Coding Animated Narratives: Edited by Len Unsworth

Bonus material for Chapter 4: Amy Austin and Kate Jun

The Media and Identity unit was taught in 3 x 80-minute lessons per week for a period of 9 weeks. For most of this period one lesson per week was dedicated to *Scratch* and the CAN project, and the other two lessons involved exploration of concepts and topics concerning media and identity. However, in the 2-3 weeks leading up to the due date of the *Scratch* narratives, students had two lessons per week to work on their projects, and this extra time proved to be very helpful.

As a resource for our teaching, we created a Google Slides presentation and we have included some of those slides as Figures in the following outline of our weekly program in which we have also included some differentiation strategies for students with diverse learning needs.

Week	Focus	Learning objectives
1	What is Identity?	• Introduce students to Scratch • Choosing appropriate sprites • Creating facial expressions and voices
2	What is Media?	• Creating motion in Scratch
3	The influence of the media	• Problem solving in Scratch • Creating camera shots in Scratch • Creating effective narrative storyboards (See Fig XX below)
4	Identity, place and culture	• Examining narrative structure in animated narratives
5	Techniques used to shape identity in the Media	• Creating loops in Scratch • Receiving formative feedback on Scratch projects from teacher
6	Developing Scratch narratives	• Using red blocks for effect on Scratch • Developing Scratch narratives
7 & 8	Developing and refining Scratch narratives	• Aligning Scratch narratives with assessment criteria • Receiving peer feedback through a Gallery walk
9	Submission of Scratch projects	

Week 1. Focus: *'What is Identity?' and Introduction to the Scratch Project*

- Introduce students to the *Scratch* program. All students are to create usernames and passwords and record them securely. Students are introduced to the basic functions of the coding blocks. The YouTube clip, 'Scratch Code Blocks Explained | How to use Scratch Blocks and What They Do' is particularly useful in introducing them: https://www.youtube.com/watch?v=VhfEcEj0fSc
- Assign or let students choose their pairs. Consider the range of student abilities and their prior knowledge of *Scratch*.
- As a flipped classroom activity, the *Scratch Editor* link https://scratch.mit.edu/projects/editor/?tutorial=all can be posted to the class learning management system and the video tutorials within the link can be assigned as homework tasks (e.g., watch 2 tutorial videos a week). The 'Getting Started' Video is a useful introduction.
- Choosing Appropriate Sprites (Figure 1): Students pick a sprite they each want to use (which could be for their final *Scratch* animated narrative or by focusing on a sprite representing who they are) and explain why it suits who they are/their identity. They write a few sentences justifying their Sprite choice next to a copy of their Sprite image in their English workbooks. This sprite should be a human sprite character from options 1 or 2 (from the sprite selection on *Scratch*) to allow for more modifications to costume and facial expressions.

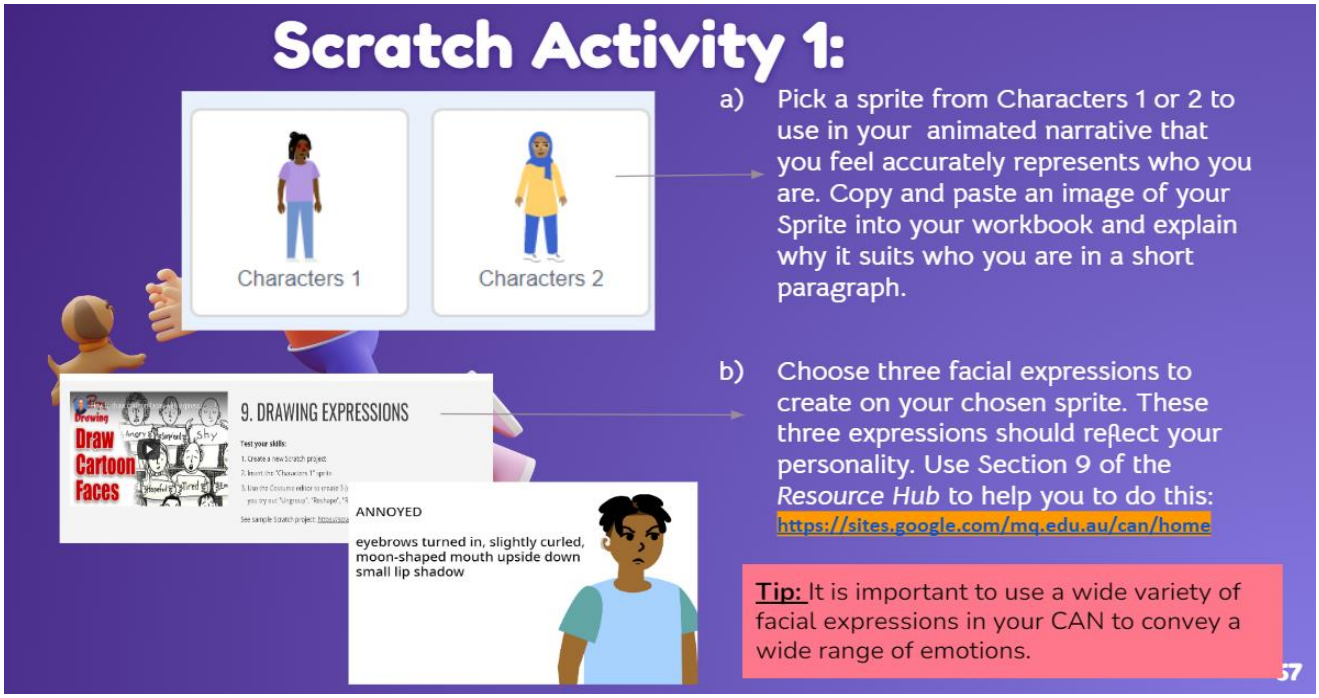

Figure 1. Choosing Sprites

- Creating Facial Expressions (Figure 2): Students could then create multiple facial expressions (perhaps up to 3) on their chosen Sprite which reflect key aspects of their own personality/identity. The teacher could use the resources on 'drawing expressions' from section 9 of the *Coding Animated Hub* (https://sites.google.com/mq.edu.au/can/home) to help scaffold teaching of coding

facial expressions e.g., show the video on drawing facial expressions and then model the drawing on the costume change grid in *Scratch* (See Chapter 1, Figure 2, The Paint Editor). As seen in Figure 2, the teacher shows students how to use the 'Ungroup' and 'Group' tools at the top of the costume grid to show how each part of the Sprite's face can be individually clicked on and manipulated to represent a different emotion. Figure 2 demonstrates how a Sprite's eyebrows can be turned in and slightly curled by using the 'ungroup' tool to be able to click on each eyebrow individually followed by clicking the 'reshape' tool to then turn the eyebrows inwards. The 'reshape tool' is the second cursor with a dot at the tip. This expression of annoyance is further amplified by clicking on the sprite's mouth and clicking the 'flip vertical' tool to create an upside-down mouth and then using the line tool to create a small lip shadow underneath it.

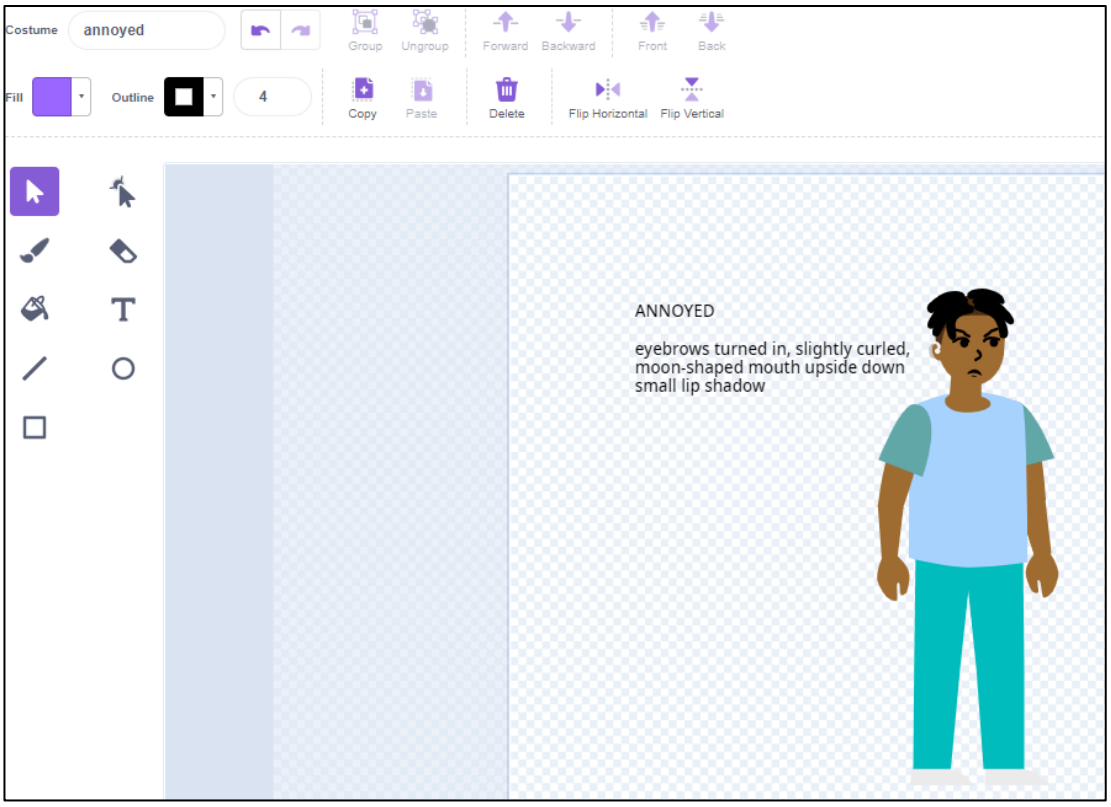

Figure 2. Creating Facial Expressions using the Paint Editor

- As seen in Figure 2, a series of different facial expressions can be made for a single sprite by right clicking on the first costume square and duplicating it. For each duplication, a new emotion can be created by firstly using the 'ungroup', tool (on the top bar of the editing tools) to separate the different parts of the face and then using the 'reshape', 'flip vertical/horizontal' tools, to manipulate the different parts of the face, as necessary. Each new facial expression (costume duplication) should be given a different name, as seen in Figure 3.

