climate smart

Climate Smart Handbook

An Taisce
The National Trust for Ireland

Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Welcome to Climate Smart! A Transition Year Module for Climate Adaptation in Ireland

Title of Module

Climate Smart

Area of study

Local and Global Citizenship

Overview

This module encourages students to explore why we need to adapt to climate change at the global and local level and how we can plan a just transition for a resilient future.

Students will learn about the causes of climate change and how our climate is changing both globally and in Ireland. They will learn about a key hazard of climate change for Ireland, flooding, and how floods are measured, monitored, predicted, and visualised. Finally, students will learn about the numerous options that are available to help adapt to the changing climate, how decisions are made, and how they can participate in planning for a climate smart future.

The programme comprises of seven workshops, six with interactive videos, multiple-choice questions, and a complimentary hands-on activity. The final workshop, workshop 7, is involves playing an online serious game, iAdapt. This game places students in charge of adaptation planning for Dublin in the year 2045 and asks them to defend the city against flooding. The programme is available at no cost and can be run autonomously using the Climate Smart platform, available at www.climatesmart.ie.

By now you should have successfully registered at climatesmart.ie/register and be able to navigate the platform. If you have any questions, check out our **Climate Smart Platform Guide**, or send us an email at climatesmart@eeu.antaisce.org.

Table of Contents

Climate Smart was developed by Dr Stephan Hügel and Professor Anna Davies, Department of Geography, School of Natural Sciences at Trinity College Dublin, with funding from the EUH2020 Marie Skłodowska-Curie grant scheme: No. 713567 and Science Foundation Ireland via the Enable Spoke and Discover Grant: 21/DP/9560

Introduction to Climate Smart

Summary

Workshop 1: Introduction to climate change

Workshop 2: Flooding: What is it?

Workshop 3: Sensing Floods

Workshop 4: Mapping and visualising floods

Workshop 5: Adaptation options

Workshop 6: How do we adapt?

Workshop 7: The iAdapt game

Related learning

Geography: explores the changing relationships between the physical and human worlds through the effects of climate change on the environment and helping students develop geographical skills to make informed judgements on local, national, and international issues.

Maths: utilises graphs and statistics to analyse flood probabilities which enable students to solve problems in mathematical and real-world contexts.

Computer Science: explores how sensors work and how data is stored, communicated, and analysed.

Politics and Society: navigates power and decision-making, active citizenship, community rights and responsibilities, and sustainable development.

The proposed Leaving Certificate subject 'Climate action and sustainable development' which aims to empower students to meet the challenges of the 21st century.

Key skills

Skill	How is it evidenced
Information processing	Students will apply what they learn in individual workshops to effectively play the iAdapt game and defend the city. They will learn how to evaluate the graphs and scores they achieve in the game.
Critical and creative thinking	Students will have to evaluate the suitability of adaptation interventions presented in the modules during the iAdapt game, drawing on expert feedback from stakeholders with different interests. They will have to ensure that their decisions are popular enough with the electorate to avoid being voted out. Students will have to come up with creative solutions to climate adaptation – comparing the impacts of different options on sections of society and balancing effectiveness against popularity.
Communicating	Students will engage in debate, developing speaking and listening skills. They will discuss their attitudes to climate change in class and discuss these in relation to those of other students.
Working with others	Students will work in teams to debate and discuss which approaches to climate adaptation they think are most effective.
Personal effectiveness	Students will: Further develop their learning skills Develop confidence Develop decision-making skills Personally reflect on their work Receive and respond to feedback

Aims

This transition year module aims to:

- Develop an awareness of the causes and effects of climate change.
- Help students understand the need to both mitigate and adapt to climate change.
- Expand students' understanding of how we can adapt to climate change.
- Provide students with experiences of making decisions about climate change adaptation.
- Empower students to get involved in planning for climate change.

Learning Approaches

The Climate Smart programme is designed to be flexible and to meet the needs of different class requirements found across schools. As such there are numerous ways in which the module can be carried out:

- It can be teacher-led and followed by the whole class with students responding as a group, or with students working in pairs or small groups to answer quizzes.
- It can also be followed by individual students online working independently and autonomously, with teachers able to monitor students' progress.
- Each workshop has a follow-on activity which builds on the content of a specific module and can stimulate class discussions. There are also four additional activities outlined which can be carried out after the gameplay.

Assessment Approaches

A combination of the following can be factored into an overall assessment:

- Completion of multiple-choice quiz at the end of every workshop.
- Game play results with ranking and feedback.
- A reflective final report.
- Outputs from extension activities.

Evaluation Methods

This module will be continuously improved based on user feedback. As such, students will be asked to evaluate the module and provide feedback in two ways:

Students will complete an anonymous before-and-after survey (provided on the platform) about their knowledge of climate adaptation which will provide insight into the impact of the material provided.

