IB MYP Unit Planner

3D Bobble-Head Project

TEACHERS SUBJECT
Moneeb Minhas, John Nicholson Design

SHARED GRADES START DATE DURATION COURSE PART

Grade 7 Week 2, September 16 weeks

30 hours

INQUIRY

Key Concepts

Systems are sets of interacting or interdependent components. Systems provide structure and order in human, natural and built environments. Systems can be static or dynamic, simple or complex.

Related Concepts



Innovation, Invention

Conceptual Understanding

Systems develop through form and function

Global Context & Explorations



Personal and cultural expression

Figure 2 Explorations to develop

- Craft
- Products

Statement of Inquiry

3D Printing Systems Allows for the Ability to Invent and Innovate to produce personal or cultural products.

Inquiry Questions

Factual Design
Conceptual Design
Factual Design
Conceptual Design

Debatable Design

Conceptual Design

Debatable Design

What is 3D printing?

How can we use CAD/CAM to design and make a Bobble-head figurine of high quality.

What is the process of 3D printing?

How can we use 3D printing to benefit society?

To what extent can a 3D printer be used to manufacture products on a large scale?

How can we capture things in 3D to create models?

Will 3D printing replace high store products in the future?

® RESOURCES



1. Inquiry and Analysis - 3D Bobblehead Pen



Students to complete all tasks in the first section (Inquiry and Analysis) of their Google Portolfios.

Tasks to complete:

TASK 1A: Research About 3D printing

TASK 1B: Research 3D printing to solve problems

TASK 2A: Situation Analysis

TASK 2B: Situation Analysis

TASK 3A: Product Analysis

TASK 3b: Product Analysis

TASK 3c: Product Analysis

TASK 4: Justifying the need

TASK 5: Research (Theses are extra optional tasks for a Level 8)

TASK 6: Design Brief

You must click SUBMIT on Google Classrooms once you have completed all tasks above.



2. Developing Ideas - 3D Bobble Head Project

Summative Task Thursday at 9:00 AM

Students to complete the following Tasks:

TASKS

Specification

Moodboard

Design Ideas Sheet 1 (with annotations)

Design Ideas Sheet 2 (With Annotations)

Presenting your final Design

Reasons for selection and Requirements for creating your design

PLEASE NOTE: DO NOT complete Task 7 or 8 in this section



3. Creating the Solution - 3D Bobble-head project



Students to complete the following tasks:

TASKS

- 9. Plan for making
- 10. Creating the solution (Body and 3D printed Head)
- 11. FINISHED PRODUCT



4. Evaluating - 3D Bobble-Head Project



Evaluation

Tasks: Students to complete the evaluation tasks. Explanations are to be found in the portfolio.



1. Inquiry and Analysis - 3D Bobble-head Project



Students to complete the following tasks:

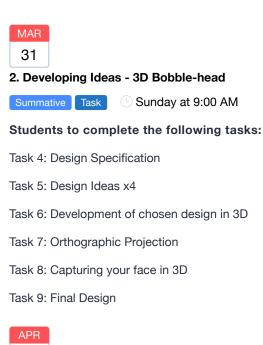
Task 1: 3D printing

Task 2A - 2C: Product analysis

Task 3: Design Brief

All explanations of tasks can be found in Google drives portfolio.

NOTE: YOU DO NOT NEED TO UPLOAD ANYTHING TO MANAGEBAC. INSTEAD DO ALL WORK ON THE GOOGLE DRIVES PORTFOLIO





2. Developing Ideas - 3D Bobblehead Project



Students to complete the following tasks

- 1. Design Specification
- 2. Developing Ideas x2
- 3. Developing Ideas x2
- 4. Presenting your chosen design development
- 5. Reasons for selection and requirements
- 6. Head in Meshmixer
- 7. Orthographic drawing



3. Creating the Solution - 3D Bobblehead Project



Students to complete the Creation of the Pen in class using 3D printing and 3D modelling skills.

Students then need to display their finished project on their portfolios, showing 3 angles of photographs.