Figure 3. Creating Facial Expressions and giving them different names

- Figure 4 demonstrates how to integrate the different facial expressions into coding sequences by using a purple costume change block. The 'switch costume to' block, together with the name of the required facial expression, is inserted as part of the coding sequence where the background, positioning and size of the sprite have already been coded. Thus, the same sprite can show a range of different emotions and facial expressions across multiple scenes.

Figure 4. Creating a costume change block

- Justification of Facial expressions: Students could then justify why they chose those three facial expressions for their chosen sprite either to the person next to them, or to the class, and the teacher, for feedback. Students are reminded of the importance of using a variety of facial expressions to convey the changing personality/mood/emotions of their sprites throughout their narratives.

- Recording Voices: (Figure 5): Students are then to record their own voices in a 30 second introduction of their chosen Sprite which contains an outline of who their Sprite is including details such as the sprite's name, background, family and culture (these can be based on the students' own identities). Students can use any of the sound functions in *Scratch* to include with their Sprite (e.g., recording voice, sound effects, and text to speech, depending on their confidence with *Scratch*). Students are asked to show their introductions to the class, and the teacher leads a discussion on their effectiveness.

Figure 5. Creating talking sprites

- Figure 6 shows how to integrate voice recordings, and text to speech, within a coding sequence. To do a voice recording,
    - select the speaker icon at the bottom of the sound tab.
    - Select the 'record' button and then record your sound, name it and save it.
    - To play the sound, select the 'play sound' block, from the 'Sound' code and select the specific sound.
    - To create text to speech, click on the 'say for x seconds' block under the 'Looks' code and type in the speech you want converted to text.

  Additionally, under the 'Sound' code, the volume and pitch can be changed using the 'set volume to %' and the set pitch effect to' blocks. Figure 6 also shows how to use a red block to create the effect of a sprite's mouth moving at the same time it is talking, which is explained in Week 6. An extension task for students with advanced competence with *Scratch* is indicated in Figure 7.

Figure 6. Integrating voice recordings and text to speech blocks

Figure 7. Sprite conversations - an extension task for advanced learner

- *Differentiation for recording voices:* Based on different skill and confidence levels in the class, students who are less confident could record their own voices. Those who are more confident can add in speech effects e.g. add text to speech functions and use different accents.

Week 2. Focus: *'What is Media?' and Creating Motion in Scratch*

- Show students an effective example of a *Scratch* CAN which thoughtfully explores the relationship between media and identity. It might be beneficial to show the students a copy of a teacher composed CAN narrative (we found it immensely beneficial to go through the same process, and hurdles, as the students). After the sample CAN has been shown, ask the students open-ended questions to clarify their understanding of the plot, its structure, and its conceptual focus on the shaping of identity through the media (Figure 8). There are two key questions modelled in Figure 8. The teacher leads a discussion centred on how the coding blocks have been used effectively in the CAN to generate strong audience responses i.e. choice of

camera shots/angles, use of sound/sound effects, and purposeful movement of the sprites.

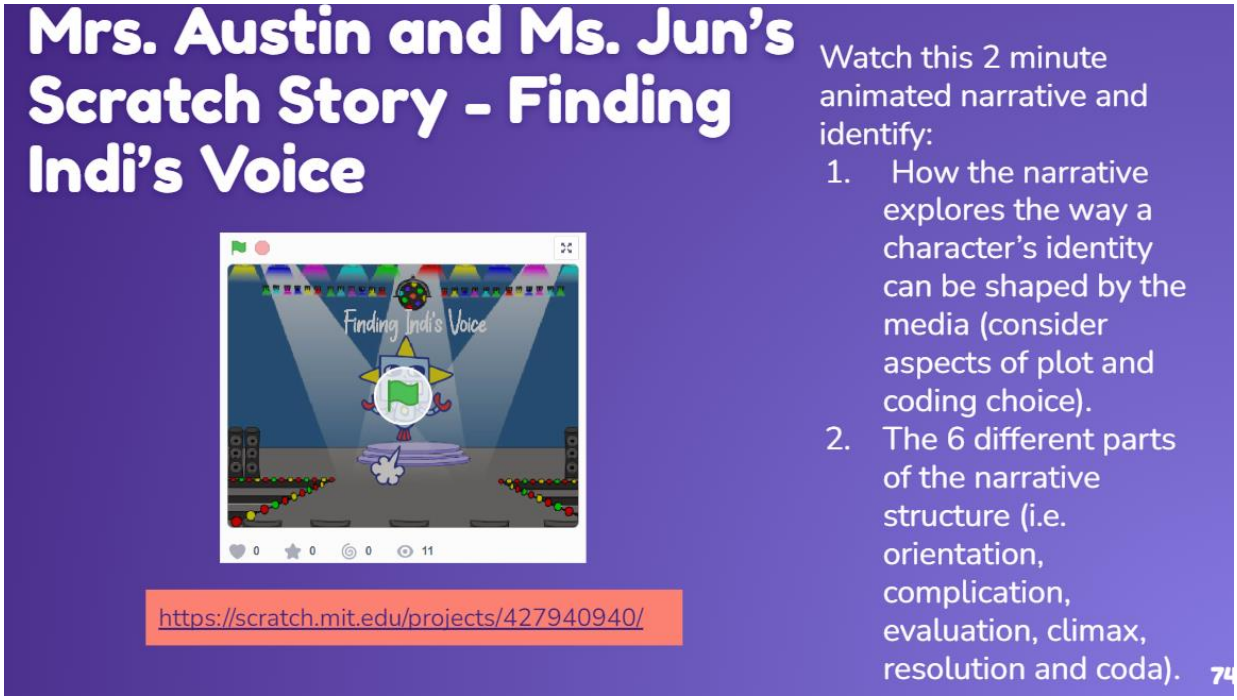

Figure 8: Exploring the teacher composed CAN narrative

- One example of an effective moment from our teacher-created CAN narrative entitled *Finding Indi's Voice* (https://scratch.mit.edu/projects/427940940/) is shown in Figure 9. It is a mid-shot of our robot protagonist Indi showing a puzzled facial expression combined with an original question mark background design. This background design amplifies the uncertainty Indi feels about the robot's sense of identity (a way of showing character interiority) and is this further amplified through Indi's enlarged eyes and wide-open mouth with defined teeth.

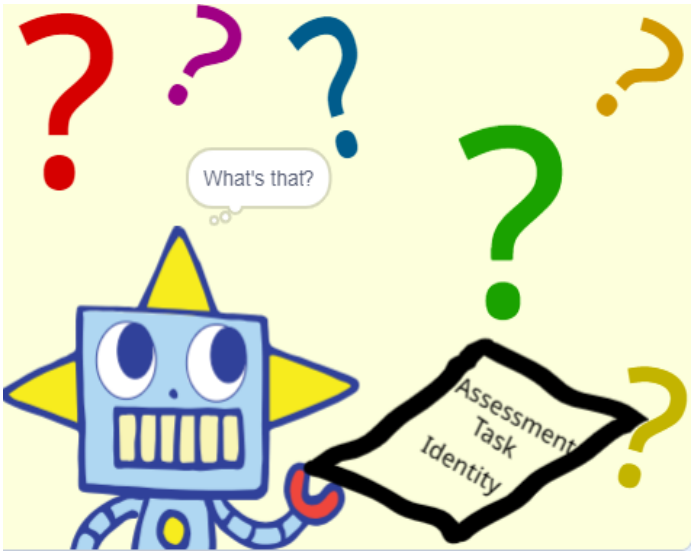

Figure 9. Teacher composed CAN Narrative - facial expression and original background.

- Figure 10 shows how Indi's puzzled look was achieved through coding blocks. The 'switch costume to' block is used to portray the facial expression combined with the original background being shown through the 'switch backdrop to' block. The size of the facial expression has also been changed to 200% using the 'set size to' block which emphasises Indi's uncertainty.

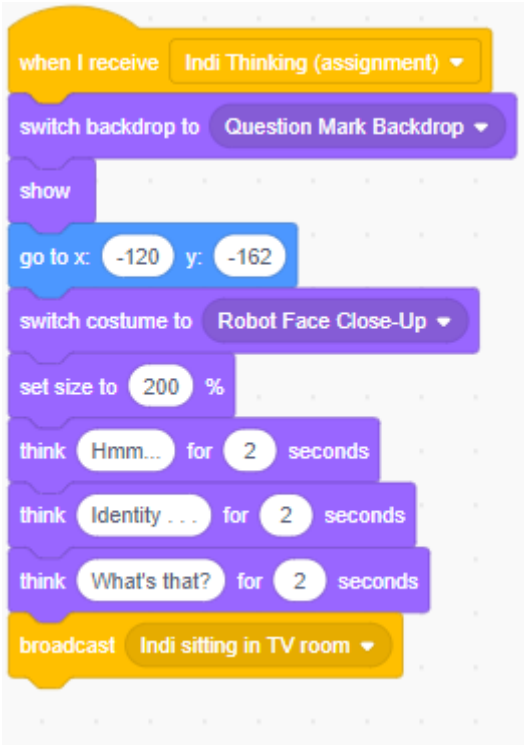

Figure 10. Teacher composed CAN Narrative - coding blocks used to show facial expression, camera shot and original background.

- Creating Motion (Figure 11): Getting your Sprites to move involves a combination of code blocks - these could include both **'Motion' (blue blocks)** and the **'Looks' (purple blocks)**. Sometimes you might even need sounds from the **'Sound' block** (light purple block) or from the green **'Text to Speech'** block to combine with the Sprite's movement. Figure 11 shows how a combination of these blocks have been used to make the Sprite Cat move over to the Egg, at the far right of the frame, and then say hello. A repeated 'switch costume' block sequence has been used to create the walking movement of the Sprite Cat whilst the blue 'go to' and 'glide' motion blocks have been used to correctly position the cat next to the Egg.

