MARINE RENEWABLE ENERGY & SUSTAINABLITY

TRANSITION YEAR UNIT - PLANNING GRID

MICHEAL WALSH – RESEARCHER ATU

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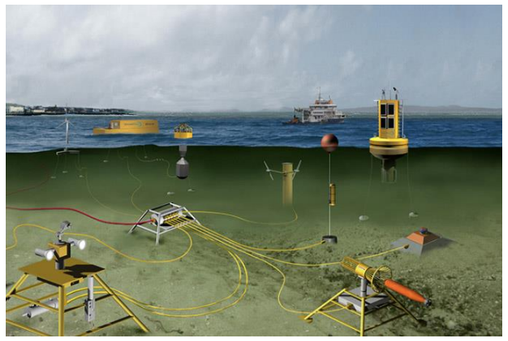

Marine Renewable Energy and Sustainability.		
Student Name: Micheál Walsh	**School: Coláiste Chroí Mhuire gan Smál**	**Class teacher: Micheál Walsh.**
No of Pupils: 30		**Length of Lesson:** 80 minutes & 40 minutes
Class profile		
Transition Year – Marine Renewable Energy & Sustainability	**Diversity (Gender, Ethnicity etc.)**	**Other relevant information**

Schedule	Curriculum	Relevant LC Outcomes	Learning Intentions (students will learn about)	Teaching Methodology	Success Criteria	Assessment Method	Key Words
							
Week 1	Consent for data Launch research, inform students Baseline survey. Introduction to Global citizenship for the marine world. Marine Renewable energy introduction (Setting the scene)	34. show discernment in the selection and safe use of environmentally friendly materials 33. appreciate design considerations appropriate to various environments	• Introduction to learning • Establish their knowledge of global citizenship. • Discover their knowledge of marine renewable energy. • Filling in a survey	• Ice breaker Game • Brainstorming (Previous knowledge) • PowerPoint Presentation- Introduction • Student Posters • Class Discussions • Microsoft FORMS	• Identify student's previous knowledge. • Extinguish student's experience of science subjects and interests. • Explain what Global Citizenship is. • Explain in their own words what M.R.E is.	• Questioning • Worksheet • K.W.L • Poster and presentation launch. • Reflection circle.	• Global citizenship • Marine renewable energy • Survey • Consent • Science
Week 2	Oceanography & Ocean Literacy Weekly subsection's topics/themes: • Global citizenship & Marine • renewable energy (Ocean literacy) • Tides, • Wave & Tidal, Ocean circulation (Practical) Properties of water	3.3 Use statistical analysis and information technology in the interpretation and analysis of results and conclusions Test environmental factors as applied to terrestrial and aquatic environments, abiotic, biotic and climatic factors. 2.3 Assess the complexity of this interaction, and the potential for change in the boundaries and extent of regions using specific examples Defend the importance of water for organisims.	• Analyse surface ocean currents. • Examine wind driven currents. • Establish boundary currents in local waters. • Research upswelling in their surroundings. • Properties of water and bonds that form H^2O • Discover terminology regarding water molecular bonding • Visualise Hydrogen bonding that results in Cohesion • Test water different states/molecular structure (Ice, liquid & gas)	• A recorded Teams meeting between a Marine lecturer/scientist (TBC) • PowerPoint • TG4 documentary (Taoide) • YouTube clips on the properties of water Link 1, Link 2	• Outline & plot the water circulation in Galway Bay. • Highlight surface, wind, and boundary currents. • Model upswelling and its effects in the surrounding area. • Establish the importance of water in everyday life.	• K.W.L • Group discussion • Worksheets (Different moon & sun positions) • Questionnaire	• Upwelling • Cúrsaiocht aigéanach (oceanic circulation) • Atmaisféar • Gluaisne (motion) • Grianghníomhaíocht teas (Solar heating). • Dlús • Uisce • Móilín • Hidrigin • Comhghreamú (Cohesion) • Greamachán (Adhesive)

