RESOURCE FOLIO

Introduction

The 8 activities that have been designed to be taught at Corrimal High School which is a public high school within the Illawarra region. Corrimal High School has 455 students who are currently enrolled in the school (Australian Curriculum Assessment and Reporting Authority [ACARA], 2024) , these enrolment numbers have gone up since the previous year. 16% of the students are indigenous and 22% of the students have a language background different to English (ACARA, 2024). Corrimal high school also has a new industrial arts block which was opened in 2022 (NSW Department of Education [NSW DOE], 2022). This new block includes two STEM spaces, a metal and two timber workshops, 4 collaborative learning areas as well as outdoor work benches (NSW DOE, 2022).

Classroom context for Design and Technology

Stage 6 Design and Technology is an ATAR subject that has no pre-requisites from students. It is the first time in 5 years that Corrimal High is able to run a Design and Technology and the excitement from the students was evident through the enrolment numbers into this class. This Yr. 11 Design and Technology class is the largest senior TAS class that is running this year, with 20 students enrolled in the class. The large student enrolment creates a learning environment that is diverse and unique. One student who is an active member in the classroom has high-functioning autism. They have a broad knowledge and a love for design; particularly computing and digital design. This student works well in group activities; however, a loud classroom environment can become very overwhelming for this student. When the classroom becomes loud, they often ask for their group or a partner to work outside. This student is one of the 3 high achieving students in this classroom. These three students consistently complete the classwork to a high standard and have all class activities completed first. These students are encouraged to complete the extension activities or continue on with the development of their project. There are also 3 students who have been identified as low operating students within the classroom. These students struggle with written work, however, show a real interest in the physical projects that will be designed and created in class. The Design and Technology activities have been created to be used midway through Term 1 with the purpose of building up students' skills and preparing students for their mini major project that is due in Term 2.

Summative assessment for the unit:

The summative assessment for the design and technology that students are working towards is the completion of their first mini major project. Students are required to design a children's toy. As part of the submission students will be required to submit a design portfolio and a prototype of their toy.

Classroom context for food

Food Technology is a strong subject at Corrimal High, with the class running the past 10 years. This yr. 12 Food Technology class is the smallest TAS class in the year cohort with 7 students continuing on with the class for the HSC. The Australian Food Industry is the first HSC content area that is taught in yr. 12. This yr. 12 Food technology class is a small learning environment with 7 students. There are 3 gifted high achieving students in the classroom,

all who have goals to get a band 6 in the HSC. These students' complete classwork and assessments to a high standard consistently. They also present practical dishes of an outstanding standard and have had photos of their practical dishes displayed at school events. One student in this class has dyslexia. This student is hard working and completes schoolwork to a sound standard, however they can disengage from a class if it involves independent reading or they have to read aloud. Within the kitchen this student excels and is able to produce beautiful dishes that are at outstanding standard. They have ambitions to become a chef or a pastry chef when they leave school. There are also two students in the classroom who are low students and require assistance during class activities.

Summative assessment for this unit:

The summative assessment task that students are working towards is a case study on an Australian Company. This assessment is a hand-in written task which requires students to research an Australian food company of their choice. Some of the company options include Bega Cheese, Arnott's, Bulla, Boost, Uncle Toby's, Cadbury and Rosella. There are two parts to this case study. In part A students will be required to give a brief description of their chosen company. They will also be required to write 250 words on each aspect of the AFI. Part B of the assessment will require students to examine the role of the chosen company within the AFI and discuss the sustainability of the company.

Reflection

The 8 activities that have been designed were developed closely in reference to both the Stage 6 Design and Technology (NSW Education Standards Authority [NESA], 2013a) syllabus and the Stage 6 Food Technology syllabus (NSW Education Standards Authority [NESA], 2013b) . All 8 activities have been designed in a sequential order for their respective syllabus. These activities build upon prior knowledge and also relate to the assessment task that the classes are working towards.

There are a range of different learning and teaching strategies that were considered during the development of these activities. These activities were influenced by the theory of constructivism; that students are active participants in their learning and that new knowledge is constructed from existing knowledge (Mcleod, 2024) . Another theory that influenced the design of the activities was that learning is social, both Dewey and Vygotsky in their respective studies noted that learning is social, and students can benefit from collaborative learning and the interaction with others (Mcleod, 2024). These theories relate to the 4C's of 21st century education. The implementation of this pedagogical practice is vital as it equips students with skills that will be essential for students to be able to be successful outside of school (Landon, 2019). Bloom's taxonomy was also a vital theory that influenced the design of the activities. Blooms taxonomy is an educational framework that splits 6 main cognitive skills into Low Order Thinking and Higher Order Thinking skills (Adams, 2015). Higher Order Thinking [HOT] skills require students to foster and develop critical and creative thinking skills which are two essential skills that students will need for the 21st century (Chiruguru, 2020). The activities encourage collaboration and communication through group activities and class discussions, they require students to think critically and creatively through the design process of their mini major project. The

activities also allow the teacher to conduct diagnostic and formative assessments through observation, questioning, discussion, and the collection of work.