Students will give their views on what they found were the most and least beneficial aspects of the unit and suggest changes that would make the unit more enjoyable and effective for the next group of students.

1 Introduction to Climate Change

The history and the science behind climate change, and global and Irish Climate Policy

Students are introduced to the topic of climate change. They will learn:

- The basics of climate change.
- The difference between climate change mitigation and adaptation.
- The history of climate science and how science informs climate action.
- How climate policy works on a global scale.
- How climate policy is developing in Ireland.

Learning Outcomes

Upon completion of this workshop, students should be able to:

- Describe the basic mechanisms of climate change.
- Understand why the earth has been warming more rapidly since the 1950s.
- Explain the difference between climate mitigation and climate adaptation, and how they are both needed when taking climate action.

Video Breakdown

Workshop 1 is broken down into 5 videos, with 3 multiple choice questions to be completed after each video. The breakdown is as follows:

1. Introduction to Climate Change
2. Adaptation and Mitigation
3. Climate Science
4. Global Climate Policy
5. Irish Climate Policy

Activity 1:

Creative Climate Communications

By now, your students should have a good idea of climate change in Ireland, so it is time to spread the word!

In this activity, your students will create a novel way to communicate what they have learned about Climate Change to an audience of their choice.

Class work (20 minutes)

1. As a class, discuss traditional and new ways of communication that students have encountered (e.g.: School lesson, newspapers, on the news, on social media).

   With these different formats, get your students to consider:

   - Do they find these formats engaging?
   - Why/ why not? Who is the target audience?
   - What kind of information does it normally contain?
   - What tone does it have (E.g.: serious or comedic)?
   - Is it effective?

2. Look at some novel ways in which groups and individuals have spread climate change messages:
   - Línte na farraige, Sea level rise light installations: lintenafarraige.com
   - The show your stripes infographic for average Global temperature change: #ShowYourStripes
   - Pyramids of Garbage, Egypt: Pyramids of Garbage — Bahia Shehab
   - We are Frying, Madrid: We Are Frying! / ¡Nos freímos! – luzinterruptus

3. With these newer exhibitions, ask your students:
   - What do they think of using art and creativity to communicate issues around Climate Change?
   - How does it make them feel?
   - Do they think it is more or less effective than traditional techniques?

Group Work (10 minutes)

4. Split your students into small groups. Their goal is to design, and make, a creative way to communicate information about Climate Change. By the end of this class, students should have an outline of their communication format that they are ready to use.

Students should use these questions as a guide:

1. **Who are the target audience you want to teach about Climate Change?**
   Consider, their age, background, and prior learning.

2. **What kind of information do you want to talk about?**
   You have learned a lot so far, trying to get all of it into one communication medium might be tricky. You can choose to focus on one aspect of climate change, for example, causes, impacts, mitigation, or adaptation.

3. **What tone will your message have?**
   Think about what you are communicating, and who you are targeting it towards. Is your goal to fun and engaging, or does your topic need a more serious note?

4. **What format will you use?**
   This is where you should let your creativity shine! You can choose any format you like to communicate your flooding message. Just make sure it is appropriate for your audience!

   Some ideas include:
   - A **poster**
   - A **video** or **social media account**
   - A **demonstration/ 3D piece**
   - A **news article**
   - A **podcast**

Class work

5. Each group should present their idea to the class in under 1 minute, outlining their idea, its target audience, and 3 main points of their idea.

They are ready to create!

Some students might be really enthusiastic about their ideas, and it would be great to see them come to life. Consider whether their idea is feasible within the school or community, and how they can make happen. If you are working on the Green-Schools programme, check if it would fit in with your current flag. If you would like any other assistance or advice on this, please do get in touch!

Useful Resources:

- Tips from the Young Reporters for the Environment: Young Reporters for the Environment (yreireland.org)

2 Flooding: What is it?

An introduction to flooding with a look at historical and more recent flood events in Ireland, and an exploration of what future flooding might look like.

Students will learn about flooding, its causes, and its impacts. They will also explore a case study of flooding in Ireland, looking at previous and predicted flood events. This section focuses on:

- Introduction to flooding and flood types.
- Flooding in Ireland, looking at a specific case study.
- How the different types of flooding can be defended against.
- How flood risk management plans are made.

Learning outcomes

Upon completion of this workshop, students should be able to:

- Explain the difference between climate mitigation and climate adaptation, and how they are both needed when taking climate action.
- Discuss how climate change may affect the future of Ireland and society.
- Explain the fundamentals of flooding and why it occurs.

Video Breakdown

Workshop 2 is broken down into 5 videos, with 3 multiple choice questions to be completed after each video. The breakdown is as follows:

1. Introduction to Flooding
2. Flooding in Ireland
3. Flood Defence
4. Defending against Coastal Flooding
5. Planning and Building Flood Defences

Activity 2:

Surface Sampling

In this activity, your students will learn how land cover type influences water retention and drainage.