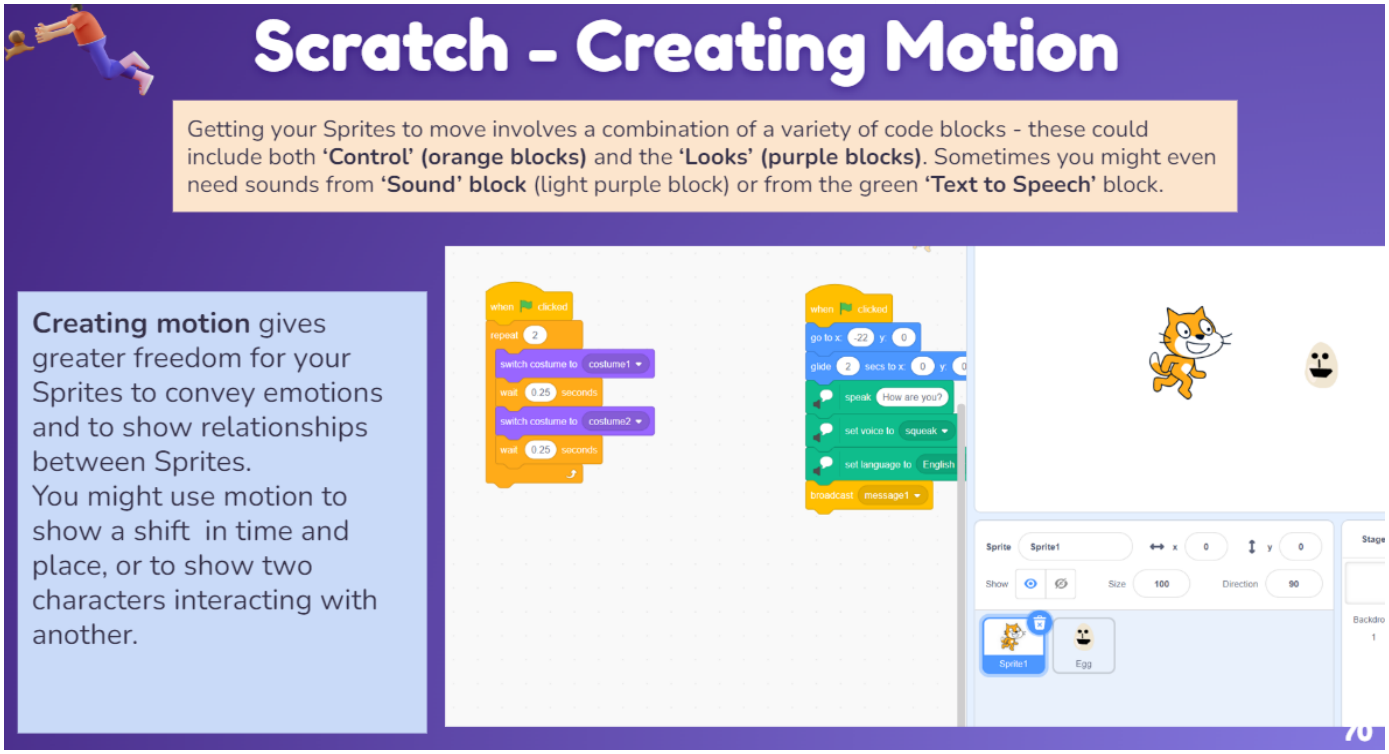

Figure 11: Creating Motion

- Walking (Parallelism): In TWO (max of 3) frames students depict their Sprite using their chosen form of media. This piece of media could be chosen from brainstorming different types of media done in class. When the Sprite walks up to the selected media, s/he needs to interact with it in some way (e.g. going to a tv and turning it on, walking to a computer and starting to type on it, walking to a book and start to read it). There doesn't necessarily have to be animated action but there needs to be a relationship between the Sprite and the chosen form of media (for coding walking see Chapter 1, Figures 5 and 7). Students are to use tips from the 1. Walking (Parallelism) Video from the online Scratch Resource Centre at: https://sites.google.com/mq.edu.au/can/home *Note:* To embed a form of media, students may need to draw it using the Paint Editor, or import a found image (to do this just hover over the 'add sprite button' and choose the 'upload' option and then select the image from your device.) If students are using an imported online image, then encourage them to find one with a transparent background or use a tool like *Remove Image Background at* https://www.remove.bg/ to remove the background of an online image.

- Broadcasts- Students must include the 'broadcast' and 'when I receive' orange 'Events' blocks to efficiently transition between different frames (scenes) within their animated narratives. Inform students to use the 'broadcast' block instead of relying on the 'when background changes' block to achieve this. If students have multiple scenes using the same backdrop, and they continue to repeatedly use the 'when background changes' block, then they'll run into problems. Figure 12 shows how a 'broadcast' block is used to signal a new event and the 'when I receive block' is used to signal when the event starts. Each 'broadcast' block needs to have a clear

name and these names should also be identified on the students' storyboards, as they plan the scenes in their animated narratives.

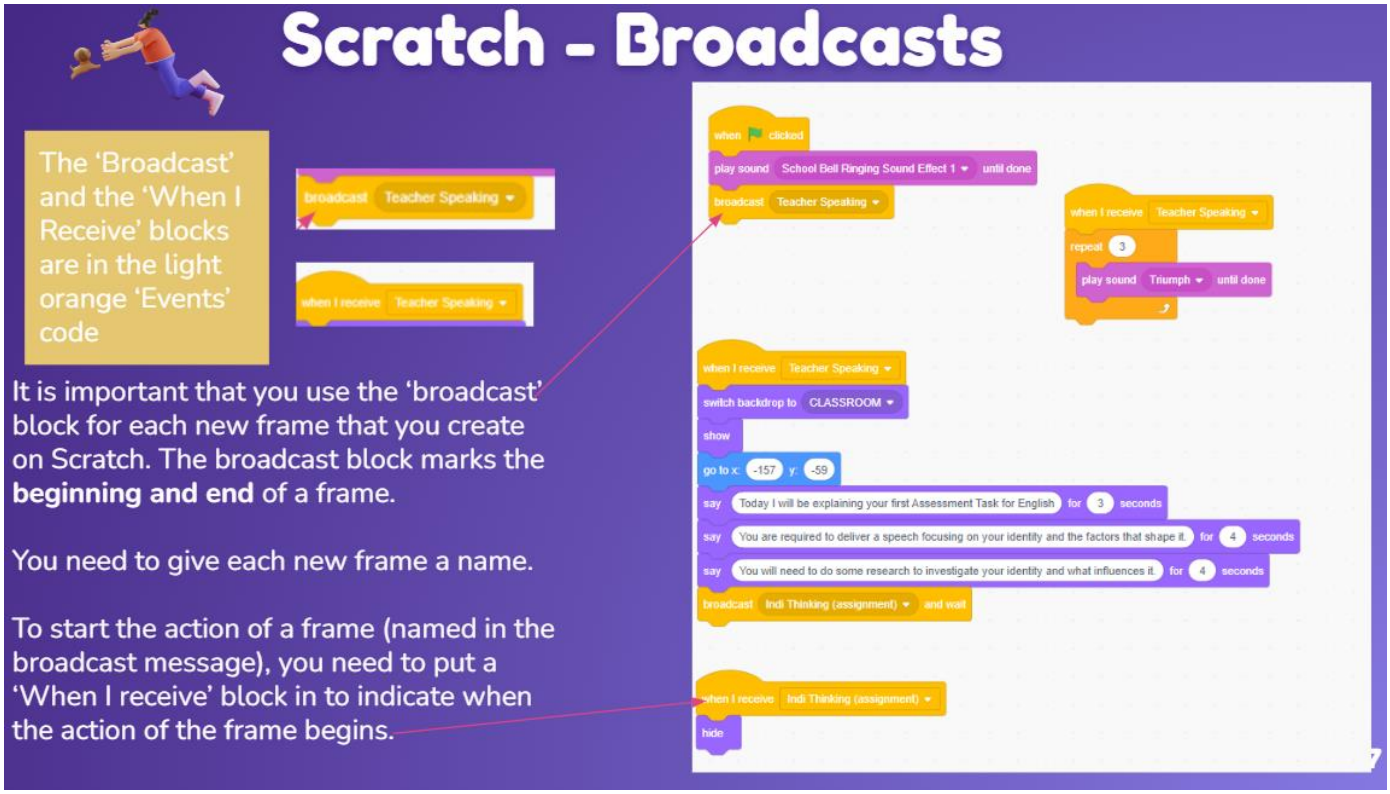

Figure 12: Using 'broadcast' and 'when I receive' blocks.

Week 3. Focus: *'The Influence of the Media'. Creating Camera Shots in Scratch and Storyboarding*

- Problem-solving activities: Create some problem-solving exercises on *Scratch* for students whereby students are presented with mini-coding projects that have code block errors which they have to solve (i.e. the coding blocks chosen aren't performing the intended function e.g. a Sprite moving from one side of the screen to the other). These problem-solving exercises could focus on coding skills already taught within the first few weeks of the unit i.e. walking, creating motion, recording voices and facial expressions. These problem-solving exercises could come from the 'Test Your Skills' activities on the *Coding Animated Narratives Resources Hub* at https://sites.google.com/mq.edu.au/can/home.

- An example of one of the 'Test Your Skills' activities, based on creating complex motion, is shown in Figure 13. Students are required to rearrange the blocks into the correct sequence to make the Scratch cat start to fly from the bottom left corner of the screen, then fly upwards to the centre, and then fly horizontally to the right edge of the screen. Once the blocks are arranged in the correct order then the student can

hit the green play button and they will see Scratch cat perform the correct actions in the preview screen.

