we want?
- How would this actually play out in a session?
  - Minute by minute?
  - Is there too much for one session? Too little?
- How will we test this?
- How will we analyse this?
- What are the goals for the sessions?