This activity was designed from the GLOBE Ireland Rainfall and Flood Resilience Resources (About GLOBE in Ireland - Ireland - GLOBE.gov).

Class work (15 minutes)

1. Lay out four paint trays in a row.

2. Fill the higher level of each tray with one of the following substrates:

    - Gravel
    - Sand
    - Soil
    - Bark mulch

    Add a brick to the end of the row.

3. Pour water into each substrate and allow it to flow into the lower part of the tray.

4. Assess and compare the trays using the following prompts:
    - How much water flowed through the substrate and how much was absorbed?
    - What did the water look like? (e.g.: cloudy/ clear)
    - Did the water hold debris?
    - Did the water go straight through, or did it sit on the surface?
    - What would happen if more water was poured through the substrates?

5. Pour more water over each substrate.

6. Assess and compare the trays using the following prompts:
    - Have the substrates held their shape? Why or why not?
    - What aspects of each substrate has caused the differences discussed?
    - What can we learn about flooding and flood adaptation from this?
    - Are there any other observations to be made?

Group work (15 minutes)

7. Split your students into groups and ensure each group has a bottle of water or watering can.

8. Each group is to explore the school grounds and **test 3 different surface types** with water, similar to what was done above.

9. Have your students fill out the table below and use the answers to assess the different surface types.

Class work (10 minutes)

10. Each group should share their findings with the class, highlighting **3 key observations** they made throughout their study.

11. Discuss what changes could be made to **surface types** to help the school adapt to flooding.

Surface Sampling

	Surface 1	Surface 2	Surface 3
What material is it?			
Describe what you think are key features of the surface.			
Did the water disappear, or did it remain on top of the surface?			
If it disappeared, was it fast or slow?			
How far did the water spread?			
Why do you think this was?			
If it rained heavily, what would happen to the water here?			
Are there any nearby drainage spots? Do you think this is a problem?			
Any other observations?			

3 Sensing floods

Explore how authorities know when floods are happening and how flood data is collected.

Students will further explore flooding and the science and technology used for flood measurements and reporting. This workshop focuses on:

- How floods are sensed, monitored, and predicted.
- How ultrasonic water level and gully monitoring sensors work, and how they communicate their data.
- How flood data is used for analysis, monitoring, and prediction of flood risk.
- Exploring the idea of uncertainty and how this relates to flood modelling.

Learning outcomes

Upon completion of this workshop, students should be able to:

- Explain how flooding is detected and measured
- Demonstrate an understanding of how floods are sensed, mapped, and predicted in Ireland

Video Breakdown

Workshop 3 is broken down into 3 videos, with 3 multiple choice questions to be completed after each video. The breakdown is as follows:

1. Introduction to Sensing
2. Using Flood Data
3. Uncertainty

Activity 3

Media Probe

In this activity, your students will examine how the media portrays flooding in Ireland and abroad.

Student work (5 minutes)

1. Search for news reports, articles, accounts, and stories about flooding in Ireland.
   Useful resources:
   - Independent.ie
   - RTÉ Ireland's National Television and Radio Broadcaster (rte.ie)
   - Ireland – FloodList
   - Home - Floodinfo.ie

Group work (20 minutes)

2. Each group is to choose one flooding event featured in an article and answer the following questions:

For some questions, students may need to search outside of the article.

1. Which news source published the article?
2. What is the title?
3. Where did the flood take place?
4. What type of flooding event occurred?
5. When did it happen?
6. What was the impact of the flooding?
7. Are there images in the article? Do you think they are appropriate?
8. Does flooding occur regularly in this place? Is it likely to increase?
9. Have any interventions been put in place or are planned to be implemented?
10. Does the article mention climate change? Do you think it should?

Class work (15 minutes)

3. Each group is to present their findings to the class.

4. Discuss whether the students noticed any similarities or differences between the flooding events or the articles.

4 Mapping Floods

Understand mapping and visualising floods, how flood maps are used, impacts of flooding and climate action.

Students will learn about how and why flooding is visualised, and how flood maps can be used. In this workshop, students will:

- Learn how floods are visualised and mapped in greater detail, and different ways of visualising sea level rise.
- Look at the different ways in which sea level rise and flooding can be visualised.
- Learn about the different impacts that flooding can have, from impacts on property and environmental impacts, to psychological impacts.
- Using a survey, students will then participate in an in-class discussion of how they feel about flooding.

Learning outcomes

Upon completion of this workshop, students should be able to:

- Demonstrate an understanding of how floods are sensed, mapped, and predicted in Ireland.
- Understand the function of flood maps and how they can be used in multiple scenarios.

