Upper Key Stage 2 – *Morphing Image* – Theme Guide

Children use 3D graphical modelling to create and explore objects. They review operating systems. They evaluate films and animations, going on to create live film or animations for specific audiences. They demonstrate their understanding of copyright and ownership.

Learning objectives for the term
To understand 3D graphical modelling enables us to explore objects that may not exist, or could be difficult to observe in other ways.
To understand that digital graphical tools can support the creation of models, enabling them to be explored and developed in 3D. *Use tools in the software to create a "fly-through" to support others in viewing the model.*
To understand that every computer needs an operating system to manage a wide range of processes.
To analyse/evaluate digital films and animations, considering how they are used to inform, persuade and entertain audiences. 🛡
To understand film/animation can be stored, shared and published locally and online, but that this sharing may not be appropriate. 🛡
To understand the stages in producing a live film and/or animation. *The live filming could include green screen filming.*
To understand the need to test and review their work with an audience.
To develop ways to use animation to meet specific audience needs.
On-going learning objectives
To organise their work confidently in agreed locations, using appropriate file-naming conventions and folder structures.
To save drafts of their work and use these to support critical review in which they evaluate and improve their work.
To demonstrate understanding of the rules around copyright, ownership and plagiarism and to apply these across their computing work. 🛡
To understand some of the methods they can use to report concerns about content and contact. 🛡

Vocabulary – see Glossary in main scheme document for definitions (for terms in blue)	
storyboard, (video) transition, (video) trimming, *operating system,* *Graphical user Interface, (GUI, pronounced 'gooey')*	*Windows,* *DOS (Disk Operating System)* *common file types,* *copyright,* *plagiarism*

Possible resources for this theme (further resources are suggested with the explanatory notes below. Note that these are examples and not formal recommendations.)	
Video Editing Software • iMovie (freely available app for iPads® purchased from September 2013. Mac® version also available.) • Windows® Movie Maker (free, for Windows® computers.) • Serif® Movie Plus (for Windows computers.) • Green Screen app by Do Ink – app (iPad, use to create green screen projects.)	**Animation Software** • Stop Motion Studio (free version available, iPad®) • iMotion app (free version available, iPad®) • I Can Animate - app (iPad® version and desktop/laptop version) • ZU3D (iPad version and desktop/laptop version) **3D Modelling Software** • Trimble Sketchup® Make (free version for schools, now Chrome / G Suite based.) • 2Simple 2DIY 3D (as part of Purple Mash.) • LeoCAD (open source, Windows software)

Primary Computing Scheme online materials that are referenced in this guide can be accessed from:
http://www.hertsforlearning.co.uk/user/login

You will need to be logged into your school account and have a current subscription to the Primary Computing Scheme to gain access. The materials can be accessed from the *My Resources* link at the top/right of the screen, once you are logged in.

Key learning objectives
(some objectives might be used for more than one lesson)
To understand that 3D graphical modelling enables us to explore objects that may not yet exist, or which could be difficult to observe in other ways.

- Discuss where 3D modelling is used in the world around us. E.g.: Games, town planning, simulations for training, designing buildings. Show some videos and discuss how the 3D modelling shown might be used to help us. See accompanying sheet: [*Links to videos of 3D graphical modelling.*]
- The free iPad® app "Essential Skeleton 4" may be a good reference.
- Why do we use them? What do they offer us? Think about why, for example, a pilot might be trained on a simulator and not on a real aeroplane carrying passengers.
- What might simulators not be able to offer us?

To understand that digital graphical tools can support the creation of models, enabling them to be explored and developed in 3D. *Use tools in the software to create a "fly-through" to support others in viewing the model.*

- Trimble Sketchup® for Schools (free version for schools if you are using G Suite for Education) enables the creation of a 'fly-through' animation to show off the finished model.
- Use graphical tools in 3D modelling software to create models, developing the detail, texture and surface material.
- Review their models with others, moving round them in 3D.
- Use feedback when refining their models.
- See the downloadable tutorial [***Getting Started with Sketchup Make]*** available in the online area of the scheme.

To understand that every computer needs an operating system to manage a wide range of processes.

- What is an operating system? Thought-shower examples. Why do we have them? Which do you know and use? Which do you prefer and why?
- Operating systems manage a wide range of processes, from recognising mouse input to controlling the screen or managing printing.
- Examples of operating systems include:
  - Windows®
  - OS-X® (Mac®)
  - iOS™ (iPads and iPhones)
  - Android (the most used mobile operating system, found on a wide range of phones and tablets.)
  - Orbis OS (Playstations®)
  - Linux (free, open-source operating systems often found on web servers and suchlike, but less frequently on end-user devices.)
- Research the history of operating systems and look at pictures of old versions of Windows and other operating systems. How have they changed over time? (Until Windows® most operating systems did not have a GUI, and so all commands had to be entered via text.)
- Discuss how operating systems have been developed over time to make it easier for the user to use the computer without special skills.
- If possible, have your technician show a DOS prompt and simple commands (as a demo.) Warn about the dangers of doing this (it could cause system problems if you do not know what you are doing.)
- Compare an operating system such as iOS (iPad) with Windows (PC.) How are they the same / different? What

features do they include to make using the computer easier? Which do you prefer? Why?
- Children could design their own imaginary operating system. What would it be called? How would the user interface with it? Why have you designed it in this way?