3. Creating the Solution - 3D Bobble-head Project

Summative Task Thursday at 9:00 AM

Students to complete the following tasks:

Task 10: Plan for Making

Task 11: Creating the Solution



4. Evaluating - 3D Bobble-head Project

Summative Task Thursday at 9:00 AM

Students to complete

Task 12: Evaluation against specification

Task 13: Evaluation



4. Evaluating - 3D Bobblehead Pen

Summative Task Thursday at 9:00 AM

Students to complete the two tasks for evaluation:

- 1. Evaluation against Specification
- 2. Evaluation improvements

CURRICULUM

MYP Objectives

A: Inquiring and analysing

- · i. explain and justify the need for a solution to a problem
 - ii. construct a research plan, which states and prioritizes the primary and secondary research needed to develop a solution to the problem
 - iii. analyse a group of similar products that inspire a solution to the problem

B: Developing ideas

- i. develop a design specification, which outlines the success criteria for the design of a solution based on the data collected
 - ii. present a range of feasible design ideas, which can be correctly interpreted by others
 - iii. present the chosen design and outline the reasons for its selection

· C: Creating the solution

- i. construct a logical plan, which outlines the efficient use of time and resources, sufficient for peers to be able to follow to create the solution
 - ii. demonstrate excellent technical skills when making the solution
 - iii. follow the plan to create the solution, which functions as intended

iv. explain changes made to the chosen design and plan when making the solution.

D: Evaluating

- i. describe detailed and relevant testing methods, which generate accurate data, to measure the success of the solution
 - ii. explain the success of the solution against the design specification
 - iii. describe how the solution could be improved

Content & Skills

Skills

• All of the tasks/skills will be based on the criteria required to fulfill the design process (Inquiring, Developing, Creating and Evaluating) • The ability to plan a project from start to finish • How to produce and analyse the results from a consumer survey • In depth product analysis of an existing websites in terms of aesthetics, ethical issues and functionality. • Use of 3D graphics design packages to design their products in 3D. • The skill of using video tutorials to independently carry out tasks. • Use of Google classrooms and online based portfolios. • Use of modelling to develop a product solution. • The skill of printing in 3D using 3D printer.

ASSESSMENT

Tasks



1. Inquiry and Analysis - 3D Bobblehead Pen

Summative Task Thursday at 9:00 AM

Students to complete all tasks in the first section (Inquiry and Analysis) of their Google Portolfios.

Tasks to complete:

TASK 1A: Research About 3D printing

TASK 1B: Research 3D printing to solve problems

TASK 2A: Situation Analysis

TASK 2B: Situation Analysis

TASK 3A: Product Analysis

TASK 3b: Product Analysis

TASK 3c: Product Analysis

TASK 4: Justifying the need

TASK 5: Research (Theses are extra optional tasks for a Level 8)

TASK 6: Design Brief

You must click SUBMIT on Google Classrooms once you have completed all tasks above.

5/8 A: Inquiring and analysing

N/A B: Developing ideas

N/A C: Creating the solution

N/A []] D: Evaluating

IB MYP Unit Planner 3D Bobble-Head Project			
2. Developing Ideas - 3D Bobble Head Project Summative Task Thursday at 9:00 AM Students to complete the following Tasks:			
TASKS			
 Specification Moodboard Design Ideas Sheet 1 (with annotations) Design Ideas Sheet 2 (With Annotations) Presenting your final Design Reasons for selection and Requirements for creating your design 			
PLEASE NOTE: DO NOT complete Task 7 or 8 in this section			
N/A A: Inquiring and analysing			
4/8 B: Developing ideas			
N/A C: Creating the solution			
N/A []] D: Evaluating			



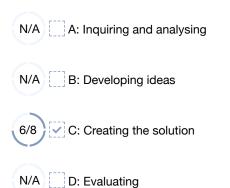
3. Creating the Solution - 3D Bobble-head project