Video Breakdown

Workshop 4 is broken down into 3 videos, with 3 multiple choice questions to be completed after each video. There is also a survey to be completed between video 2 and 3. The breakdown is as follows:

1. Introduction to Visualising Floods
2. The impacts of flooding
3. *The survey*
4. Taking Action

Activity 4:

Find the Floods

In this activity, you will map out your school and identify the flooding hotspots!

This activity was designed from the GLOBE Ireland Rainfall and Flood Resilience Resources (About GLOBE in Ireland - Ireland - GLOBE.gov).

Class work (15 minutes)

1. Print out an aerial photograph of your school grounds.
   The easiest way to do this is to find your school on google maps and select the "Satellite" map type.
   Tip: Click the "Layers" button on bottom left of screen > "more" > "Satellite" at the bottom of the pop-up.

2. Use the flood map data available at Flood Maps - Floodinfo.ie to identify pluvial, fluvial, or coastal threats to the school.

   If there is no flood data for your school, ask your students:

   1. Why might this be?
   2. How does this make you feel?
   3. Are there any other ways you can get this data?
      Hint: suggest talking to people who have been in the school for a long time!

3. Using the flood map data, and your knowledge of the school, identify the pooling hotspots and mark them on the map.
   Pooling hotspots are areas where water gathers and collects.

Group work (25 minutes)

4. Once all the hotspots are identified, split your class into groups, and assign each team to a pooling hotspot.

5. Each group is to determine **what features of the hotspot causes water to pool there**. This is best done by going outside to the pooling spot and examining the area and surroundings.
   Print off the table below and use it as a guide to determine characteristics.

6. Have each group present their findings to the class.

7. What similarities exists across the hotspots that might contribute to the pooling there?
   Look at the map for help too!

If this activity is not suitable for your school grounds, consider whether you could apply it to your local community.

Find the Floods: Pooling hotspot characteristics

Pooling Hotspot Name:	
Pooling Hotspot location:	
Where does the water come from?	
What is the surface type? Is it natural or artificial?	
Is the area on an incline or decline?	
Is the area expose or covered? With what kind of material?	
Are there any nearby drainage spots?	
Any other observations?	

5 Adapting to our Changing Climate

Understand adaption and the ways in which action can be taken against oncoming flood threats.

In this workshop, students explore what can be done to adapt ourselves to the predicted rise in flooding. Learning will focus on four types of adaptation:

- Grey infrastructure, that is the human-engineered responses to flood risk such as sea walls and flood barriers.
- Nature-based solutions which involve conserving, restoring, or better managing ecosystems to reduce risk from flooding.
- Mixed or hybrid infrastructures, which use both human and nature-based solutions.
- Policy and participatory planning mechanisms that support behaviour change, inclusive decision making and just transitions to a resilient future.

Learning outcomes

Upon completion of this workshop, students should be able to:

- Explain the differences between, and the advantages and disadvantages of, different climate adaptation mechanisms to counteract increases in flooding through climate change.
- Understand the importance of multiple types of adaptation strategies and the need for societal adaptation measures.

Video Breakdown

Workshop 5 is broken down into 3 videos, with 3 multiple choice questions to be completed after each video. The breakdown is as follows:

1. Grey Infrastructure
2. Nature-based Solutions
3. Adapting in Other Ways

Activity 5:

Emergency Planning

A key feature of adaptation is being prepared. The first step of being prepared is having a plan!

Pair work (5 minutes)

1. Brainstorm what you need to prepare for sudden flooding.

Class work

Build a flood kit (15 minutes)

2. Determine what should be put into an emergency flood kit for a single person:
   - Have each student write on a small piece of paper **ONE item** they believe must be in every emergency kit. The item must be able to fit into a rucksack.
   - Gather the papers and write the item on the board. Repetitions of the same item can be placed together.

   .
3. This is your student's emergency flood kit. Ask them to Consider:
   - How do they feel about the items in the bag?
   - Would all the items fit into one bag, and can they carry it?
   - if not, what changes would they make to the bag?
     - This can be removing items, adding different versions of similar items, or changing out the items completely.
   - How would they edit this flood kit to make it suitable for the class?

Make the flood plan (20 minutes)

4. Next, use these questions as a guide to build up a flood plan:
   - What phone numbers would you make sure to have on hand?
   - What emergency flood defence measures do you have, or would you need?
   - Where would you store your flood kit and defence measures? Is it accessible?
   - Is there anyone in your school or locality who may need extra assistance or would need to be checked on?
   - Is there anything else about your school you might need to be aware of? How would you get this information?
   - In case of power outages or damage to phone lines, how would you adapt your plan?

5. Examine My FloodPlan Guide available at My Floodplan (flooding.ie).
   Can you identify any aspects the class has missed?

6. Fill out the Flood Plan and place it in a visible location.

Students can also use the guide to prepare a Flood plan for their homes!

6 How we Adapt

Explore adaptation as a societal measure and the role of citizenship in successful adaption!