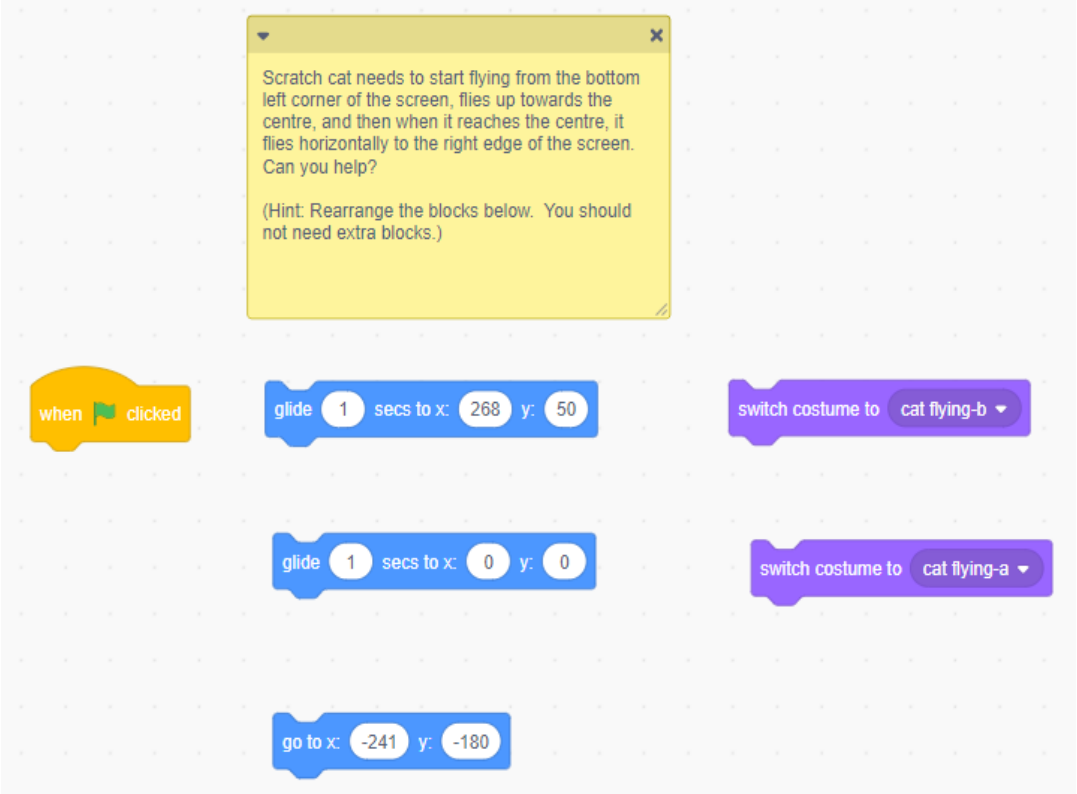

Figure 13: A 'Complex Motion' Problem-Solving Activity

- Additional Example of a problem-solving activity: Show students a sequence of coding blocks (such as in Figure 14) and ask students some probing questions about why the blocks are placed in that way, and what effect it would create with the sprites, as well as how they could be sequenced differently to achieve an alternate effect. In the sequence of blocks in Figure 14, students are asked why a repeat block is needed with the costume changes, as well as why wait times are needed in-between the costume changes. In this example, the teacher could further test the students' knowledge of repeat blocks and wait times by asking why the repeat block goes for 5 seconds and why wait time is .3 seconds in each wait block.

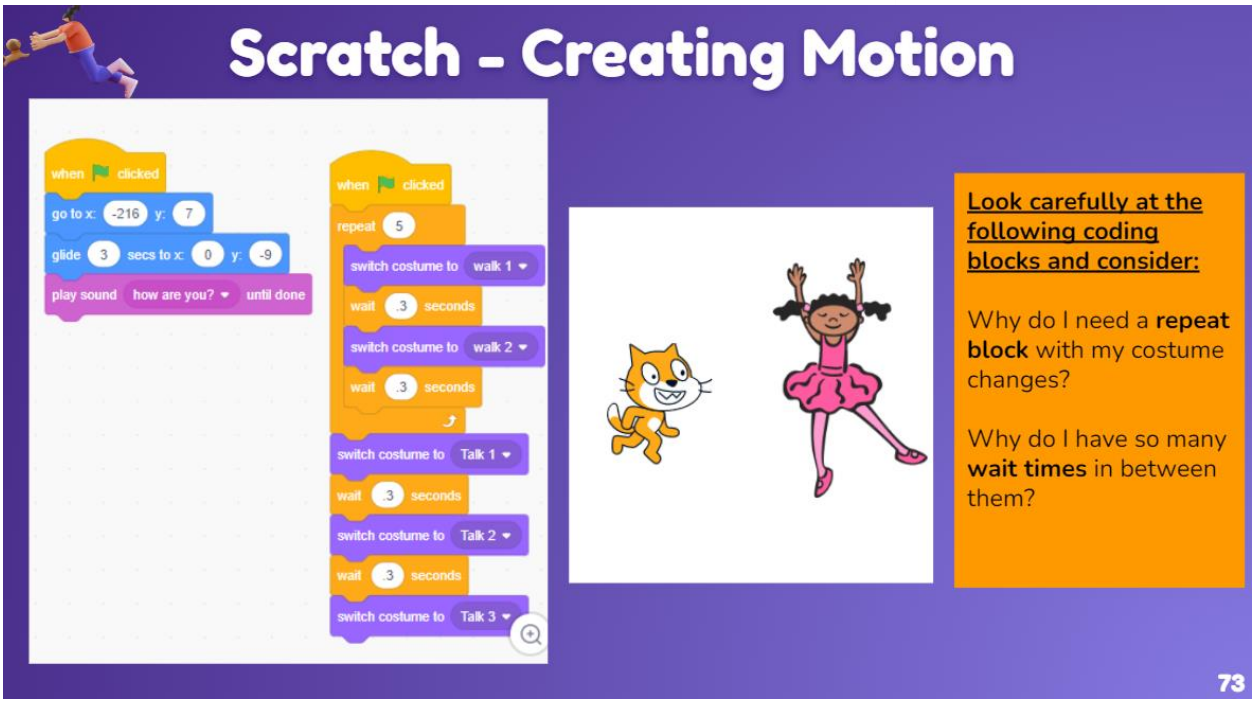

Figure 14: Additional problem-solving activity

- Camera Angles/Shots: Students create a short 5 to 10 second scene showing their Sprite having an emotional reaction to a form of media. This must incorporate a close up shot to highlight the emotional reaction of the Sprite to the chosen form of media. Students could also incorporate a sound effect and/or background music track to amplify the emotional reaction (e.g exciting upbeat or melancholy tone). The teacher teaches the coding steps required to create an emotion (e.g. close up of face, use of sound effect, add background music to accompany the emotional reaction and costume changes using face and body). Figure 15 shows how to code a close-up shot of an egg Sprite combined with a line of dialogue. A new broadcast block name entitled 'egg zoom in' is created and the 'when I receive block' is placed at the start of the sequence to indicate what needs to happen. The 'switch costume' block is used to change the costume to the Egg's shocked facial expression (Egg2), as seen in Figure 16. The 'set size to' block is then set to 800% so a close-up shot is created of the egg's face, and this is followed by a 'say … for … seconds' block which allows the egg to speak. Additionally, sound effects or background music can be added to this sequence by using the 'play sound … until done' block (located with the 'Sound' blocks) and selecting the sound (either from the collection of pre-recorded Sound effects on *Scratch* or from an audio file already saved on the student's device). Further instructions on how to combine multiple close-up shots in a dialogue between two Sprites is also available in the video on '6.Camera Angles' on the *Coding Animated Narratives Resources Hub* at https://sites.google.com/mq.edu.au/can/home. This resource also contains a 'Test Your Skills' activity requiring the students to recreate the project with an additional close-up shot.

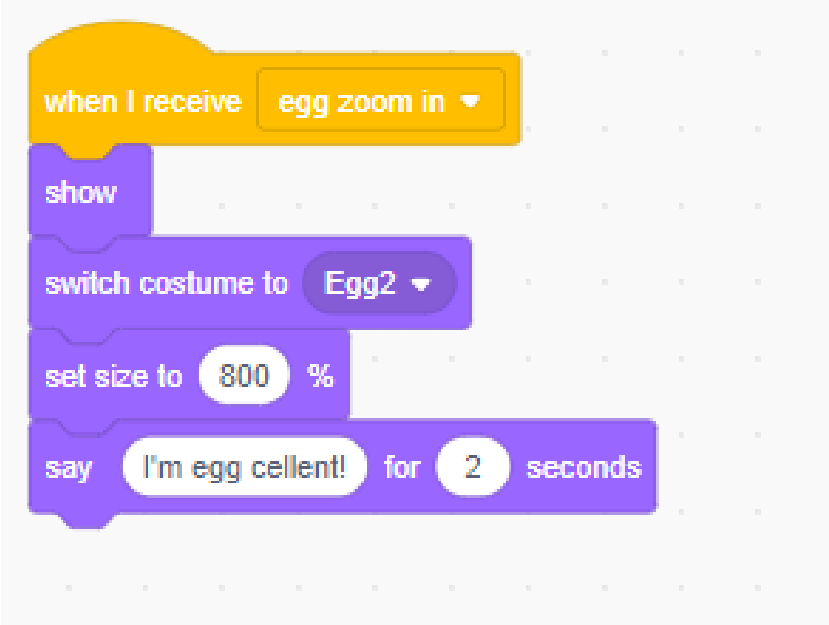

Figure 16: Creating a close-up of an egg Sprite combined with dialogue.

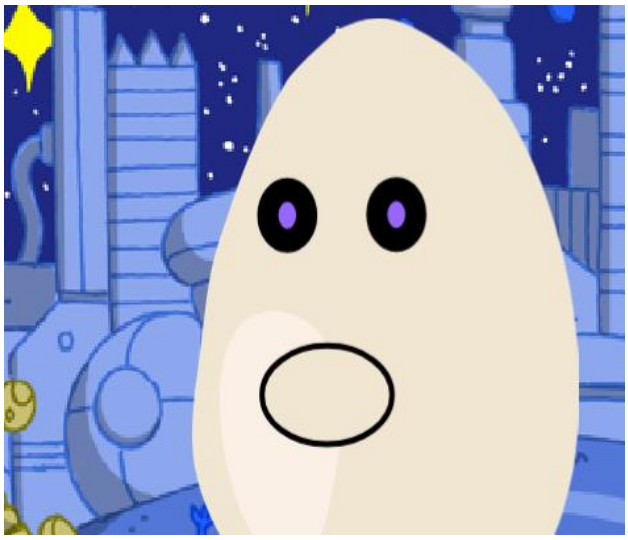

Figure 17: Close-up of an egg Sprite combined with dialogue

- Storyboards: A storyboard is a graphic organiser that plans the structure of a narrative. Each frame provides a visual representation of what happens in each moment in the narrative. Students are to begin planning their narratives using an assigned storyboard devised by the teachers (Figure 18). One row of storyboard frames only is shown in Figure 18, but typically three or four such rows appear on one page, and twelve scenes should be sufficient for the short, animated narratives the students create.
  In each frame of the Scratch Storyboard students will need to:
  a) draw a clear picture of what happens.
  b) write down the background changes/costume changes (if required)
  c) record any dialogue of the sprites.

d) give each frame a name to eventually make it into a broadcast message.