Summative Task Saturday at 9:00 AM

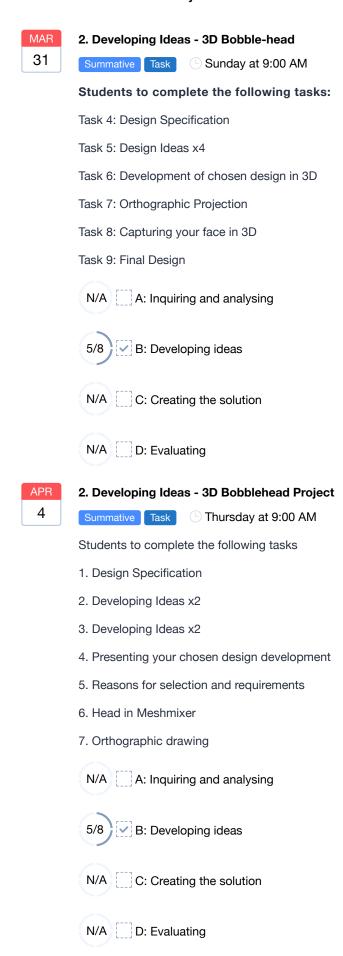
Students to complete the following tasks:

TASKS

- 9. Plan for making
- 10. Creating the solution (Body and 3D printed Head)
- 11. FINISHED PRODUCT



JAN	4. Evaluating - 3D Bobble-Head Project
23	Summative Task
	Evaluation
	Tasks: Students to complete the evaluation tasks. Explanations are to be found in the portfolio.
	N/A A: Inquiring and analysing
	N/A B: Developing ideas
	N/A C: Creating the solution
	3/8 📝 D: Evaluating
MAR	1. Inquiry and Analysis - 3D Bobble-head Project
10	Summative Task Sunday at 9:00 AM
	Students to complete the following tasks:
	Task 1: 3D printing
	Task 2A - 2C: Product analysis
	Task 3: Design Brief
	All explanations of tasks can be found in Google drives portfolio.
	NOTE: YOU DO NOT NEED TO UPLOAD ANYTHING TO MANAGEBAC. INSTEAD DO ALL WORK ON THE GOOGLE DRIVES PORTFOLIO
	5/8 A: Inquiring and analysing
	N/A B: Developing ideas
	N/A [] C: Creating the solution
	N/A [] D: Evaluating



MAY	3. Creating the Solution - 3D Bobblehead Project			
16	Summative Task			
	Students to complete the Creation of the Pen in class using 3D printing and 3D modelling skills.			
	Students then need to display their finished project on their portfolios, showing 3 angles of photographs.			
	N/A [] A: Inquiring and analysing			
	N/A B: Developing ideas			
	5/8 C: Creating the solution			
	N/A [] D: Evaluating			
MAY	3. Creating the Solution - 3D Bobble-head Project			
30	Summative Task Thursday at 9:00 AM			
	Students to complete the following tasks:			
	Task 10: Plan for Making			
	Task 11: Creating the Solution			
	N/A [] A: Inquiring and analysing			
	N/A B: Developing ideas			
	5/8 C: Creating the solution			
	N/A [] D: Evaluating			

JUN	4. Evaluating - 3D Bobble-head Project	
20	Summative Task	
	Students to complete	
	Task 12: Evaluation against specification	
	Task 13: Evaluation	
	N/A A: Inquiring and analysing	
	N/A B: Developing ideas	
	N/A [] C: Creating the solution	
	N/A D: Evaluating	
JUN	4. Evaluating - 3D Bobblehead Pen	
20	Summative Task	
	Students to complete the two tasks for evaluation:	
	1. Evaluation against Specification	
	2. Evaluation - improvements	
	N/A [] A: Inquiring and analysing	
	N/A B: Developing ideas	
	N/A C: Creating the solution	
	8/8 D: Evaluating	
MYP As	ssessment criteria	
Desig	gn	
E/0	A: Inquiring and analysing	5/8 B: Developing idea
U/O / V	A. Inquiring and analysing	Joro Jeveloping idea