The final workshop provides an opportunity for students to reflect on and revise their understanding gained across the preceding modules and provides a step-by-step guide to the iAdapt game – the capstone activity of this module – that unlocks on successful completion of all six modules. Students will learn about and revise material relating to:

- Power: adapting in a democracy, how decisions are made, and by whom, and uneven access to the decision-making process.
- Citizenship: In the last section, students learned about the decision-making process, and the different actors who participate in it. Successfully designing and implementing adaptation measures requires an understanding of these debates and processes and is part of what it means to be a citizen.
- Uncertainty: students will learn about the concept of uncertainty, predictions, and the value of models when it comes to forecasting flood events.

Learning outcomes

Upon completion of this workshop, students should be able to:

- Understand the processes of planning, consultation, revision, and implementation that will be necessary to make just transitions to a climate resilient Ireland.
- Understand what it takes to be active citizens in society.

Video Breakdown

Workshop 3 is broken down into 3 videos, with 3 multiple choice questions to be completed after each video. The fourth video is an introduction to the iAdapt game, which is played during workshop 7. The breakdown is as follows:

1. How we Adapt
2. Citizenship
3. Uncertainty
4. The iAdapt Game

Activity 6:

Nature-based Solutions for Schools

By now, you should have a good idea of what Nature-based solutions are and when they are effective. But how can we apply those to the school?

*This activity was designed from the GLOBE Ireland Rainfall and Flood Resilience Resources (*About GLOBE in Ireland - Ireland - GLOBE.gov).

Class work (10 minutes)

1. Brainstorm all the nature-based solutions for flood adaptation you have learned about through-out the module, or which you may have heard of elsewhere.

2. Discuss which ones would be most suitable for your school.
   Think in terms of size, cost, and feasibility.

Group work (20 minutes)

3. Choose 1 nature-based solution to focus on.

4. Research your chosen nature-based solution to fill in the SWOT table below.

Class work (10 minutes)

5. Each group will pitch their solution to the class in **one minute**, outlining its key features!

Useful Resources:

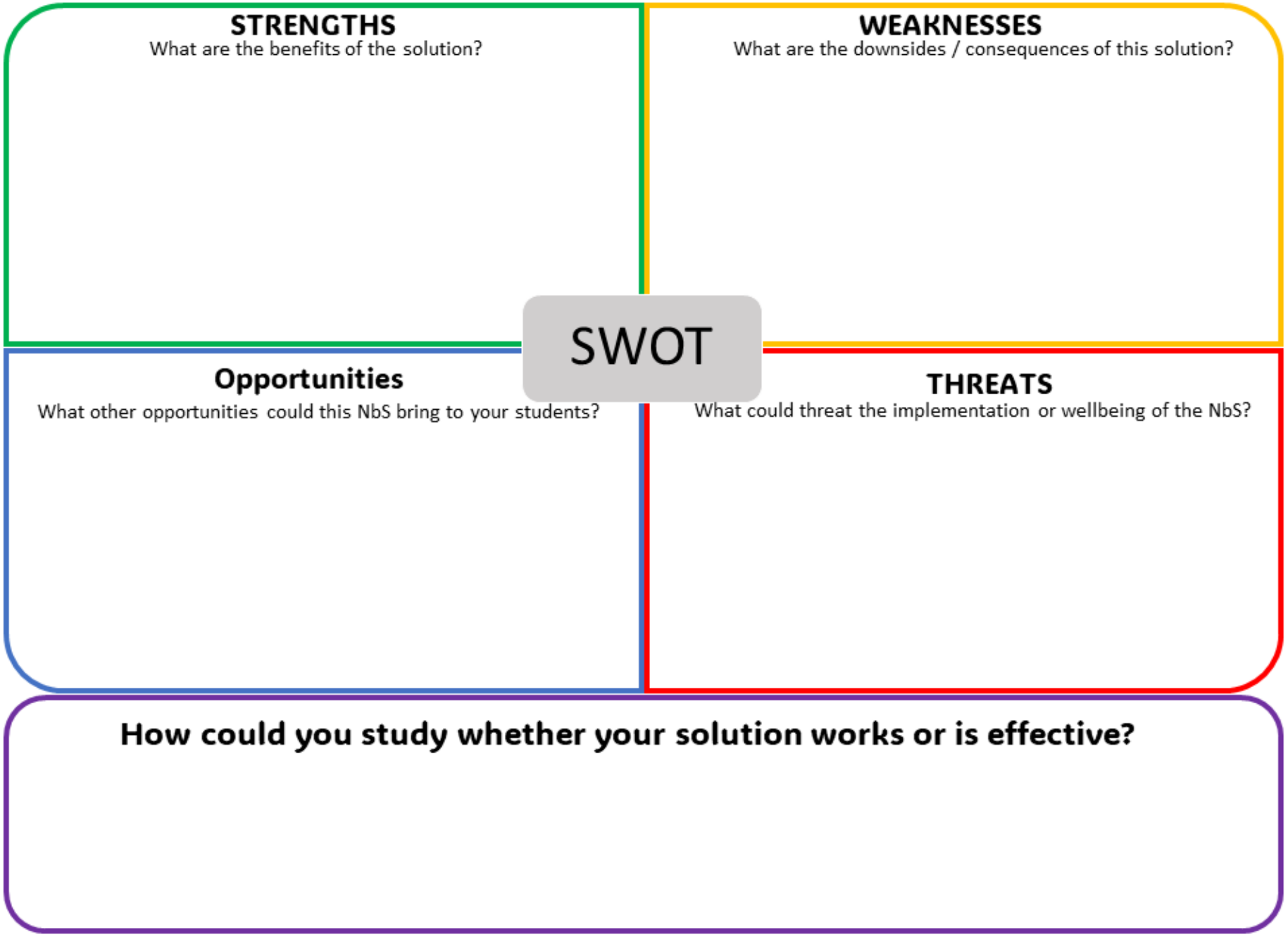
GLOBE Rainfall Resilience Poster (Printable for classrooms!): here

