Teacher notes

- This project really grew arms and legs and took 2 x 1h45 sessions in the end. If you are carrying this over more than one session you will need storage boxes/trays for each team.
- Ensure that it is a chain reaction machine being built and not just a single marble run etc.
- The children were wildly enthusiastic about this and being able to video it. Their creativity astounded me!
- Videos can be shared with class teachers, other classes, in assemblies...

STEM Challenge Project

Chain reaction challenge



Learning Intentions

- To build up our **STEM skills**:
 - Teamwork
 - Communication
 - Creativity
 - Critical Thinking
 - Resilience
- To use the **engineering design process** to solve a problem

What are your success criteria for this project?

- I would like to get better at
 - teamwork
 - communication
 - creativity
 - critical thinking
 - resilience
- How can you get better at this? Write down some strategies for yourself.
- At the end you will decide if you have been successful.

Chain reaction machine

- <u>http://no-ads-youtube.com/video/bg-binggo/amazing-chain-reactions?v=1pl8Xqlxgg4</u>
- <u>http://no-ads-youtube.com/video/viral-maniacs/most-amazing-chain-reaction-machine-mechanism-videos-domino-effect-rube-goldberg?v=CxunCt-rd2Y</u>
- <u>https://www.youtube.com/watch?v=p8Wwq_B5S7I</u> hints and tips

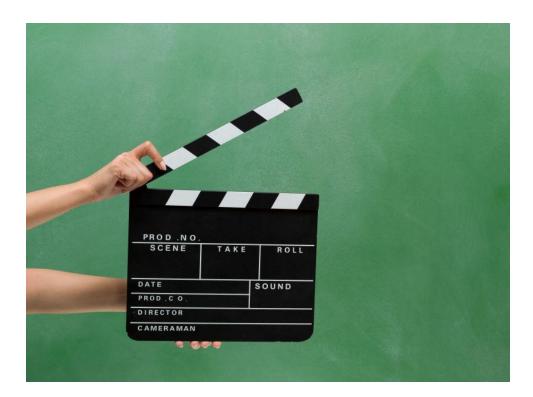
Chain reaction challenge

- Design and build a chain reaction machine which has as many steps as possible
- You will be given a choice of materials:
 - Straws max 6
 - Lollypop sticks max 6
 - String
 - Foil
 - Card
 - Card boxes variety of sizes to be cut up
 - Old Sellotape rolls
 - Paperclips
 - Yoghurt pots max 1
 - Marbles, balls, beanbags
 - K'nex
 - Sellotape
- You may bring in your own items from home: dominoes max 10, balls, wind up toy, car, etc
- Test your chain reaction machine and try to improve it



Video

• Make a video of your Chain Reaction Machine – this will probably take several attempts – keep engineering to get it right!



What can you learn from others?

- Learning loop look at other people's work.
- How did other groups tackle the STEM challenge?
- Which ideas did you see that were successful?
- What did you see that hadn't worked, or that you wouldn't use?



Evaluation

- Discuss how your team approached the STEM challenge
 - What did you learn?
 - Which STEM skills did you develop?
- How could you improve your design?
- Can you think of another similar STEM challenge you could set yourself to try at home?

Self-assessment at end of project

- We have been developing our STEM skills by doing STEM challenges:
 - Collaboration
 - Communication
 - Critical thinking
 - Creativity
 - Resilience
- Use a felt-tip pen to update your previous self-assessment sheet.
 - Tick the boxes to show how you feel about each STEM skill.
 - Circle the STEM skills you feel you have developed during these STEM challenges.