N/A D: Evaluating

* - Class mean of Assessed Criteria

C: Creating the solution

LEARNING EXPERIENCES

Learning experiences

- · Students will be encouraged and provided video learning opportunities, to learn new software's independently.
- · Teacher will give class tutorials for everyone to follow in class.
- Teacher will use the previous knowledge of students that have used Google Sketchup (3D packages) and apply it to Autodesk Meshmixer, another 3D package.
- Students will be taught through video and visual learning when demonstrations of 3D printing are shown.
- Students will be encouraged to work together and assist one another to when using sophisticated software and design packages.
- Students will be encouraged to make mistakes and learn from the mistakes.

Differentiation

- · Students will be given extra support who struggle with using sophisticated software independently.
- Students who struggle with tasks will be encouraged to sit with peers who do not so they can share knowledge and skills among each other.
- · Differentiation of individual students will be assessed when the unit starts, depending on the students individual needs.
- Students will be provided with exemplar work of previous examples or other units to help them with layout of their portfolio and level of detail required for different tasks.

IB MYP Unit Planner

3D Bobble-Head Project

CONNECTIONS

Approaches to Learning

Linked objectives



- · A: Inquiring and analysing
 - · iii. analyse a group of similar products that inspire a solution to the problem
- · B: Developing ideas
 - · ii. present a range of feasible design ideas, which can be correctly interpreted by others
- · C: Creating the solution
 - · ii. demonstrate excellent technical skills when making the solution

Communication

I. Communication skills

Exchanging thoughts, messages and information effectively through interaction

- · 1. Give and receive meaningful feedback
- 5. Use a variety of media to communicate with a range of audiences

Reading, writing and using language to gather and communicate information

· 23. Organize and depict information logically

I. Communication skills

In order for students to, (design objective C v), present the solution as a whole they will need to, (I. Communication skills - 1) Give and receive meaningful feedback. The skill strategies that will be explicitly taught and practised are: Students will use Google drives platform to present their work, receive feedback from the teacher and then reply to the feedback using the "reply" buttons/tools.

In order for students to, (design objective B iv), develop accurate planning drawings/diagrams and outline requirements for the creation of the chosen solution. they will need to, (I. Communication skills 5) Use a variety of media to communicate with a range of audiences. The skill strategies that will be explicitly taught and practised are: Students will learn to use 3D graphics software (Autodesk Meshmixer) to produce their Designs in 3D. And then present screenshots of this on another media platform called Google drives to present their work to their teacher. Thereafter students will learn to convert their work to a suitable format for printing in 3D.

In order for students to, (design objective C v), present the solution as a whole they will need to, (I. Communication skills - 23) Organize and depict information logically. The skill strategies that will be explicitly taught and practised are: Students will learn how to convert work into a digital format and use a present tool in Google Classroom to share their work.

♡ Self-management

III. Organization skills

Managing time and tasks effectively

- · 6. Bring necessary equipment and supplies to class
- 8. Use appropriate strategies for organizing complex information
- 10. Select and use technology effectively and productively

V. Reflection skills

(Re-)considering the process of learning; choosing and using ATL skills

 23. Focus on the process of creating by imitating the work of others

III. Organization skills

In order for students to, (design objective B ii), present a range of feasible design ideas, which can be correctly interpreted by others they will need to, (III. Organization skills - 6) Bring necessary equipment and supplies to class. The skill strategies that will be explicitly taught and practised are: Students will need to bring their own devices (Laptop / Camera / Smartphones etc) So they can work through their e-portfolios on Google classrooms. Cameras or smartphones will be used to take images of any work done on paper to transfer onto their portfolio.

In order for students to, (design objective A iii). analyse a group of similar products that inspire a solution to the problem they will need to, (III. Organization skills - 8) Use appropriate strategies for organizing complex information. The skill strategies that will be explicitly taught and practised are: Learn how to summarise and present complex information in the form of diagrams and Mindmaps. Use acronyms such as CAFQUES to provide a structure for analysing a Bobblehead products.