Sustainable Urban Drainage Systems: Susdrain - The community for sustainable drainage

Wildlife Ponds: Ponds for Biodiversity | An Taisce - The National Trust For Ireland

If you want to take this further, check out Activity 10: Nature-based Solution Implementation (page: 29) for advice on how to carry out putting a Nature-based Solution into your school!

Nature-based Solutions SWOT Analysis



7 The iAdapt Game

The capstone of the module! Practice your new knowledge and protect the city!

iAdapt: Students can play the iAdapt game in class either individually or in groups using their computers, tablets, or phones.

The game is set in a fictional Dublin or Cork in the year 2045. Players play as the newly elected mayor of the city, which is facing multiple flood threats as a result of climate change. The game is set over five rounds, with each round representing one year. At the end of each round, a flood event of random severity (low, moderate, or severe) and type (fluvial, pluvial, coastal) occurs, and will cause damage to the city. The players are given an annual budget to implement adaptation measures to defend the city from flooding. Using an interactive web map, students must decide what kind of flood defences they will build. They must also try to keep the electorate happy, or they will be voted out of office (and end the game early). The game ends after five rounds, and the players are shown how they did on a series of interactive graphs, which can be used for classroom-based discussion teacher-led discussion of why students made the choices they did, and how these affected their final score.

The main objective of the game is to prevent or reduce the damage that will occur in the yearly floods.

The iAdapt game is a “serious game” designed to as the capstone element of the climate smart transition module. It is designed to build on and reinforce the knowledge gained during previous in-class activities, and to drive discussion among participants.

The game is played in a web browser, and can be played on a desktop, laptop, tablet, or smartphone. Detailed instructions on how to play the game are available from https://youtu.be/7nYuYF2TLEo.

At the end of the game, players are shown how well they’ve done, and their performance is ranked on a leaderboard compared to other players. In order to compete with the highest scorers’ players must ensure that they defend against flooding, while ensuring that the defences they construct have the maximum number of co-benefits, which can be achieved by building nature-based solutions. The statistics and graphs displayed on the end game screen are designed to facilitate an in-class discussion about how well pupils have done in the game, and how the graphs and statistics can be interpreted to show this.

Additional Activities

This section includes further activities that you might like to run after completion of the game and module.

Activity 7 can be used as a solo activity or added into the end of any workshop as seen fit.

Activities 8, 9 and 10 are larger activities that will require more time and effort than can be completed in a single class.

If you have done any other additional activities with your class that you would like to share, or think could be included in future editions of this handbook, do let us know!

Activity 7

Debate and Discuss

If you are looking to extend a class or encourage discussions, try these techniques. Sample prompts and discussion topics are also available.

Moving Debate

Also known as a walking debate, this technique encourages conversation and discussion, using movement to create a more comfortable and open environment.

1. Set one side of the room as “I agree” and one side of the room as “I disagree”. The space in the centre of the room works on a spectrum from the “I agree” and “I disagree”.
2. Call out a prompt (see below) and students move to where in the room they feel mostly represents their viewpoint.
3. Ask students why they are standing where they are and use this to encourage discussion around the rest of the room.

A variation of this can be done via stand up (I agree), sit down (I disagree) and sitting with hands up (middle ground).

Tips:

- If the students all move towards the same side, play as opposition, and see if they can defend their points of view.
- Students should direct their explanations to the other students, not just at the teacher.
- Students can still move throughout the discussion if they are being swayed by any points.
- Do take care with more contentious statements or topics. Many aspects of climate change and climate action can cause derision and can cause the discussion to get argumentative.
- Do not feel pressured to get through as many prompts as possible. The goal is to encourage discussion and constructive conversations. 10 minutes spent on one prompt is preferred to 10 prompts with only a minute’s consideration each!