Storyboard for Scratch Narrative - Media and Identity

Scene #: Description/Background/Type of shot: Length of scene/Broadcast message:	**Scene #:** Description/Background/Type of shot: Length of scene/Broadcast message:	**Scene #:** Description/Background/Type of shot: Length of scene/Broadcast message

Figure 18 Excerpt from storyboard proforma

- Reviewing the Features of a Storyboard: Examples of storyboards are shown to students, including the one made by the teachers in their construction of their own *Scratch* narrative (Figures 20 – 22). They can also be shown example storyboards from professional animators, some of which can be found at this link, *28 Storyboard Examples to Inspire You*: https://boords.com/storyboard-examples#animation-storyboards. This review of storyboard features activity is seen in Figure 19.

Figure 19 Reviewing the features of a storyboard

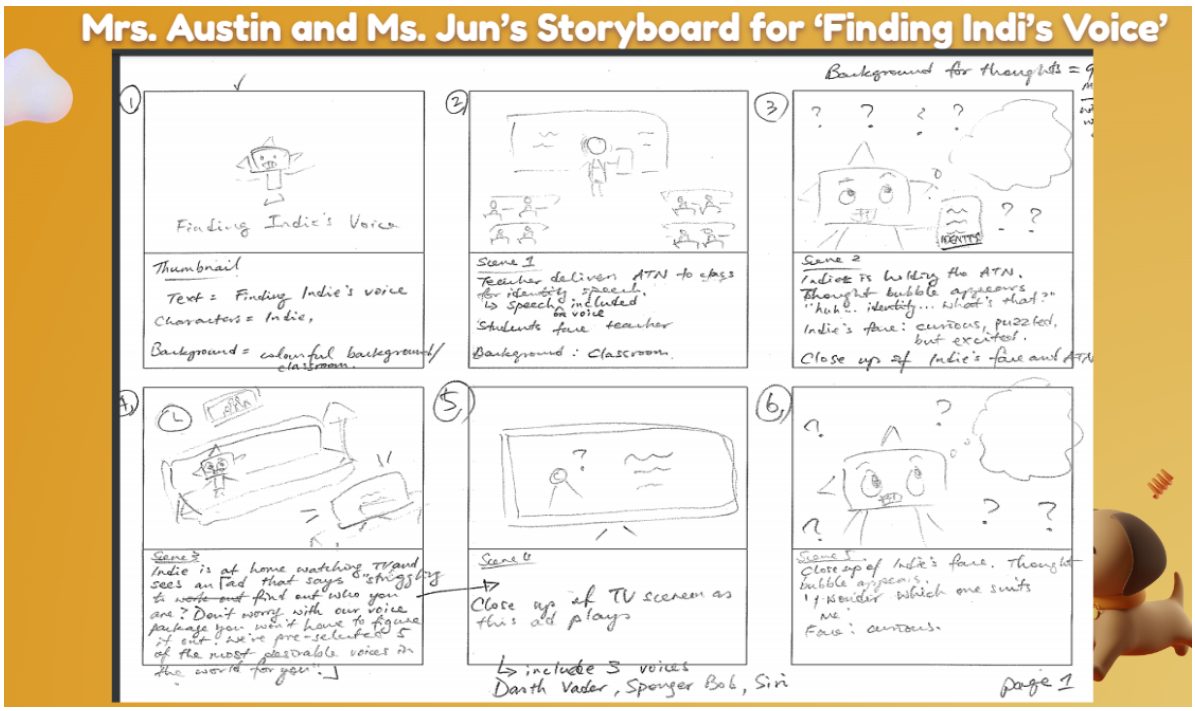

Figure 20 Teacher Storyboard for *Finding Indi's Voice*

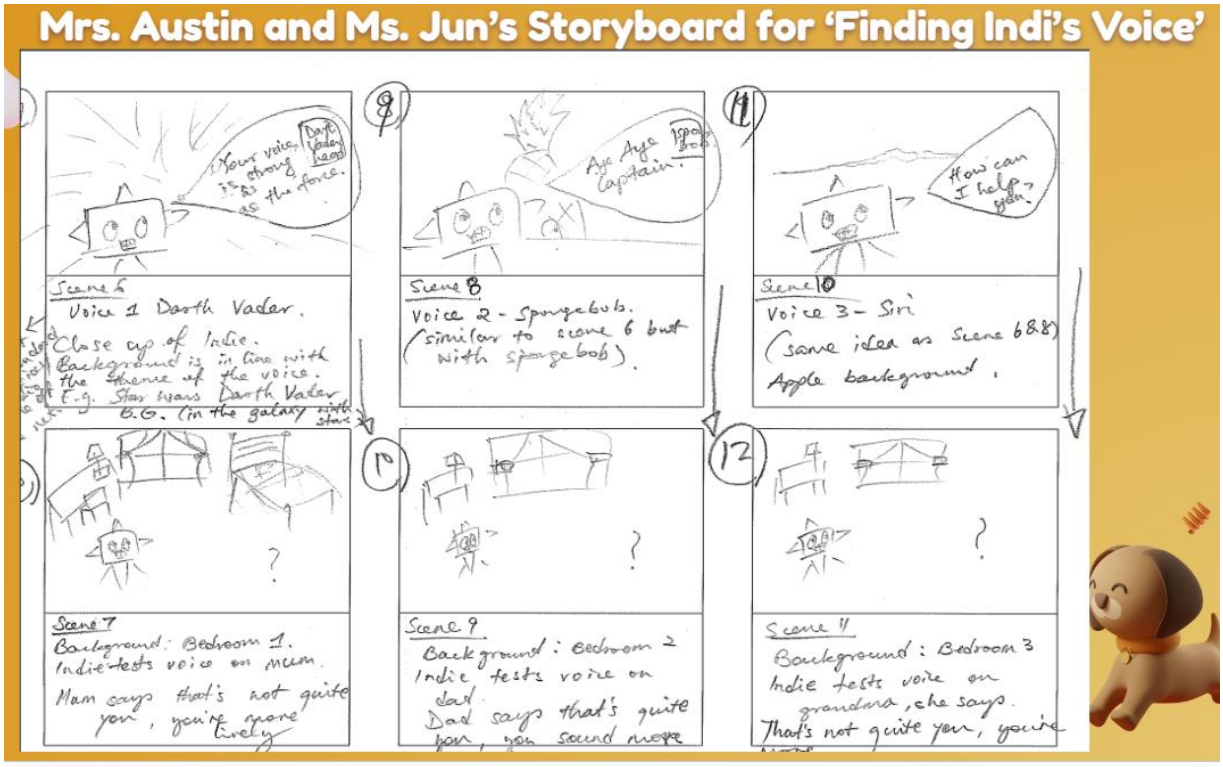

Figure 21 Teacher Storyboard for *Finding Indi's Voice*

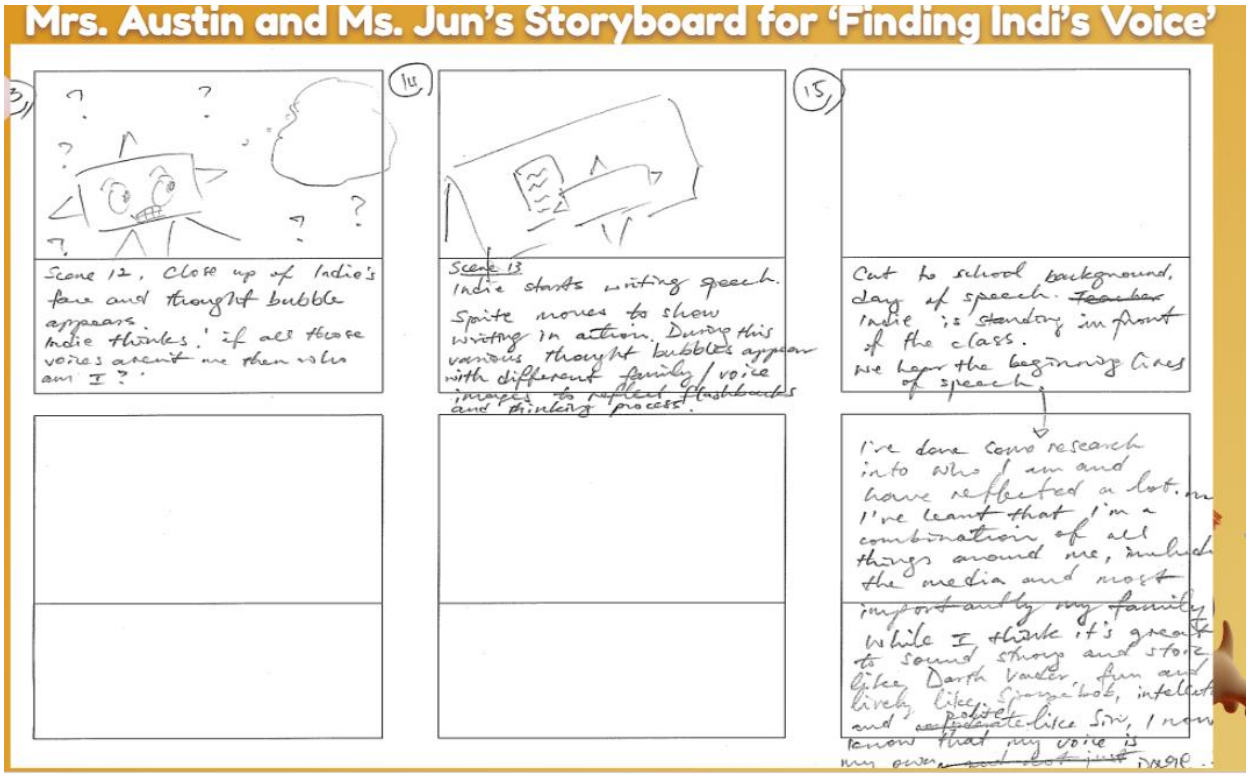

Figure 22 Teacher Storyboard for *Finding Indi's Voice*

Week 4. Focus: *'Identity, Place and Culture' and Examining Narrative Structure in Animated Narratives*

- Developing Narrative Structure: Students review with the teacher core elements of a narrative including orientation, complication, evaluation, resolution and coda (Figure 23).
  Students are asked to answer key questions to help them develop ideas for their storyboards:
  1. What key idea about the way the media shapes our identity did I want to explore in my coded animated narrative? *(e.g. the media can be used positively to find one's sense of voice…. It is important to remain true to who you are despite the media's influences)*
  2. Who are my key characters?
  3. What is going to happen in each key part of the narrative structure listed below:
     - Orientation:
     - Complication:
     - Evaluation:
     - Resolution:
     - Coda:
  4. What knowledge of coding will I need to complete this narrative?

