

Understanding the overall concept of 3D printing.

USING 3D PRINTING TO MANIPULATE AND RECREATE OUR CHARACTERS.

ESSENTIAL QUESTION

What would you build if you could build anything?

WHAT ARE WE LEARNING?

- That materials can be manipulated and transformed to enhance fitness for purpose.
- Understand how people's perceptions and acceptance of technology impact on technological developments.
- Create accurate nets for simple polyhedra.

TRY THIS WITH

- Years 7 - 10
- Students who have an interest in exploring new technologies
- Students who respond innovatively to a clear brief.

FIND

- Locate
- Estimate
- Discuss
- Predict
- Outline
- Give examples

Ask students what it is they think a 3D printer prints with? (Ink, plastic etc.)
 View the [Pinterest board](#) to see whether students identified any of the [right materials](#).
 View the video - '[10 of the strangest things printed in 3D](#)'.
 Support students to research the craziest things they can find, that have been created using a [3D printer](#).
 Use Evernote to collate lists, examples, images, recordings and samples of 3D printed elements.
 As a class, discuss the [potential](#) and possibilities of the findings.



APPLY

- Appraise
- Research
- Investigate
- Isolate
- Examine
- Question

Ask - What are the students predicting will be the future of 3D printing?
 Create a list of possible future uses, based on the research findings.
 Divide students into groups and assign each group an [ethical issue](#) related to 3D Printing:

- Copyright issues - protecting the rights of creators and inventors
- [Printing body parts](#) using human cells
- Taking DNA and being able to print an identikit image of a face
- Being able to print guns that could potentially harm people
- Being able to [print houses](#) quickly after a natural disaster

Ask students to consider positives and negatives.
 How might they address the issues they identify?
 Record ideas on a collaborative Google Doc so groups can respond to each others thoughts.



PRODUCE

- Model
- Modify
- Experiment
- Construct
- Convert
- Create

Download and log on to [SketchUp Make](#) (or similar modelling platform).
 Introduce students to the basic functionality of the platform.
 Ask them to build a basic structure such as a [house](#).
 Encourage students to fail, redo, undo, succeed and persevere with their creation.
 Add texture, colour, elongate, reduce, shrink, expand and create.
 Explore the warehouse of models and support students to understand that there are literally millions of starting points.
 Locate 3D models of cows within the warehouse.
 Students will have identified their criteria for the cow characters in their storyboards.
 Support students to create cows that meet their character specifications.
 Export creations as .stl files to a printer or print provider.



SUCCESS CRITERIA

Students can check they have completed the task successfully by:

- Creating an Evernote folder that summarises crazy 3D printing uses.
- Constructing a response to one of the ethical issues surrounding 3D printing.
- Successfully creating a 3D .stl file that meets the criteria set by the student's storyboard.

PRINCIPLES	VALUES	KEY COMPETENCIES	LEARNING AREAS	WORD BANK	RESOURCES REQUIRED
Future focus Learning to learn	Innovation, inquiry and curiosity Excellence	Thinking Participating and contributing	Technology The Arts	Bounding Blocks .stl files Ethical Copyright	1. 3D Model Pinterest Board 2. Strangest things printed in 3D 3. 3D printing ethical issues 4. 3D printing material list