Big and small

With this, students have small group discussions which is followed by an open floor discussion. Students discuss the topic or prompt amongst themselves, in pairs or groups, and then share with the class.

1. Split students into pairs or small groups.
2. Use a prompt below and ask students whether they agree or disagree with it.
3. Give the students max 3 minutes to discuss the prompt and choose an answer.
4. Share the answers with class, each group should be able to defend their answer.

Prompts for discussion

Climate Change

- Climate change is too big a topic to discuss in a classroom.
- Climate change is currently impacting Ireland.
- Climate change is a problem for my [the student's] lifetime.

Adaptation

- Nature-based solutions should *always* be chosen over grey solutions.
- Climate adaptation should always be chosen over climate mitigation.
- It is enough to focus on just climate adaptation (or mitigation).

Flooding

- Mapping and visualisation are a good way to understand flooding.
- Flooding is the greatest problem facing Ireland due to climate Change.
- I [the student] feel comfortable talking about flooding and flood impacts.
- I [the student] feel nervous about oncoming flood events.

Climate Action

- I [the student] care about climate change.
- I [the student] feel comfortable talking to peers about climate change and climate action.
- I [the student] have more important priorities than climate change.
- I [the student] can engage constructively with climate action.
- Young people have no power when it comes to climate action.
- Climate change does not worry me [the student].
- I [the student] can make effective climate action.
- I [the student] think it is important to learn about climate change.
- I [the student] want to have voice in climate action.
- Everyone has a responsibility to take climate action.
- Ireland should increase funding for climate action, at a loss to other areas, such as housing and health.
- The Irish government needs to take measures to increase climate action from businesses.
- The Irish government *has a duty* to take climate action.
- I [the student] think the government is taking adequate measures for climate action.

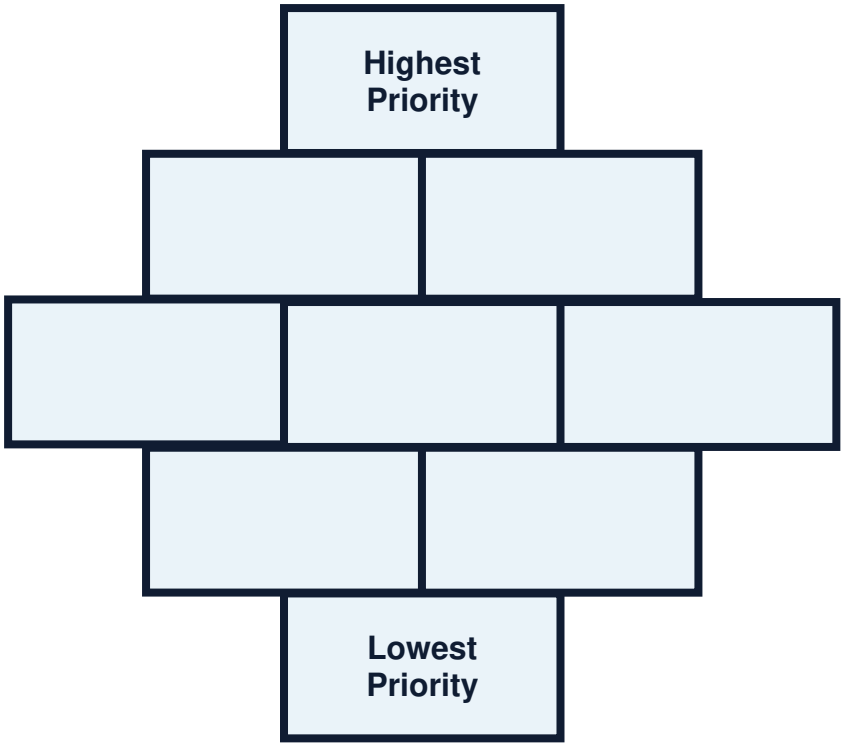
Climate Education

- The Irish education system adequately covers climate change.
- The Irish education system could do more to educate students and teachers appropriately on climate change.
- I [the student] like how we learn about climate change.
- I [the student] would like a say in how we are taught about climate change.

Diamond Mind

1. In groups, the students should organise the following measures by how important they think they are. Students should use a diamond shape to determine which measurements they believe are of the highest or lowest priority.

   Measures:
   - Community and bottom-up flood defences
   - Government and top-down flood defences
   - Climate Adaptation
   - Climate Mitigation
   - Flooding Education Campaigns
   - Nature-based solutions implementation
   - Societal Protection measures and policy
   - Emergency flood plans
   - Grey infrastructure implementation



2. Once each group has settled their diamond, open a class discussion to determine where each statement should be.
3. As a class vote on the final diamond structure.

Activity 8

Career Day

Transition year is a big time for thinking about the future and what kind of options there are. Throughout Climate Smart, there was input from lots of people in different careers, do any of these inspire you?