Along with meeting syllabus outcomes and working through content at a syllabus, it is important that general capabilities such as literacy, numeracy and digital literacy skills of students are being developed in each lesson. Australian Institute of Health and Welfare [AIHW] (2022) note that both literacy and numeracy skills provide key foundations for a students' life outside of school. Digital literacy is a 21st century skill which requires students to effectively be able to research, comprehend and interpret information that is accessed digitally (Pilgrim, 2013). The 8 activities provide ample opportunities for students to develop their literacy and numeracy skills as well as their digital literacy skills.

Diverse learning environments require differentiation and specific adjustments to ensure that all students are supported within the classroom. Differentiation is where an activity of lesson is change for individual learning needs to allow students the opportunity to complete the activity at their level (Australian Government Department of Education, n.d) . This may include providing scaffolds and extra support for students who are struggling with the content or providing extension activities for students who are excelling in the content. There are opportunities for differentiation to be applied across all activities designed as a I believe every student should have the opportunity to be able to attempt the activity at their own level.

Factors affecting designing and producing – Product Need

Description
In class we have started to look at the different factors that affect the design and production of a product. Last lesson we looked at appropriate design solutions and how the consumer needs can be met through these final design solutions. In this activity you will be given a product and you will have to determine the potential need of this product. You will also have to provide characteristics of the product which prove that the product has met the need proposed.

Outcomes - P1.1 examines design theory and practice, and considers the factors affecting designing and producing in design projects

Instructions:
Activity type: Pairs/ Small groups

Complete the table below by determining the potential need, provide a photo and features of the product that prove the need has been met for the products listed below in the table. Make sure to put the name of all your group members at the top and submit this in the google classroom submission tile.

Tip: There may be some products that you have seen, or you may not know specific features of different products, so you are able to research them.

Group Members:

Product	Photo	Need	Features that meet the need
BioPak Bio Straw		A straw that is environmentally friendly	-made out of paper -is recyclable after use
Biodegradable glitter			
Apple MacBook Pro			

HOKA running shoes			

Extension activity:
Create a need statement for a handheld torch.

Life Cycle Analysis

Description
In class we have been looking at what a life cycle analysis is and how they are a useful tool to us as designers. In this activity you will watch a YouTube video of an animated skit which will give you a recap of the life cycle analysis. We will then complete a mind map together as a class around the benefits of a life cycle analysis of a product.

Outcomes - P1.1 examines design theory and practice, and considers the factors affecting designing and producing in design projects

Instructions:
Activity type: Pairs/ Small groups & class activity

As a class we will watch the video on life cycle analysis.

https://www.youtube.com/watch?v=01tF21O2iso

You will be given 5 minutes to discuss the benefits of a life cycle analysis from the point of view of a product designer (which all of you are).
**Tip: think of changes that can be made to a product based on a life cycle analysis*

Add stickies to the jam board of all the different points that are made by your group. We will then have a class discussion around the points that are on the jam board and add any additional points that we think are necessary.

Jam Board link:
https://jamboard.google.com/d/1TSc_DcS31IaDjuwGevmhwdSMjwKFlVVWSE5_ZlonZgY/viewer?f=0

Extension activity:
Conduct a life cycle analysis on a pair of denim jeans

Mini Product Analysis

Description
We have been learning about different factors that affect product design and production. This activity requires you to use the knowledge that you have learnt to conduct a mini product analysis.

Outcomes - P1.1 examines design theory and practice, and considers the factors affecting designing and producing in design projects
P2.2 explains the impact of a range of design and technology activities on the individual, society and the environment through the development of projects

Instructions
Using the product that you have been assigned and the scaffold points that have been provided; create a mini product analysis. This mini analysis can be created in Canva or on a google doc. It must be submitted on google classroom and include the person who you worked with (if you worked with someone). I will also be completing this activity with a group of students, if you are unsure you are able to come and join the group.

Products list to choose from:

- Apple MacBook Pro {2024 version}
- Ring Camera
- Tesla
- BEKANT office desk {IKEA}

Tip: If you are unsure how your response to a question should be constructed have a look at the HSC Verbs sheet that is on google classroom. They have definitions of all the verbs used.

The mini product analysis should include the following points and questions:

Outline the need for the product and the intended consumer.

Describe the product provided, include a statistical fact.

Analyse the impact that the product & company have on the environment

Extension Activity:

Conduct a mini analysis on an existing children's toy that is similar to the one that you are designing. Use the questions above to structure your analysis. This analysis should be submitted to google classroom in the extension tile and can be put into your design portfolio for the assessment task.

Design Brief Generation

Description
A design brief is a crucial part of the design process; it allows us as designers to be able to identify the need, opportunities, constraints and considerations. In this activity we will create a design brief for your major project.

