

CONVERTING WASTE INTO WANT

THE PROBLEM :

- REDUCING WASTE IN OCEAN & BEACHES
- FINDING A SOLUTION FOR UNSUSTAINABLE SURFBOARDS
- INCREASING AWARENESS OF SUSTAINABILITY, EDUCATING THE NEXT GENERATION

THE CHALLENGE :

- TO TAKE SOMETHING THAT MIGHT BE CONSIDERED WASTE AND UPCYLCLING TO CREATE SOMETHING THAT CAN BE USED IN THE OCEAN!

80% OF OXYGEN COMES FROM THE OCEAN LETS PROTECT IT
THE OCEAN IS A CLASSROOM LETS EXPLORE IT



BLUE PLANET II

SERIES OF LESSON THUMBNAILS

LESSON 1:

Beach Clean and experimenting with different types of surfboards, hand planes and SUPs in the beach breaks.

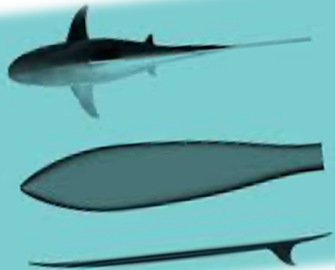
Evaluating and recording finding from waste found on beach and evaluating types of board design on tripod camera set up on beach.

LESSON 2:

Inquiry task, poster of life cycle of and carbon footprint.

Design and discussion on materials sustainability and carbon footprint?

Analysis on different types of materials found on beach and their properties and effect on the environment.



LESSON 3:

Inquiry into streamline and aerodynamic shapes and their effects on friction. Designing hand plane template based on findings.

LESSON 4:

Manufacturing hand plane using template and with use of material from beach or disused skateboard decks.



LESSON 5:

Group inquiry into biomimicry as part of the idea generation process.

Using this information groups then start designing their own surfboard based on analyzing waste materials found and shapes from streamline findings from previously and from beach inquiry findings.

LESSON 6:

Groups continue designing their surfboards and designing their own own fins for boards based on findings from the beach inquiry, streamline findings and biomimicry research.



LESSON 7:

Groups start manufacturing of surf boards frame using pre-made skeleton.

LESSON 8:

Continue manufacturing surf boards by filling surfboards with waste found on beach and attaching deck and bottom of board.

LESSON 9:

Continue manufacturing process finishing boards with resin and ensuring watertight before polishing and putting wax on the deck.

LESSON 10:

Beach day testing and evaluating boards and hand planes made by learners. Learners will record findings compared to boards tested on first lesson.

EXPERIENCES & OUTCOMES:

TECHNOLOGIES E&O'S:

- TCH 4-09a 'I can apply design thinking skills when designing and manufacturing models/products which satisfy the user or client'
- TCH 4-10a 'I can consider the materials performances as well as the sustainability of materials and apply these to real world issues'
- TCH 4-11a 'I can extend my use of manual and digital graphic techniques to realise ideas, concepts and products and recognise the importance of real-world standards'
- TCH 3-12a 'I can apply my knowledge and understanding of engineering disciplines and can develop/build solutions to given tasks'

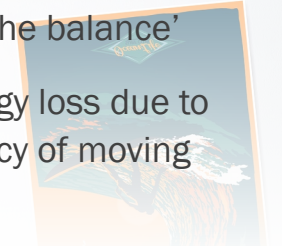


SCIENCES E&O'S:

- SCN 4-05b 'Through exploring the carbon cycle, I can describe the processes involved in maintaining the balance of gases in the air, considering causes and implications of changes in the balance'
- SCN 3-07a 'By contributing to investigations of energy loss due to friction, I can suggest ways of improving the efficiency of moving systems.'
- SCN 4-08b 'Through experimentation, I can explain floating and sinking in terms of the relative densities of different materials.'
- SCN 3-16a 'I can differentiate between pure substances and mixtures in common use and can select appropriate physical methods for separating mixtures into their components.'