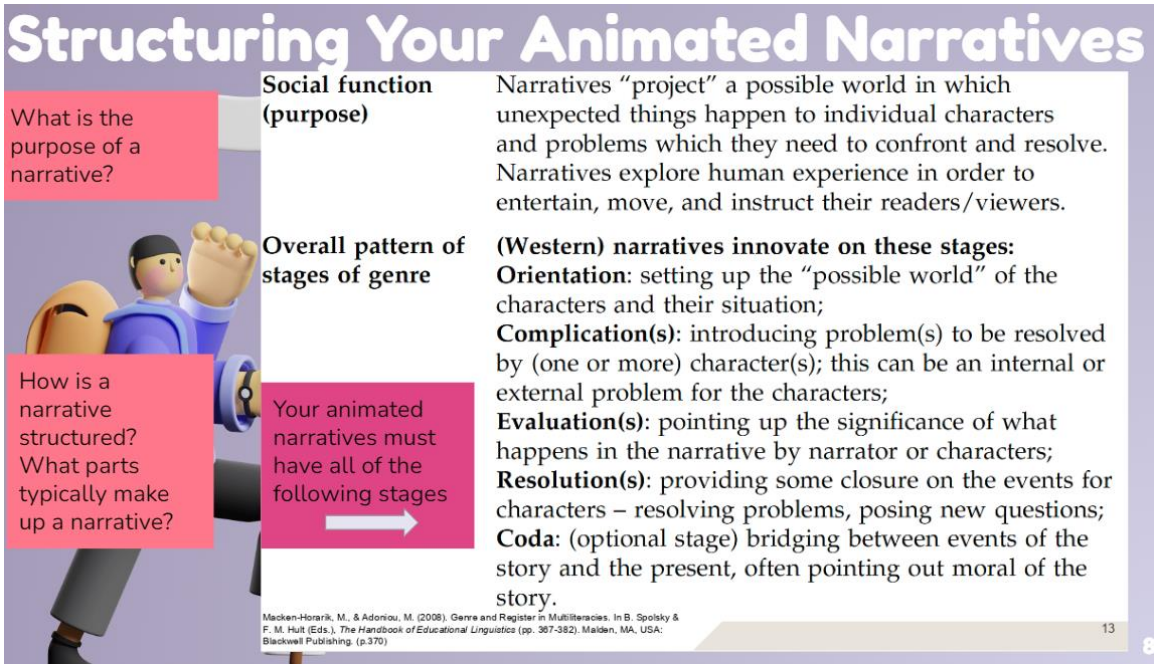

Figure 23: Core elements of a narrative

- Examples of narratives (e.g., written or digital; short-story or animation) using each of the required elements should also be provided to students. Students can identify what happens in each core element of the narratives and discuss with the class what makes each one effective in the stories that are shared. Examples of resources to facilitate this discussion of a short story and an animated narrative are shown in Figures 24 and 25.

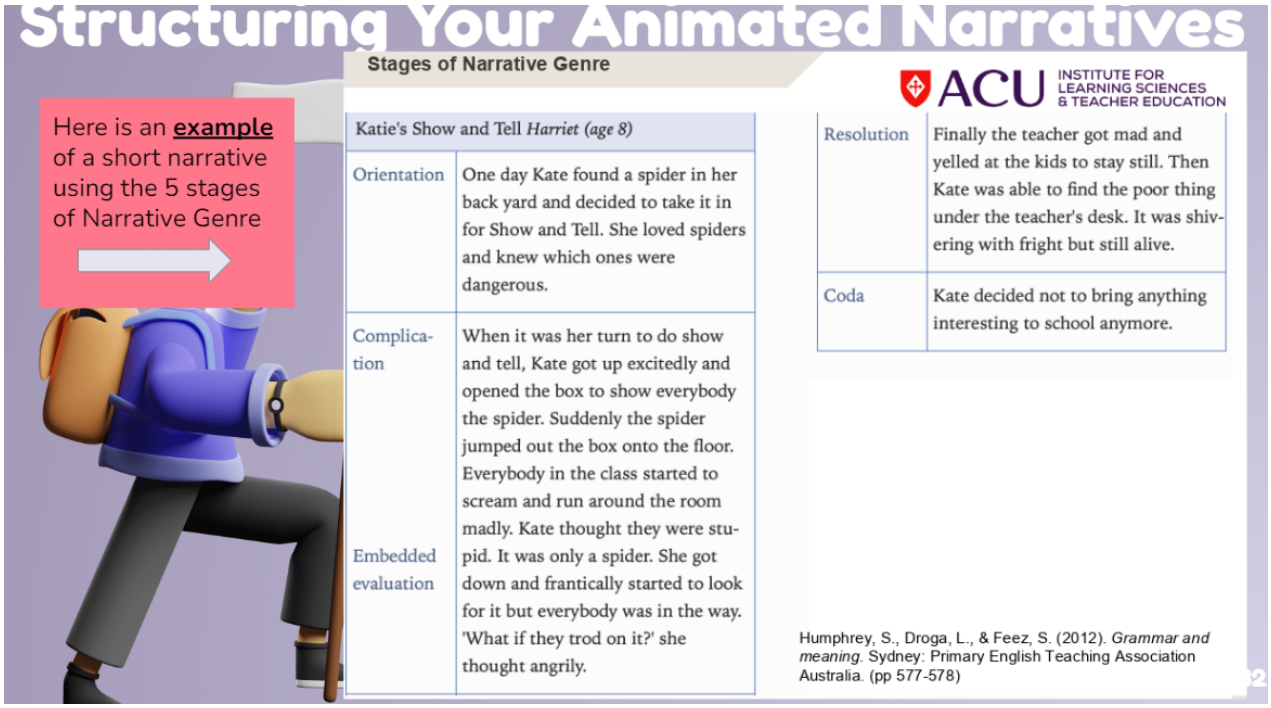

Figure 24 Example of a short story using the 5 narrative elements.

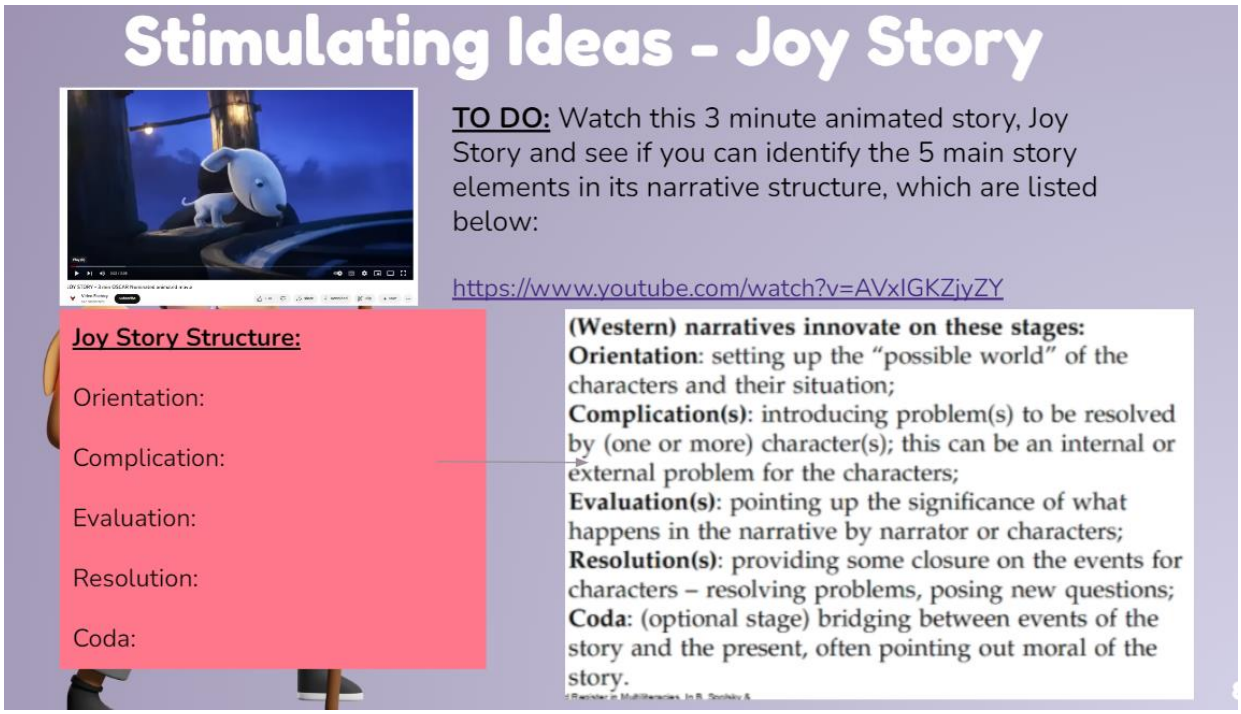

Figure 25 Example of a short animation using the 5 narrative elements.

- Suggested ideas for Scratch narrative: Students can be provided with some suggested ideas to help them construct their plots (with a focus on how their character's identity is shaped by the media). Some suggested ideas include:

a) Your Sprite character/s might be reading a book and might be transported to a new world and go through a challenging experience (e.g. climbing a mountain, learning a new language or a new skill) and then feel a strong sense of accomplishment. They might also be inspired by the qualities they see in their favourite character in the book.
b) Your Sprite character/s might be playing a game on their laptop and want to become one of the characters. They could then try to change aspects of their own identity.
c) Your Sprite character might have just lost their semi-final of a sporting match and they turn to their favourite celebrity on social media for inspiration to win their grand final match.
d) Your Sprite might be trying to make a *Tik Tok* video dancing to their favourite song and when they post it live, they realise that they are really fabricating an aspect of their identity and aren't being true to themselves.

- Storyboarding: By the end of this week, students finalise their storyboard and submit it to the teacher to review to ensure there is a clear and purposeful narrative structure.

