SDG13 Climate Change Engage Game Design

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Lesson 6: Defining the Problem

Subjects: Design, Environmental Science, Game Design, Geography, Science, Technology

Lesson Title and Summary: Defining the Problem

In this lesson, learners will begin to understand how to define a problem. Learners will be using game design to engage 15 - 17-year-olds with awareness about climate change and methods of adaptation. The process of developing a game for other learners will provide them with an opportunity to develop an awareness of climate change, causes and impacts and concepts of mitigation and adaptation.

Vocabulary: Assumptions; Analyse; Conflicts; Define; Source

In this lesson, the learner will:

- understand the importance of getting to the source of a problem
- become more aware of climate change
- develop an awareness of how to adapt to climate change
- develop an understanding of the connection of local and global issues
- complete a problem tree
- understand the complexity of wicked problems in their location
- develop critical thinking about problem-solving
- begin to think about how to apply their awareness of climate change and adaptation within their game design
- begin to reflect on and communicate issues concerning climate change to teenagers of similar ages

Materials

- Flipped Classroom Task: Define the Problem
- Video: 'Defining the Problem'
- Worksheet: Problem Tree
- Pens, pencils
- Paper

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Activity Instructions

Activity 1 Finding and defining your problem, issue or concern (15 mins)

Before the lesson, ask learners to read Flipped Classroom Task: Define the Problem and underline key words and main ideas.

1. In pairs, ask learners to discuss the following questions:
    - *What is a problem?*
    - *Why is it important to define a problem before you begin to find solutions?*
    - *What kind of difficulties can people have when they are trying to solve a problem?*
    - Share ideas as a whole class and note down ideas on the board.
2. Watch video: 'Defining the Problem' (see Media Box).
   Make notes on the questions in Step 1 based on the video.
   Add additional ideas (after watching the video) to the board.
3. In pairs, ask learners to discuss 'why is climate change a problem?'
   Share ideas as a whole group.

Activity 2 Aligning your problem area to the Sustainable Development Goals (15mins)

1. Visit the Sustainable Development Goals (SDGs) knowledge platform - see Media Box.
2. Ask learners to use the SDGs knowledge platform to select the SDGs that align with climate change.
3. In their groups, ask them to look at the targets and indicators of one of the selected SDGs.
4. Brainstorm possible solutions for the issues of that SDG.

Activity 3 Use a Problem Tree (20 mins)

1. Remind learners about the importance of defining a problem (refer to notes on the board from Activity 1).
2. Using worksheet: 'Problem Tree' and their notes from Activity 1 & 2 ask learners to write their selected problem on the problem tree trunk (Step 3 Activity 1).
3. In pairs, discuss the causes of this problem and write them underneath the problem, as the “roots” of the tree.
3. Discuss the effects or consequences of this problem and write them above the problem, on the “branches” of the tree.
4. For each cause, ask what causes it. For each effect, ask what the consequences are. Continue this process until no further causes and effects are mentioned. You may not have all the answers at this point, so make notes of any assumptions, questions, conflicts, or gaps in knowledge.

REFLECTIVE EXERCISE: 3-2-1 (10 mins)

- Three things they feel they have learnt from the tasks
- Two things they found most interesting and would like to explore more
- One opinion they have about the activities, what did they like or how they would improve them

Use Post-its or a mentimeter survey - www.mentimeter.com to gather reflections

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EXTENSION / REDUCTION ACTIVITIES

Reduction: For a shorter class, complete Activity 1 and 2 only with extended discussion time.
Extension: For a longer class, watch video: 'Identifying the focal issue' and begin to try to develop a problem statement / driving question. In addition, ask students to refer to their answers on the worksheet: Define the Problem
Students can begin to consider what areas they might like to focus on for their game design research.

MEDIA BOX: (materials, online video links, extra resources, case studies etc)

'Defining the Problem' (1:25min) https://www.youtube.com/watch?v=2rJRVv-NOaA\

Article: 'Creative Strategies: Problem-finding' https://creativiteach.me/creative-thinking-strategies/problem-finding/

Article: 6 'Steps to identifying the real problem' https://executiveeducation.wharton.upenn.edu/thought-leadership/wharton-at-work/2015/06/identify-the-real-problem/

'Identifying the focal issue - using a problem tree' (1:57 min)
https://www.youtube.com/watch?v=-j-_Y7D35H4

UN SDGs Knowledge Platform https://sdgs.un.org/goals

Lesson 15: Supports learners to define their driving question for the game design challenge

Lesson 16: The stakeholder mapping worksheet supports learners to focus on their gamer, their interests and focus their game design.

Local Trip / Expertise / Additional Work and Assessments

Contact the local librarian to collect back issues of the local newspaper for students to look at for local problems related or potentially related to climate change and adaptations.

Visit local area organisations and ask them if they are working on climate change or adaptation.

Interview local organisations to find out more about any climate concerns through primary source research.

CCE L6WS: P2P DEFINE YOUR PROBLEM

Problem Solving

First Step in problem-solving: Understand the Problem

While it may seem obvious, identifying the problem is not always as simple as it sounds. The biggest issue can be identifying the wrong source of a problem. This could mean your attempts to solve it are inefficient or even useless. Remember: Once the correct source of the problem has been identified you need to fully define it before it can be solved effectively.

Things to think about:

- What do I know already about the problem? – Make a list.
- Can a picture or diagram help you? Try to visually draw or map the problem.
- Who's telling me about this problem? What is their perspective?
- What do I need to find out?
- Do I need to speak with anyone else about this problem?
- Try rewriting the problem in your own words?
- What do you think the problem is?

Step Two: Brainstorm

In this phase, you will need to think, talk, sketch, doodle, contemplate, or journal, in order to start allowing ideas to formulate. Then, set aside some daydreaming time and get started. Think big and let all the ideas you have hit the page without editing them.

Step Three: Research: How are you going to turn the idea into a reality?

Brainstorming, researching and refining your problem go hand in hand. You will be going back and forth between the three until you come up with a plan. Once you brainstorm some great ideas for your game, you will need to research to learn more about the problem and possible solutions. In turn, that leads to more brainstorming and refining your problem.

In the next Design Thinking phase - Ideate and Prototype you will think of how to begin to turn your idea into a reality. Start to make a make a list of any questions or concerns that come to mind. Its never too early!

- What materials do you need?
- What will it cost?
- Can you build it yourself or will you need help?
- If you will need to collaborate on this piece, decide who that will be and make plans to work together?

PROBLEM SOLVING TREE

Find out different ways to solve a problem.
Pick the best one.

I choose solution number _____
because _____

_____