SOCIAL STUDIES E&O'S:

- SOC 3-08a 'I can identify the possible consequences of an environmental issue and make informed suggestions about ways to manage the impact.'
- SOC 4-09b 'Having evaluated the role of agriculture in the production of food and raw material, I can draw reasoned conclusions about the environmental impacts and sustainability'
- SOC 4-12b 'I can carry out a geographical enquiry to assess the impact and possible outcomes of climate change on a selected region and can propose strategies to slow or reverse the impact.'



4 CAPACITIES AND NUMERACY, LITERACY



Literacy E&O's:



- **LIT 4-02a** 'When I engage with others I can make a relevant contribution, ensure that everyone has an opportunity to contribute and encourage them to take account of others' points of view or alternative solutions. I can respond in ways appropriate to my role, exploring and expanding on contributions to reflect on, clarify or adapt thinking.'
- **LIT 4-04a** 'As I listen or watch, I can: clearly state the purpose and main concerns of a text and make inferences from key statements compare and contrast different types of text gather, link and use information from different sources and use this for different purposes.'
- **LIT 4-06a** 'I can independently select ideas and relevant information for different purposes, organise essential information or ideas and any supporting detail in a logical order and use suitable vocabulary to communicate effectively with my audience.'
- **LIT 4-07a** 'I can show my understanding of what I listen to or watch by giving detailed, evaluative comments, with evidence, about the content and form of short and extended texts.'
- **LIT 4-09a** 'When listening and talking with others for different purposes, I can:
 - communicate detailed information, ideas or opinions
 - explain processes, concepts or ideas with some relevant supporting detail
 - sum up ideas, issues, findings or conclusions.
- **LIT 4-22a** 'As appropriate to my purpose and type of text, I can punctuate and structure different types of sentences with sufficient accuracy, and arrange these to make meaning clear, showing straightforward relationships between paragraphs.'
- **LIT 4-25a** 'I can use notes and other types of writing to generate and develop ideas, retain and recall information, explore problems, make decisions, or create original text. I can make appropriate and responsible use of sources and acknowledge these appropriately.'

WHERE IS LITERACY INCLUDED

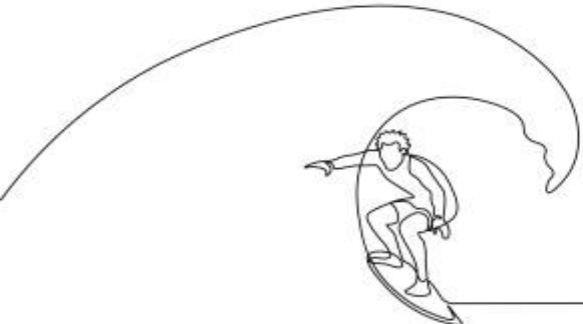
- INQUIRY TASKS
- POSTERS
- DESIGN ELEMENT
- EVALUATION OF PRODUCTS AT START AND END OF PROJECT.

WHERE IS NUMERACY INCLUDED

- AERODYNAMICS FRICTION RESEARCH
- WORKING DRAWING/DESIGN
- MANUFACTURING PROCESS

Numeracy E&O's:

- **MNU 4-01a** 'Having investigated the practical impact of inaccuracy and error, I can use my knowledge of tolerance when choosing the required degree of accuracy to make real-life calculations.'
- **MNU 4-03a** 'Having recognised similarities between new problems and problems I have solved before, I can carry out the necessary calculations to solve problems set in unfamiliar contexts.'
- **MNU 4-11a** 'I can apply my knowledge and understanding of measure to everyday problems and tasks and appreciate the practical importance of accuracy when making calculations.'



POSITIVE EFFECTS ON HEALTH & WELLBEING



- ENCOURAGING ENGAGEMENT
- STIMULATION
- PERSONAL PROGRESS
- ACHIEVABLE CHALLENGE
- SELF RESILIENCE
- SELF ESTEEM
- SELF WORTH
- SOCIAL WELLBEING
- CONFIDENCE
- VITALITY
- MOVEMENT SKILLS
- PHYSICAL ACTIVITY

HEALTH & WELLBEING E&O'S:

HWB 404a 'I understand that my feelings and reactions can change depending upon what is happening within and around me. This helps me to understand my own behaviour and the way others behave.'