Week 5. Focus:*'Techniques used to shape identity in the Media' and Creating Loops in Scratch*

- Creating Loops: Loops are important in creating repeated sequences of movements. In the 'Control' section of block code, there are three types of loops: 'repeat x number of times', 'repeat until', and 'forever'.

- Loop activities:

1. Flying: teach students how to create a flying motion for a Sprite. Figure 26 shows how Scratch Cat can be shown to be flying above repeated skyscrapers. The code that is shown is for the Skyscraper Sprite.

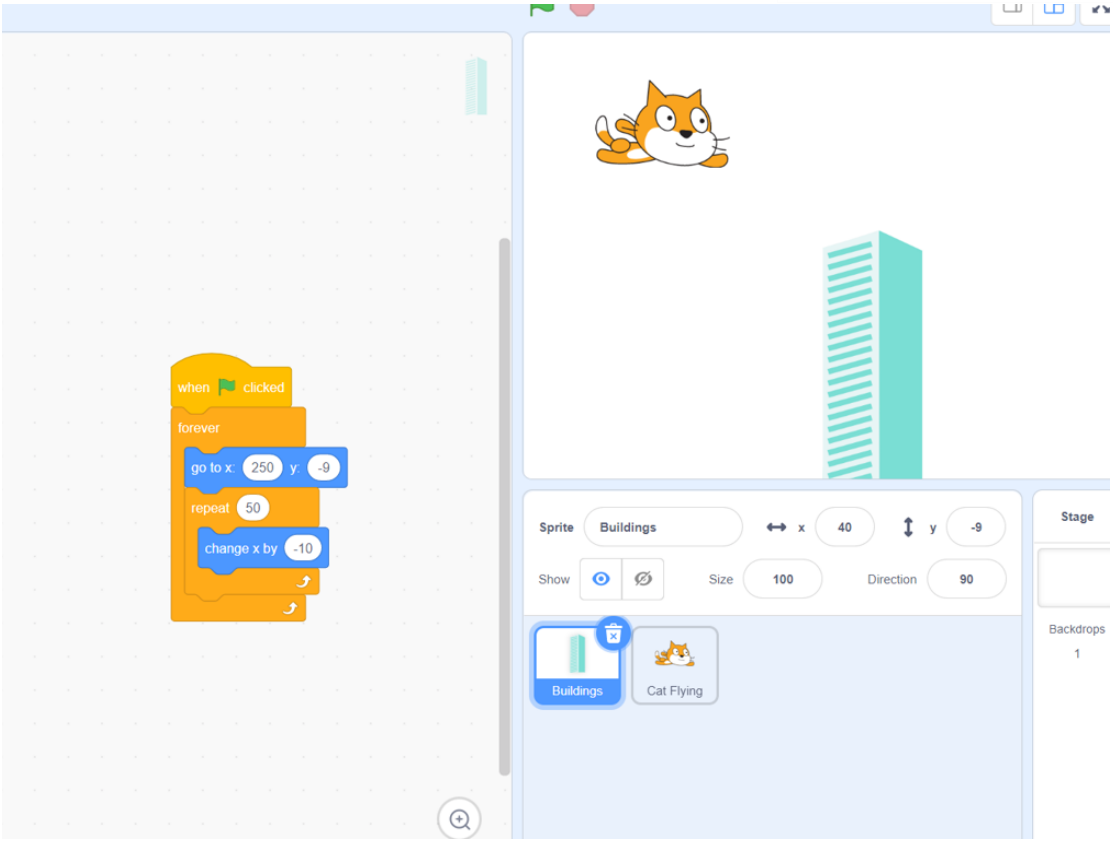

Figure 26: Flying loop code - Skyscraper Sprite

The following are the steps to depict Scratch Cat flying above a city of skyscrapers

i. A skyscraper is created through choosing a new Sprite from the pre-existing ones on *Scratch*.
ii. The positions of the coordinates of the skyscraper are first allocated using the 'go to x: y:' block.
iii. The skyscraper must first be positioned at the far right of the frame (to enable it to then move to the other side of the frame).
iv. Then the movement is repeated 50 times using the 'repeat' loop block to make the skyscraper move quickly accompanied by the 'change x by' block to -10 to make the skyscraper move to the left side of the frame.
v. The 'forever' loop code is then embedded within this sequence to ensure that the skyscraper never stops moving, evoking the effect of the *Scratch* cat continuously flying over a long distance.
vi. Figure 28 shows the code that is needed for the *Scratch* cat to appear to be flying above the skyscraper which is done by using the go to x: y:' block.

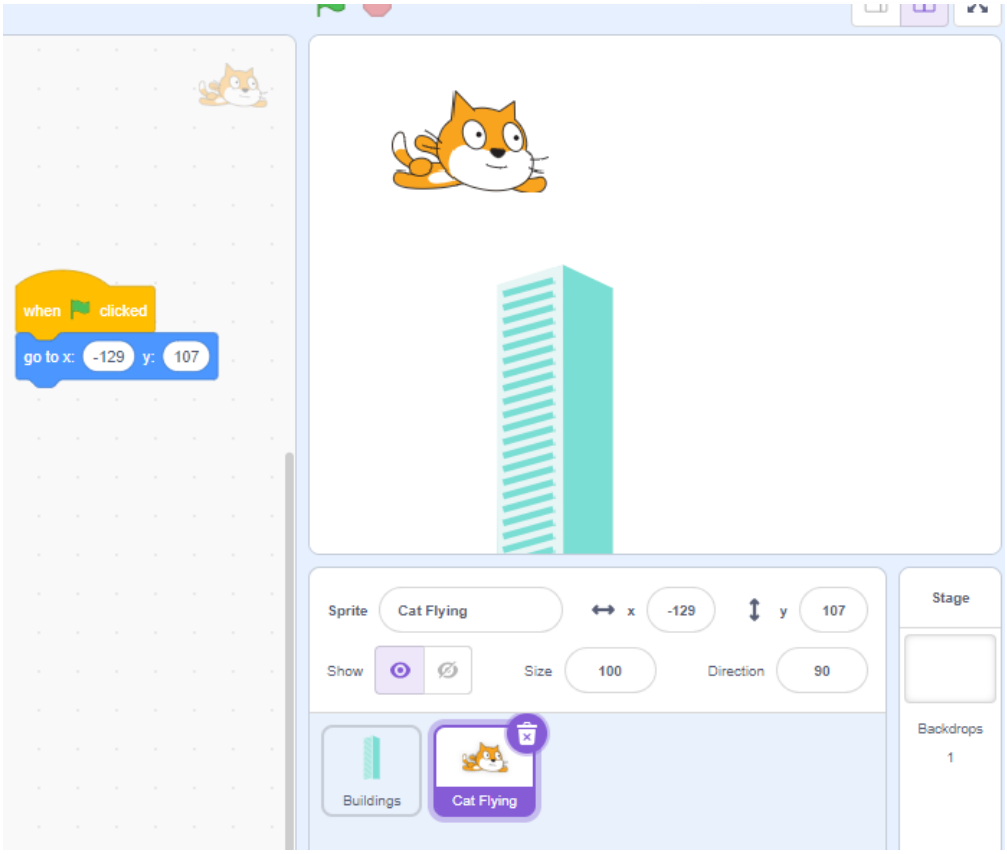

Figure 27: Flying loop code - Cat Sprite

2. Making a sprite smaller: Figure 28 shows how students can make a Sprite become gradually smaller (by falling into a hole). The size of the Sprite is first set to 200% using the 'set size to' block so that the sprite always begins at a larger size. A repeated loop sequence is then created using the 'repeat' block and within this the 'change size block' is used to change the sprite's size by -10 and this is combined with a wait time of 0.1 seconds using the 'wait …seconds' block to ensure the Sprite gets smaller quickly.

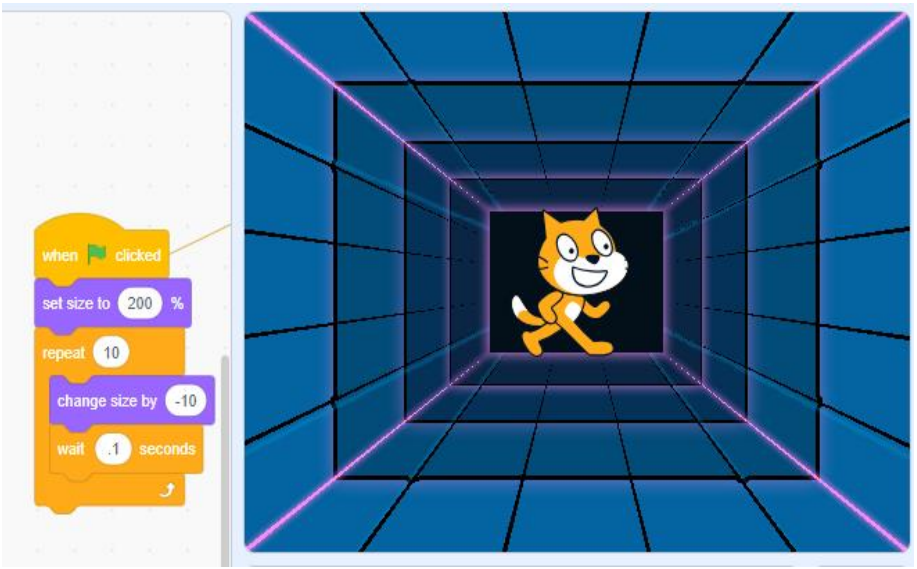

Figure 28: Making a sprite smaller

3. For further practice, students complete the 'Test Your Skills' problems under the 'Loops' section in our *Scratch Resource Hub* (https://sites.google.com/mq.edu.au/can/home). The teacher can do the first one together with the class, and then the rest will be done by the students, individually.

- Developing *Scratch* Narratives: Students continue to work collaboratively to develop their animated *Scratch* narratives. Teachers continuously provide informal feedback as they observe students' progress in class. The teacher reminds students of the key *Scratch* coding skills already covered in class (e.g. creating motion, camera shots/angles loops, broadcasts etc.), where necessary. Students should have coded at least 30 seconds of their *Scratch* narratives by the end of this week.