Week 3	Tides Introduction	Use the skills, where appropriate, to examine the dynamic nature of population and the pattern and distribution of settlement. 27. have a knowledge of design processes in the context of planning, development and realisation Distinguish the process of scientific methods and principles of experimentation.	• Investigate the rhythmic rise & fall of sea level. • Inspect the gravitational potential of the moon and the sun. • Interpret Reading and following an almanac to predict tides. • Examine how propagation & amplitude- influenced by friction, the rotation of the earth (Coriolis effect)	• Old Moore's almanac. • TG4 documentary (Taoide). • Presentation. • Coastal walk. • Chart (Galway Bay) reading and understanding.	• Establish the difference of a neap tide and a spring tide • Improve Graphicacy & Literacy skills with the aid 'Old Moore's Almanac' • Identify the importance of the sun & moon rotation around earth.	• Think-Pair-Share. • Poster & Presentation assignment. • K.W.L. • Traffic light system.	• Taoide • Lán mhara • Trábh • Iar thrá • Sruth • Cóir • Rabharta • Mallmhuir • Gealach • Grian
Week 4	Waves & Tidal renewable energy	Show a detailed understanding and be able to illustrate how population characteristics change over time and space and impact on human development. Value Nutrient recycling by organisms while outlining the carbon cycle and the Nitrogen cycle. 31. understand the principles of sustainable architecture in the location, design and construction of buildings	• Classify the cause of waves • Discuss types of waves • Theorise the movement of fluids with different densities effect on waves • Elaborate different methods of renewable energy relating to wave & tidal	• Met Éireann forecast app. • https://www.met.ie/ • Google Earth. • Presentation. • Student-led discussions (coastal erosion & damage history) •	• Link the cause of waves through observation and technology (weather reports). • Determine/Estimate sea state from weather reports. • Develop an awareness of wave energy.	• Student led discussions. • K.W.L. • Quiz. • Questionnaire preparation.	• Tonnta • Sruth taoide • Fuinneamh in-athnuaithe • Réamhaisnéis na haimsire • Staid Farraige • Creimeadh cladach
Week 5	Wind Renewable energy	27. have a knowledge of design processes in the context of planning, development and realisation 36. through appropriate investigation, derive solutions to environmental problems. 2.2 Show a detailed understaing of how physical, economic, and human process interact in Irish and European regions and in one continental/ sub continental region	• Classify Marine Renewable Energy • Highlight types of Marine Renewable Energy • Explain SmartBay Testing facility (Spiddal) operation.	• Visual aids (Print out) • Independent research • Sketching • Posters • Demonstrations	• Distinguish the different methods of renewable energy. • Explain the purpose of SmartBay testing facility.	• K.W.L • Group discussions • Poster & presentation review. • Ask the expert (TBC). • Reflection.	• Fuinneamh in-athnuaithe mara • Áiseanna tástáil • Breathnóireacht • Saineolaí •
Week 6	Sustainability Field trip	17. appreciate the difference between minimum standards and good/best practice Examine, in detail, patterns of rural and urban settlement. Test environmental factors as applied to terrestrial and aquatic	• Assess the importance of meeting needs without comprising the ability of future needs. • Revise sustainable Development 17 goals- the United Nations • Elaborate & value equality and support people's	• Visual aids • PowerPoint • Alternatives to traditional means of energy • Field trip (TBC) • Stakeholder guest speaker (TBC) – Question & answers.	• Build on previous knowledge of renewable energy • Analyse problem solving skills • Establish new techniques in creating energy	• K.W.L • Use of U-value calculation formula • Construction Studies past exam papers. • Costing worksheets • Two stars and a wish • Traffic light questioning	• Inbhuanaitheacht • Traidisiúnta • Roghanna malartacha • Cruthaigh • Muileann gaoithe • Teicníc

		environments, abiotic, biotic and climatic factors.	wellbeing. Create prosperity and end poverty.		• Argue examples for using alternatives energy sources		
Week 7	Sustainability	1. appreciate how the architecture and technologies of the past influence contemporary designs and the general built environmen 9. take a structured approach to project planning and critically analyse problems and their solutions in the context of design and project activities 34. show discernment in the selection and safe use of environmentally friendly materials	• Revise SEAI Four themes energy programme • Explain heat transfer: Conduction, Convection, Radiation • Assess household heat loss (U-value and heat loss cost from past construction studies exam paper). • Evaluate the selection and safe use of environmentally friendly materials.	• Problem-based learning (calculating heat loss and cost e.g., U-value). • Visual aids. • Presentation.	• Test heat-loss in a common household in Ireland. • Evaluate energy saving. • Give reasons how to conserve energy. • Model environmental awareness. • Compare renewable and traditional methods source of energy.	• K.W.L review- what have we learned to date? • Two stars and a wish • Subject bingo • Review of student's posters and presentations	• Caillteanas teasa • U-value • Teach cónaithe • Sábháil • Costas • Comparáid • Buntáiste • Mí-bhuntáiste • Ceadúnas • Deontas
Week 8	SmartBay Guest speaker	Examine the five-kingdom sytem of classification: Monera, Protista, Fungai, Plant, and animal. Explain the precautions when working with micro-organisims. Describe a climatic environment on the earth.	• Identify the work that is conducted at SmartBay test facility. • Establish the sub-sea cabled observatory facilities. • Make use of SmartBay to collect continuous oceanographic & environmental data.	• Guest speaker (TBC) • Microsoft TEAMS • Question & Answers • Worksheets	• Build on previous knowledge on SmarBay. • Experiment with online real time data. • Analyse data feedback	• K.W.L • Questionnaire • Reflection • SmartBay real time data • Traffic light system	• Cuan • Cladach • Taighde • Anailís • Muireolaíocht • Grinneall na farraige • Speiceas • Teicneolaíocht
Week 9	Community & local heritage	Observe and be aware of the measurement of the characteristics of the atmosphere - Ocean systems. Use skills to examine issues related to cultural and identity. 2.4 Use the skills listed above, where possible, to interpret how economic, human, and physical process interact in a regional setting	• List advantages & disadvantages of testing facilities in the locality. • Interview the local community on their views. • Develop an awareness of the surrounding environment.	• Observation • Demonstrations • PowerPoint • Data visualiser • Meet & greet (TBC)	• Identify the importance to protect the environment. • Highlight views of wider community. • Debate the advantages & disadvantages of testing facilities and renewable energy.	• K.W.L • Project review • Poster and presentation final review • Debate	• Oidhreacht • Aitiúil • Lúg ainmeacha • Stair • Céibh/caladh • Alexander Nimmo • Hospital • Ospidéal
Week 10	Careers & data gathering	36. through appropriate investigation, derive solutions to environmental problems. 28. execute modelling and design ideas including their finish and presentation. 16. appreciate the way in which good architecture enhances the quality of life of individuals and the community	• Observe their learning and progress. • Administer learning experience. • Use data collected to evaluate students learning.	• Observation & discussions • Demonstrations • Microsoft forms.	• Conduct data gathering. • Build on previous learning to further improve TY unit. • Support findings during research.	• K.W.L • Peer discussion to build confidence • Demonstration • S.W.O.T (Strengths, Weaknesses, Opportunities and Threats) analysis.	• Sonraí • Faisnéiseach/ eolasach • Foghlaim • Dul chun cinn • Machnamh • Moladh

Codes: Geography - G, Biology – B, Construction Studies – CS

(G) Geography Core Units drop down menu	Choose an item
(CS) Construction Studies Statements of learning drop down menu	Choose an item.
(B) Biology	Choose an item