Outcomes – P4.1 Uses design processes in the development and production of design solutions to meet identified needs and opportunities

Instructions
Using the template below we will create a Design Brief for your project.

Note: As we work through this resource just note that you may have different constraints and considerations based on the type of children's toy that you are designing.

Design Need:
This statement is used to identify the need of a product based off a scenario given

Constraints:
These are limits that will be used to guide the design

Considerations:
These are things that can be taken into consideration for the design of the prototype. Considerations will give you ideas and may shape the design of your prototype.

Extension activity:
You can continue on with your assessment task. If your project has been approved you can start on the CAD drawing, if your project hasn't been approved continue on with the research.

References

Adams, N.E. (2015). Bloom's taxonomy of cognitive learning objectives. *Journal of Medical Library Association, 103*(3), 152-153. https://doi.org/10.3163/1536-5050.103.3.010

Australian Curriculum Assessment and Reporting Authority [ACARA]. (2024). Corrimal High School, Corrimal NSW. My School https://www.myschool.edu.au/school/42909

Australian Government Department of Education (n.d). *Differentiate learning for different levels.* https://www.education.gov.au/australian-curriculum/national-stem-education-resources-toolkit/i-want-know-about-stem-education/what-works-best-when-teaching-stem/differentiate-learning-different-levels

Australian Institute of Health and Welfare [AIHW]. (2022, February, 25). *Australia's Children.* https://www.aihw.gov.au/reports/children-youth/australias-children/contents/education/literacy-numeracy

Chiruguru, S (2020, March). *The Essential Skills of 21st Century Classroom (4Cs).* ResearchGate. https://www.researchgate.net/profile/Suresh-Chiruguru/publication/340066140_The_Essential_Skills_of_21st_Century_Classroom_4Cs/links/5e75277d4585157b9a4d9964/The-Essential-Skills-of-21st-Century-Classroom-4Cs.pdf

Landon, K. N. (2019). *Student Perceptions of Learning in the 21st Century: An Evaluation of the 4Cs.* ProQuest. https://www.proquest.com/docview/2281849416?%20Theses&fromopenview=true&pq-origsite=gscholar&sourcetype=Dissertations%20

Mcleod, S. (2024, February, 1). *Constructivism Learning Theory & Philosophy of Education.* SimplyPsychology. https://www.simplypsychology.org/constructivism.html

NSW Department of Education [NSW DOE]. (2022, September, 8). *Corrimal High School welcomes new industrial arts building.* NSW Government. https://www.schoolinfrastructure.nsw.gov.au/news/2022/09/corrimal_hs_welcomes_new_industrial_arts_building.html

NSW Education Standards Authority [NESA] (2013a) Design and Technology: Stage 6 syllabus.

https://educationstandards.nsw.edu.au/wps/wcm/connect/6b211cf9-a68b-4808-a82a-06695e1348f3/design-technology-st6-syl+Design+and+Technology.pdf?MOD=AJPERES&CVID=

NSW Education Standards Authority [NESA] (2013b) Food Technology: Stage 6 syllabus.

https://educationstandards.nsw.edu.au/wps/wcm/connect/056cc490-87a4-4d6c-a8f4-44e797c544d3/food-technology-st6-syl+Food+Technology.pdf?MOD=AJPERES&CVID=

Pilgrim, J. (2013). Defining Literacy in the 21st Century: A Guide to Terminology and Skills. *Texas Journal of Literacy Education, 1*(1), 60-69. https://files.eric.ed.gov/fulltext/EJ1110822.pdf

Activity References

ClimateScience – Solve Climate Change. (2021, August 7). *Food Waste: The Hidden Cost of the Food We Throw Out – ClimateScience #9* [Video]. YouTube. https://www.youtube.com/watch?v=ishA6kry8nc

Disrupt Design. (2012, June, 17). *Life Cycle Assessment & sustainability animation: This is Your Life Cycle* [Video]. YouTube. https://www.youtube.com/watch?v=01tF21O2iso

NSW Education Standards Authority [NESA] (2013a) Design and Technology: Stage 6syllabus.https://educationstandards.nsw.edu.au/wps/wcm/connect/6b211cf9-a68b-4808-a82a-06695e1348f3/design-technology-st6-syl+Design+and+Technology.pdf?MOD=AJPERES&CVID=

NSW Education Standards Authority [NESA] (2013b) Food Technology: Stage 6 syllabus.https://educationstandards.nsw.edu.au/wps/wcm/connect/056cc490-87a4-4d6c-a8f4-44e797c544d3/food-technology-st6-syl+Food+Technology.pdf?MOD=AJPERES&CVID=

OzHarvest. (2022, September, 21). *OzHarvest- Food Waste Explained* [Video]. YouTube. https://www.youtube.com/watch?v=wgLuXvtaLyQ&t=1s