- Formative Feedback on Scratch Projects: The Teacher provides feedback to the whole class on common areas for improvement within students' Scratch narratives. In week 5 of the project, we discussed the following feedback with our Year 7 class, and we posted it on our Year 7 English *Canvas* (https://www.instructure.com/en-au/canvas) page:

    - Consider grouping instructions under one broadcast (rather than multiple).
    - Make sure that your Sprite's facial expressions and background music etc. align with the emotion you are trying to display in that frame. For example, if it is sad - sad music playing in the background with maybe a frown etc.
    - Break up your text in the speech bubbles so that it is easier to read.
    - Refine your transitions between costume changes to ensure a smooth flow of action.
    - At the beginning of your narrative, ensure that you are always establishing your context (e.g., introduce the names of the characters and explain why they are at a specific location).
    - Ensure a logical sequence of events in the plot of your narrative.
    - Make sure the action in your frame is clear and there are no objects blocking your Sprite/s.
    - Timing of sound effects needs to match action within your frames.
    - Consider being more effective with your choice of code block (e.g. use a repeat block or create a block to minimise crowding and lots of wait times).
    - Do the events always have to be associated with bullying? Are there other events that make you feel sad?

Week 6. Focus: *Using Red Blocks on Scratch and Developing Scratch Narratives*

- Red Blocks: Blocks can be useful to create a repeated series of actions for a Sprite (e.g. background changes you want to recur and also repeated movements, such as repeated mouth moving for the same Sprite to show them speaking).

- Figure 29 outlines how a red coding block was used within our teacher-made CAN in order to create the repeated scene of the robot, Indi, questioning its identity. We needed to use this repeated sequence to show how Indi always needed to think about her identity after trying each new voice. The red 'define' block was given a name - Indi Questioning - and within this a sequence of Looks blocks were used including: 'switch backdrop to' to show the question mark backdrop, the 'switch costume to' to show Indi's thinking face and the 'set size to' to show a mid-shot of Indi. This was accompanied by a 'go to x: y:' motion block to determine the intended position for Indi.

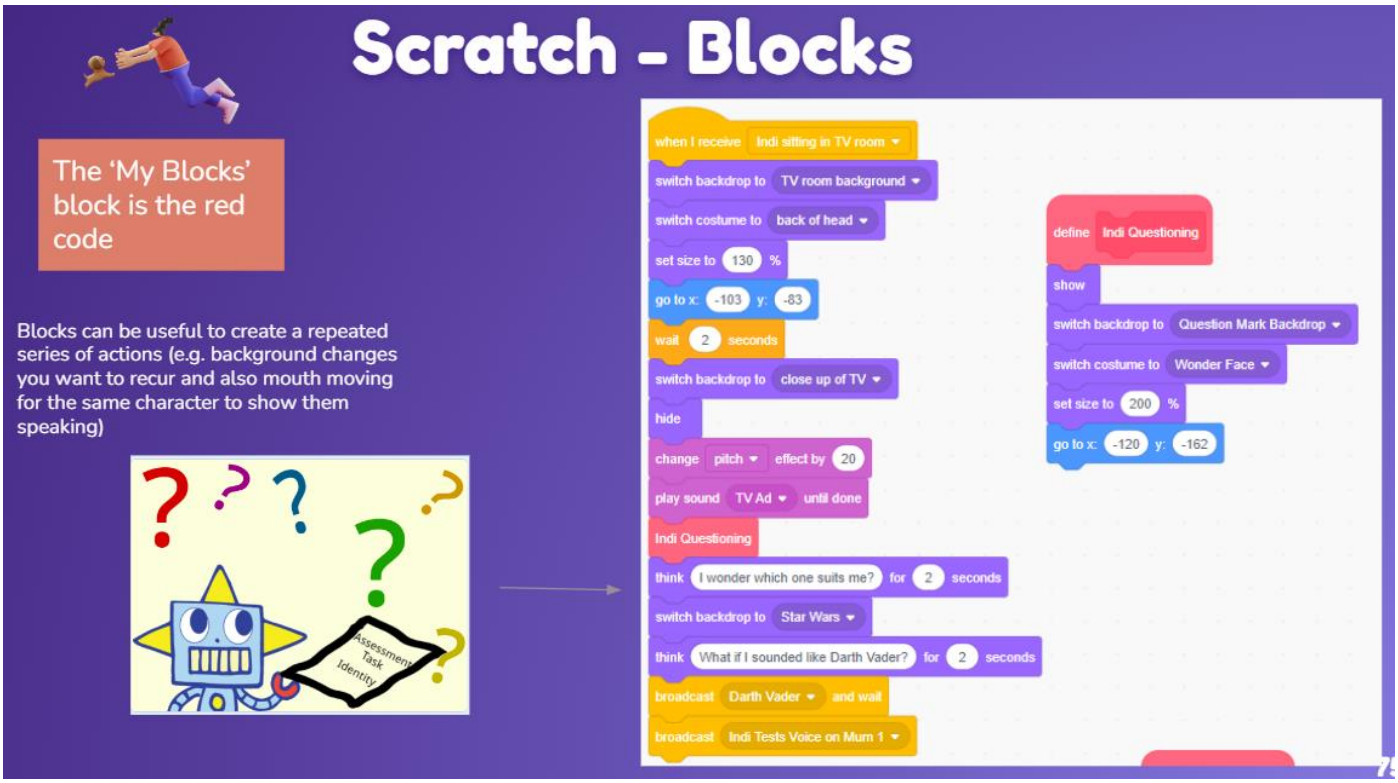

Figure 29 Red Blocks

- <u>Problem-solving activity using the red block:</u> Give students a sequence of coding that uses a red block and ask them a probing question which encourages them to think critically about a problem with a red block code, as seen in Figure 30. Figure 30 shows how students can be asked to consider why wait times are needed in-between costume change blocks to create the effect of a Sprite's mouth moving. We took a sequence of coding from our CAN, in which Indi's mouth was moving, and discussed the importance of wait times to ensure Indi's mouth could be seen from closing to opening to reflect he robot's speech.

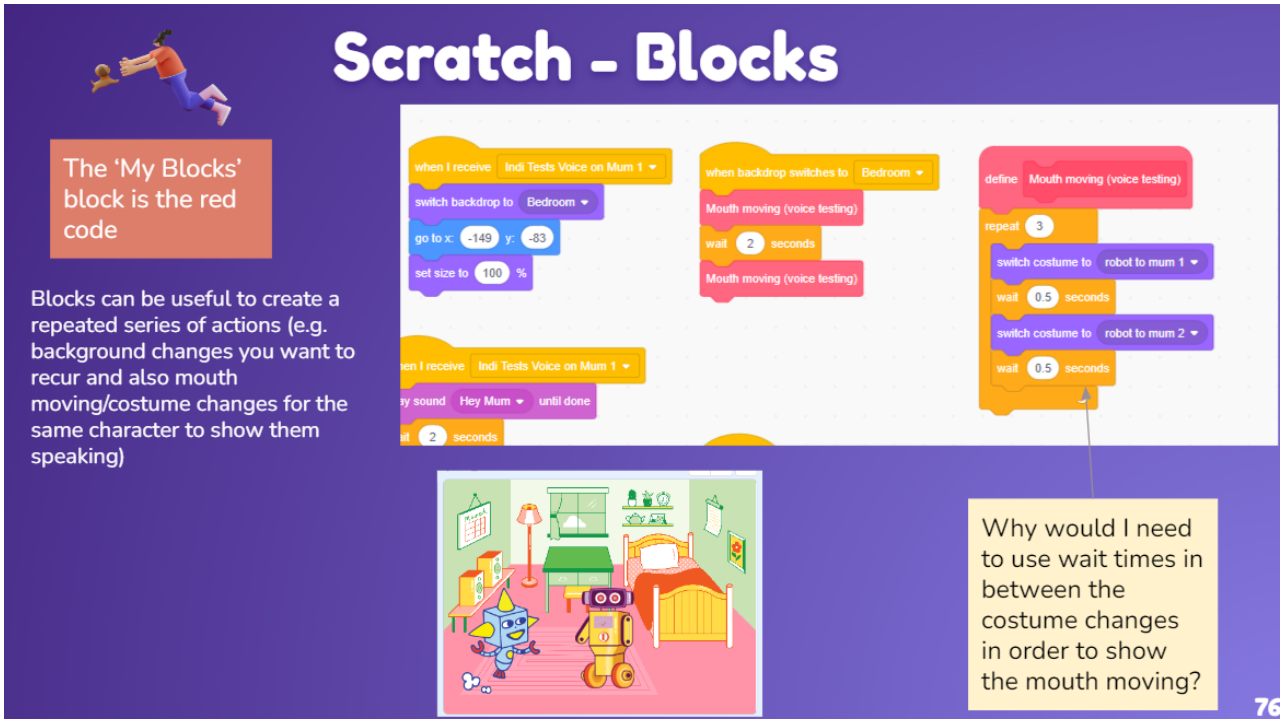

Figure 30 Problem-solving activity using the red block

- Developing Scratch Narratives: Students continue to work collaboratively to develop their animated Scratch narratives. Teacher continuously provides informal feedback as they observe students' progress in class. The teacher reminds students of the key *Scratch* skills already covered in class (e.g. creating motion, camera shots/angles loops, broadcasts etc.), where necessary.

- By this time it is important that students have completed all of the 'Test Your Skills' activities, as well as watched all of the tutorials videos from each section of the *Coding Animated Narratives Hub* (https://sites.google.com/mq.edu.au/can/home). Students can access this hub at any time for further revision on key *Scratch* skills. Some sections of the online hub that aren't able to be completed in class can be done by the students independently for homework.

Weeks 7-8. Focus: *Developing and refining Scratch narratives*

- Developing and refining Scratch projects: Students work on their Scratch projects in class, ensuring they are addressing the assessment criteria. The teacher assists students as needs arise within their projects. Teacher asks students to time their projects to ensure they are within the 1-2-minute timeframe.

- Gallery walks: Give students time to look at each other's CAN projects. Students leave their projects on their laptop, walk around the room and play whichever one they find interesting. They often learn something new from each other. Teachers can then show a few CAN projects on the smartboard and ask the students what they think is working well, and what can be tweaked to make it better, in terms of both

coding and narrative elements. This gives students the opportunity to also ask their peers for help if they get stuck.

Week 9. Focus: *Submission of Scratch Projects*

- Teacher asks students to upload their animated Scratch narratives online to a *Scratch* studio that has already been created by the teacher for their class.