Class 1

Pair work (30 minutes)

1. Identify the different jobs and roles you can see in the game/ behind the game or have learned about during the workshops.

2. Share these with the class and write all the careers up on the board.

3. Have each pair choose a career and reach out to someone working in that field. Ask them how they got into that career, and if they have any advice for young people looking to work in that area.

Class work (10 minutes)

4. Vote on the top 5 careers the students want to learn about.

5. Invite the school career guidance officer to the class to learn more about these 5 careers, the courses and qualifications required and how to get into that career journey.

Class 2

6. *Advice from career guidance officer.*

7. Students can share any information and advice they have gotten back about the career they chose.

Activity 9

DM the DMs

Now that you have the knowledge and know how, it is time to engage with the decision makers for your local area and discuss local flooding and flood plans with them.

Engaging with decision makers can be a great way for students to bring their learning into the realm of active citizenship. This can be done by inviting a local representative into the school and creating an engaging event.

This should be a student led event as much as possible. Encourage them to take responsibility for organising and running the event!

Step 1. Set the event

1. Discuss with the students what they want to get out of the event, for example:
   - Learn about on current plans for the area.
   - Consult on future plans for the area.
   - Learn about their processes for developing plans and consulting the community.
   - Talk about their adaptation learning and how they think they can benefit their area with this.

2. Use this discussion to create:
   - A name for the event
   - An outline for the event
   - **3 goals** the students want to achieve with this event

Step 2. The invite list

1. As a class, identify your local representatives. Use these resources to help:
   - Constituency maps (gov.ie - Constituency Maps (Current) (www.gov.ie)
   - TD's (TDs & Senators – Houses of the Oireachtas)
   - Councillors: Your local authority's website should have details of these.
   - CARO (The 4 CAROs - CARO)

2. Determine who would be the most suitable to invite:
   - Have they a particular interest in youth engagement or climate action?
   - Have they connected with your school before?
   - Will they be able to help complete the goals of the event?

3. Draft a letter and invite them. Include the name goals and outline of the event in the event description.

Emails and postal addresses are available on their respective profiles.

TD's and councillors can be quite busy, so it is best to invite a few and see who is interested and can attend.

Step 3. Planning the event

1. Decide on a location.
   This depends on the amount of people that will be at the event. Maybe a classroom is big enough or consider whether your school has a hall or space that would be better suited.
2. Finalise a date.
   Securing decision makers and representatives can be tricky, so once you find a day that works, lock it in!
3. Prepare yourselves.
   If you plan to ask questions, have them written out with designated speakers.
   Consider opening and closing speeches by the students and practice ahead of time.
   If you plan to play the iAdapt game with the guest(s), ensure there will be game access and Wi-Fi connection available.

Step 4. The event and follow up

On the day, make sure everything is ready so that it can run smoothly. If you make a good impression with the guest, it is likely they may return, and you can build up a relationship within your school to keep students engaged.

More tips for the students:

- Take lots of pictures and share them on school socials, making sure to tag the guest.
- Have someone keep track of the day and write a short piece on how it went and what happened. Try and get it published in a local newspaper.
- Follow up with the representative a few days later. Thank them for their time and ask to keep in touch on any updates about what you have asked about.

You could also network with other Climate Smart or nearby schools to host a larger event with multiple representatives and schools. If this is something you would like to try, get in touch and we can see how we can help!

Activity 10

Nature-based Solution Implementation

This activity would work best as a follow on from activity 6: Nature-based Solutions for schools. In that activity, research was carried out on the types of Nature-based Solutions, and which one would be appropriate for a school. Now is your chance to implement it.

1. As a class, choose your favourite solution and draft a letter to your principal or board of management on why it should be implemented.

   When writing this letter, think of what you are trying to achieve and make it convincing.
   Be sure to include:
   - *The problem or potential problem being faced by the school and how this nature-based solution will defend against it.*
   - *All the other benefits of the nature-based solution outside of this.*
   - *Any potential risks or safety concerns and how you plan to overcome them.*
   - *How much implementing the nature-based solution will cost and why it deserves the money.*

2. Once happy with the letter, try and get as many signatures as possible added to your letter. Encourage both teachers and students alike to read and sign the letter looking for nature-based solution in the school.

3. Approach the principal or board of management with the letter. Be professional when approaching. You need to be taken seriously if you want to get approval!

Success!

Now comes the fun part… actually implementing the nature-based solution!

This activity started with research, and as such you should be ready to go!

If you need more guidance, do get in touch!

Final Notes

Thank you

Thank you so much for taking part in the Climate Smart module. We truly hope you enjoyed your experience and found it beneficial. If you have any questions or feedback about the module, online or hands-on activities, please do get in touch. We want to continuously improve this module and make sure it meets your needs, so we appreciate any and all feedback.

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