HWB 4-06a 'I understand the importance of mental wellbeing and that this can be fostered and strengthened through personal coping skills and positive relationships. I know that it is not always possible to enjoy good mental health and that if this happens there is support available.'

HWB 4-07a 'I am learning skills and strategies which will support me in challenging times, particularly in relation to change and loss.'

HWB 4-14a 'I value the opportunities I am given to make friends and be part of a group in a range of situations.'

HWB 4-15a 'I am developing my understanding of the human body and can use this knowledge to maintain and improve my wellbeing and health.'

HWB 4-16a 'I am learning to assess and manage risk, to protect myself and others, and to reduce the potential for harm when possible.'

HWB 4-17a 'I know and can demonstrate how to keep myself and others safe and how to respond in a range of emergency situations.'

HWB 3-19a 'I am developing the skills and attributes which I will need for learning, life and work. I am gaining understanding of the relevance of my current learning to future opportunities. This is helping me to make informed choices about my life and learning.'

HWB 4-21a 'As I encounter a variety of challenges and contexts for learning, I am encouraged and supported to demonstrate my ability to select and apply a wide range of complex movement skills and strategies, creatively, accurately and with consistency and control.'

HWB 4-23a 'While learning together, and in leadership situations, I can:

- experience different roles and take responsibility in organising a physical event
- contribute to a supportive and inclusive environment
- demonstrate behaviour that contributes to fair play'

HWB4-24a 'I can: • observe closely, reflect, describe and analyse key aspects of my own and others' performances
• make informed judgements, specific to an activity
• monitor and take responsibility for improving my own performance based on recognition of personal strengths and development needs.'



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SUSTAINABILITY:



THIS PROJECT ADDRESS:

- THAT ALL LEARNERS ARE ENTITLED TO LEARNING FOR SUSTAINABILITY.
- THIS PROJECT WILL EDUCATE ON THE IMPORTANCE OF PROTECTING THE NATURAL ENVIRONMENT, REDUCING WASTE, UPCYCLING WASTE, RECYCLING WASTE TO HELP PROTECT OUR LOCAL WATER COURSES AND THE OCEAN.
- EDUCATE AN AWARENESS OF PLASTIC USE AND THE EFFECTS OF CARBON FOOTPRINT ON THE WORLD.
 - LEARNERS WILL BE EDUCATE ON HOW SUSITANABILTY CAN BE INCLUDINED WITHIN THE DESIGN AND MANUFACTURE PROCESS.

OUTDOOR LEARNING

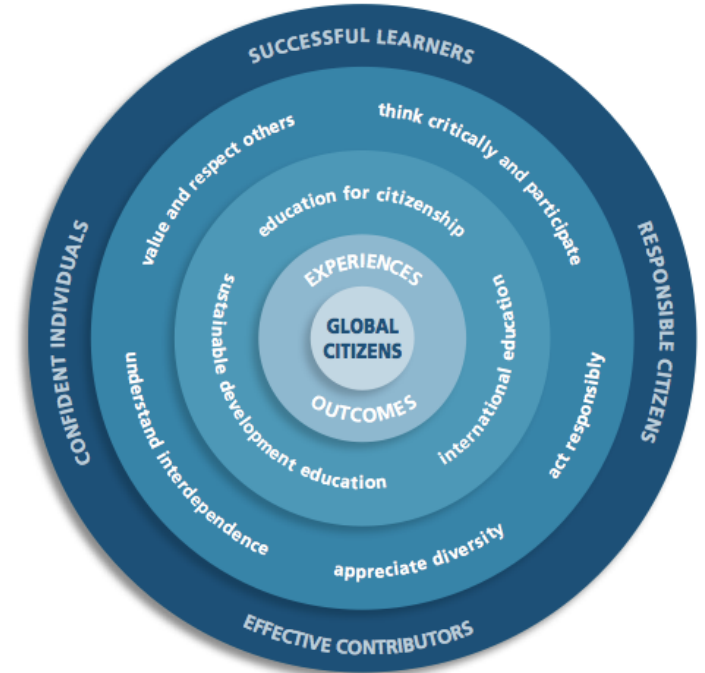


FACILITATING OUTDOOR LEARNING THROUGH:

- EDUCATING THROUGH BREACH CLEANING, WHERE LEARNERS DEVELOP WORKING IN GROUPS, GROWING SUSTAINABILITY AWARENESS OF THE OUTDOORS AND NATURAL ENVIRONMENT CREATING CONNECTIONSWITH THE REAL WORLD.
- LEARNING TO SURF PROVIDING A MULTISENSORY RELAXING EXPERIENCE, PROVIDING A PLACE FOR QUIET PUPILS TO SPEAK MORE AND OTHERS TOBECOME CALMER AND MORE FOCUSED ADDITINALLY HELPING OVERALL WELLBEING.



CITIZENSHIP



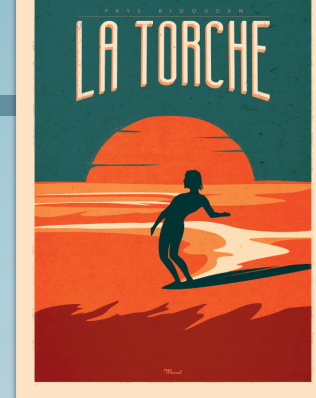
DEVELOPING GLOBAL CITEZINS THROUGH:

- THIS PROJECT FOCUS ON INSPIRING YOUNG PEOPLE DEVELOPING KEYS SKILLS AND EDUCATING LEARNERS ABOUT THE RESPONSIBILITIES TOWARDS EACH OTHER AND THE WIDER WORLD. HELPING LEARNERS TO BECOME RESPONSIBLE, CONFIDENT, SUCCESSFUL, AND EFFECTIVE CITIZENS OF THE FUTURE.



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TEACHING APPROACHES - A MIXTURE OF PEDAGOGICAL APPROACHES FOR ALL LEARNERS



ACTIVITY

GROUP ACTIVITIES:

- DESIGNING SURFBOARD.
- MANUFACTURING SURFBOARD FROM RECLAIMED BEACH CLEAN MATERIALS.
- BEACH CLEANING.
- EVALUATING SURFBOARD PERFORMANCE
- POSTER INQUIRY TASKS

INDIVIDUAL ACTIVITIES:

- BEACH RESEARCH
- DESIGNING HAND PLANE.
- MANUFACTURING HAND PLANE FROM RECLAIMED SKATEBOARD DECKS OR BEACH CLEAN MATERIALS.
- EVALUATING HAND PLANE

DISCUSSION

- GROUP INQUIRY TASKS
- GROUP DESIGN TASKS
- MANUFACTURING TASKS
- ACTIVITIES THROUGHOUT BEACH DAYS



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INQUIRY

BEACH INQUIRY:

- AS PART OF THE BEACH CLEAN LEARNERS WILL RECORD THE TYPES OF WASTE THEY FIND.
- LEARNERS WILL RECORD WHAT DESIGN FEATURES WORK BEST AFTER TESTING EXISTING PRODUCTS SUCH AS SUP'S, SURFBOARDS, HAND PLANES ETC.

DESK INQUIRY:

- LEARNERS RESEARCHING BIOMIMICRY TO ASSIST DESIGN PROCESS POSTER TASK.
- PHYSICS BETWEEN AERODYNAMICS AND STREAMLINE DESIGN TO ASSIST DESIGN PROCESS POSTER TASK.

DIRECT

- ALL LESSONS WILL BE INCLUDE DIRECT TEACHING, IN BOTH OUTDOOR, WORKSHOP AND CLASSROOM ENVIRONMENTS.
- DIRECT TEACHING WILL UTILISING LOWER & HIGHER ORDER THINKING QUESTIONING TO HELP ENCOURAGE CLASS DISCUSSIONS.