V. Reflection skills

In order for students to, (design objective A iii). analyse a group of similar products that inspire a solution to the problem and (design objective C iii), follow the plan to create the solution, which functions as intended they will need to, (V. Reflection skills - 23) Focus on the process of creating by imitating the work of others. The skill strategies that will be explicitly taught and practised are: Students will use CAFQUES to analyse other bobbleheads, then use this to inspire their own designs.

VI. Information literacy skills

In order for students to, (design objective C ii), demonstrate excellent technical skills when making the solution they will need to, (VI. Information literacy skills -10) Understand and use technology systems. The skill strategies that will be explicitly taught and practised are: Students will learn how to use 3D softwares to design their Bobbleheads in 3D. Thereafter they will learn how to convert these into formats ideal for printing and learn how to use the 3D printer.

Research

VI. Information literacy skills

Finding, interpreting, judging and creating information

10. Understand and use technology systems

VII. Media literacy skills

Interacting with media to use and create ideas and information

- 15. Locate, organize, analyse, evaluate, synthesise and ethically use information from a variety of sources and media (including digital social media and online networks)
 - · c) I express opinions respectfully about the work of

others

blogs.

- 18. Understand the impact of media representations and modes of presentation
 - a) I create works that are appropriate in style, tone and structure for the required genre, e.g. essay, report, speech, resume, letter, etc
- 20. Communicate information and ideas effectively to multiple audiences using a variety of media and formats
 b) I try new ways to communicate, present and use

information. eg visual/audio technology, social media,

VII. Media literacy skills

In order for students to, (design objective C v), present the solution as a whole they will need to, (VII. Media literacy skills - 18) Understand the impact of media representations and modes of presentation. The skill strategies that will be explicitly taught and practised are: Students will learn to present their work and designs in the form of an e-portfolio.

In order for students to, (design objective C v), present the solution as a whole they will need to, (VII. Media literacy skills - 20) Communicate information and ideas effectively to multiple audiences using a variety of media and formats. The skill strategies that will be explicitly taught and practised are: Students will learn to use a 3D graphics software (Autodesk Meshmixer) to produce their Bobblehead product in 3D. Thereafter, present screenshots of this on another media platform called Google drives to present their work to their teacher. Students will learn to use still cameras to present their hard copy work and use "screen capture" and "file transfer skills" to transfer work over from one platform to another. Students will also learn to use a 3D printer to present their product as a 4 dimensional product.

Thinking

VIII. Critical thinking skills

Analysing and evaluating issues and ideas

 17. Use models and simulations to explore complex systems and issues

X. Transfer skills

Utilizing skills and knowledge in multiple contexts

 37. Combine knowledge, understanding and skills to create products or solutions

VIII. Critical thinking skills

In order for students to, (design objective C ii), demonstrate excellent technical skills when making the solution they will need to, (VIII. Critical thinking skills - 17) Use models and simulations to explore complex systems and issues. The skill strategies that will be explicitly taught and practised are: Using youtube video tutorials and online "help support" to learn how to use "Autodesk Meshmixer" (3D graphics software) as well as diagnose any issues they face during the use of Autodesk Meshmixer. Students will also learn about 3D printing methods and processes.

X. Transfer skills

In order for students to, (design objective C ii), demonstrate excellent technical skills when making the solution they will need to, (X. Transfer skills - 37) Combine knowledge, understanding and skills to create products or solutions. The skill strategies

that will be explicitly taught and practised are: Students will learn new 3D software packages (Autodesk Meshmixer) that can be used to print in a 3D printer.

IB Learner Profile

- · Inquirers: During the process of Research
- · Thinkers: During the process of designing their 3D bobble-head figurines
- · Communicators: During presentation of their designs in their portfolio.
- · Risk takers: During the Making and designing process.

Service as Action

Work collaboratively with others: Students will demonstrate their talent, skills, and ideas by producing their designs as a 3D printed product

REFLECTIONS

2018 - 2019