To analyse/evaluate digital films and animations, considering how they are used to inform, persuade and entertain audiences. 'S

- Discuss different types (genre) of TV programme and film, how they differ and what they are for. (E.g.: news, comedy, documentary, drama.) How do they make you feel? How / Why? How have they been designed to impact on audiences?
- As class, watch selection of adverts and discuss how they persuade us to buy. (E.g.: UK Christmas adverts, Andrex® etc.) Many are available on Youtube™ if you have teacher access.
- You could also watch <u>carefully selected</u> public information films etc. to discuss how the film makers have used different techniques to inform and make an impact on audiences (and so get important messages across.) Often they may aim to scare the audience into following the advice (hence the need to select these videos carefully.)

To understand that digital film and animation can be stored, shared and/or published both locally and in online spaces, but that such sharing may not be appropriate. 'S

- Discuss the use of YouTube™ and other video sharing sites. What are the advantages and disadvantages of such sites and services?
- Discuss what control we might have over our films if we post them, including who could access them.
- Discuss the sort of thing which should not be shared on video sites, and the importance of respecting other people's privacy and not film people and/or upload video without permission.
- Discuss the age limits which accompany most video sharing services. (E.g. you may not be permitted to have an account, so that you can upload your own content, until you are 13.)
- Discuss what to do if something on YouTube etc. worries or upsets you. Show how to report a video using the reporting mechanism within a video sharing service.
- Note that to access YouTube in Herts schools will require the WF1 web filter enabled. To find out more about web filtering in Hertfordshire, see http://www.thegrid.org.uk/eservices/safety/filtered.shtml
- Discuss copyright and ownership and the fact that we should never upload something we do not own, and even then only if it is appropriate and safe to do so, bearing in mind 'once online, always online' and the size of the potential audience for anything we share online.
- Look at video file types and sizes (see glossary for some examples of file extensions.) Note how video files can be very large. What are the disadvantages of large file sizes?

To understand the stages in producing a live film and/or animation. Review their film or animation, annotating their plan to show changes made. 'S *The live filming could include green screen filming.*

- Decide on the specific purpose for film/animation. This may be easier with a live action film. It might be, for example, an eSafety message, an advert for a school event, revision tips, an advert for an imaginary product etc.
- In groups, use planning approaches such as storyboarding to plan a short film or trailer for a specific purpose and audience. Create their film or animation carrying out the agreed stages, which may include:
  - carrying out the filming (still and moving) including filming narrator sequences where relevant
  - importing still and moving images into the software application
  - sequencing
  - adding text, e.g. titles and credits
  - adding sound (music, sound effects and narration)
  - editing – trimming, timing, transitions, visual and special effects
  - saving (including saving drafts) and exporting
- There are a number of free and commercially available video editing programs available, such as:
  - iMovie (freely available app for iPads® purchased from September 2013. Mac® version also available.)
  - Windows® Movie Maker (free, for Windows® computers.)
  - Serif® Movie Plus (for Windows computers.)
  - Green Screen app by Do Ink (iPad, use to create green screen projects.)
- If choosing an animation, there are a number of free and commercially available stop-motion animation programs and apps available, such as:
  - Stop Motion Studio (free version available, iPad®)
  - iMotion app (free version available, iPad®)
  - I Can Animate app (iPad® version and desktop/laptop version)
  - ZU3D (iPad version and desktop/laptop version)

To understand the need to test and review their work with an audience.
- Children present a film that they have created to the selected audience. Each pupil could make a presentation to

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the class about their film/animation before showing it and receiving constructive feedback from peers.

- They should explain how their production met the specified objectives and take the opportunity to gauge the extent to which it engages and informs the audience.
- Consider extending this to a wider school audience. You could show some of the creations in an assembly, for example.

To develop ways to use animation to meet specific audience needs.

- Extending the above, and using knowledge learned throughout this theme, consider how their animations might be changed to meet different objectives or a different audience.

On-going learning objectives

To organise their work confidently in agreed locations, using appropriate file-naming conventions and folder structures.

To save drafts of their work and use these to support critical review in which they evaluate and improve their work.

To demonstrate their understanding of the rules around copyright, ownership and plagiarism and to apply these across their computing work. 🛡

To understand some of the methods they can use to report concerns about content and contact. 🛡

To understand the need to keep electronic and other data secure and protect personal information when entering data online and to encourage eSafe practice in others. 🛡

Suggested independent task – any open-ended activity (2-3 sessions) enabling the children to demonstrate their computing capability around the knowledge and understanding provided in the term

➢ Choose to create a film, an animation or a 3D graphic to meet a specific need and audience
➢ Explain the stages of the creation of their work, detailing how these meet the audience/purpose
➢ Share their work and revisit it to refine and/or develop.
➢ Evaluate the effectiveness of the final product and how it meets the given criteria.

Other considerations:

Does the task provide for children to work at different levels?
Is there support available for children to select if they wish?
Are there opportunities for the children to review and develop their work?
Is there an opportunity for the children to evaluate the finished task?

- Choose whether pupils should make a film, animation or 3D model – bear in mind it's hard to make a film independently.
- Make sure there is a clear objective for creating it. E.g. an advert for the school (live film), an eSafety message (animation), a classroom of the future (3D model). The specifications should be simple because of time restrictions.
- Children should plan first and keep their planning documentation.
- Share the work with the class and write a report of how effectively the film/animation met the objective.