SCAFFOLDING

- DESIGN STAGES
- MANUFACTURING STAGES
- INQUIRY TASKS
- INDIVIDUAL TASKS
- BEACH RESEARCH (USE OF TECHNOLOGY TO RECORD NOTES THROUGHOUT DAY)
- GROUP TASKS
- USED TO INCREASE CREATIVITY
- USED TO INCREASE MOMENTUM OF CLASS
- A RANGE WILL BE USED TO HELP DIFFERENTIATION ACROSS ALL ABILITIES

EVALUATION

- EVALUATION OF BOARDS TESTED AT BEACH
- EVALUATION OF INDIVIDUAL & GROUP DESIGN
- EVALUATION OF PEERS DESIGN
- SELF EVALUATION AT END OF PROJECT

CONSTRUCTIVISM & SOCIAL CONSTRUCTIVISM

- ALL LESSONS WILL BUILD ON LEARNERS PRIOR KNOWLEDGE AND USING PREVIOUS KNOWLEDGE LEARNERS UNDERSTAND FROM POP CULTURE AND SOCIETY.

PROJECT ASSESSMENT – COMPLETING THE FEEDBACK LOOP

HOW WILL THE LEARNERS BE ASSESSED THROUGH THE PROJECT?

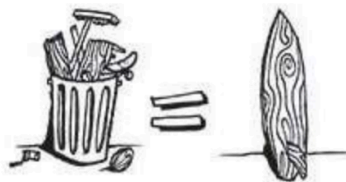
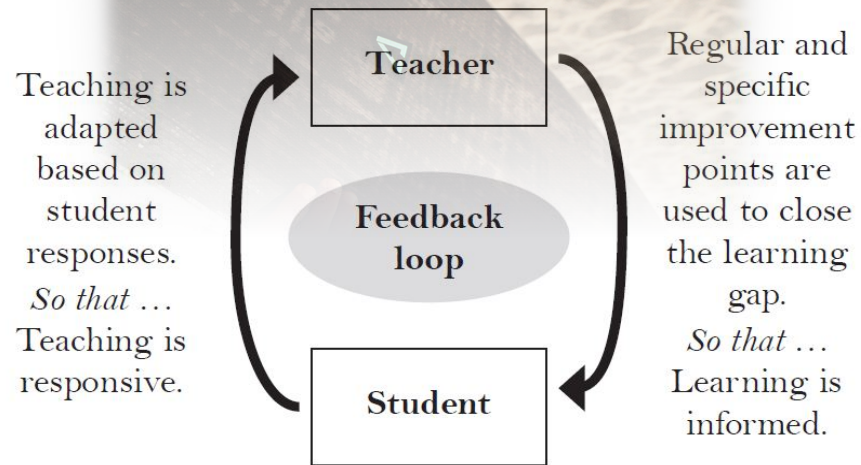
SUMMATIVE ASSESSMENTS

- DESIGN PROCESS
- MANUFACTURING PROCESS
- FINAL PRODUCT
- INDEPENDENCE



FORMATIVE ASSESSMENT

- INFORMALLY USED THROUGHOUT THE PROJECT IN THE CAPACITY OF QUESTIONING BY USING LOWER AND HIGHER ORDER THINKING QUESTIONING TECHNIQUES.
- FORMALLY USED THROUGHOUT PROJECT SUCH AS EXIT PASSES ETC.



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WHY ARE THE LEARNERS ASSESSED BOTH SUMMATIVELY AND FORMATIVELY?

FORMATIVE ASSESSMENT

- DEFINED LEARNING GOALS
- INCREASED RIGOR
- IMPROVED ACADEMIC ACHIEVEMENT | ENHANCED STUDENT MOTIVATION
- INCREASED STUDENT ENGAGEMENT
- FOCUSED TARGETED FEEDBACK
- PERSONALISED LEARNING EXPERIENCE
- SELF REGULATED LEARNERS
- DATA DRIVEN DECISIONS TO DEVELOP SUITABLE LESSON PLANS



SUMMATIVE ASSESSMENT:

- PROVIDING BENCHMARK FOR STUDENTS TO BETTER THEMSELVES
- PROVIDING AUTHENTICITY TO REAL WORLD
- CAN ASSIST AS FEEDBACK TO IMPROVE TEACHING METHODS



THE CIGARETTE SURFBOARD

A FILM BY BEN JUDKINS AND TAYLOR LANE



SURF – LEARN – CREATE - EVALUATE

**PROTECT THE ENVIRONMENT
SAVE THE OCEANS**