CREATIVE INPUT

Film makers

Dan Ford & Gibson Blanc, [StoryScreen](#)

Game design

Funcertain Futures: Building New Worlds game design by [Jo Lindsay Walton](#). *Funcertain Futures: Building New Worlds* is a hack of [*Kampala Yénkya*](#) by Jo Lindsay Walton, Dilman Dila, Polina Levontin, Maurice Ssebisubi, Jana Kleineberg and others. *Funcertain Futures: The TTRPG* is a hack of *Kampala Kampala Yénkya Multiverse*. All these games are inspired by [*The Quiet Year*](#) by Avery Alder. With additional thanks to Keith Perera.

Illustrations

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Guide to topic content graphic (Introduction); **header images:** Louise Harvey, [Chimney Design](#).

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https://www.transformineducation.org/

Creating with uncertainty

Creating with uncertainty:

Sustainability education resources for a changing world

Resources that are adaptable for all students of all ages in formal and informal education

SSRP
SUSSEX SUSTAINABILITY RESEARCH PROGRAMME

TRANSFORM-*i*N EDUCATION

PASTRES
Pastoralism, Uncertainty, Resilience

GREEN UNITED!
LET'S CHANGE THE WAY WE DO THINGS

OUR CITY, OUR WORLD

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Perpetua Kirby and Rebecca Webb

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1. JONK Thinking and Learning Ltd.

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FOREWORD

Professor Sasha Roseneil

Stilling the voices that know, cultivating those that don't know

We are living through a period of polarised certainties. Amplified by social media, and informed by the algorithmic push of like-minded content, individuals and groups seem more ready than ever to shout their firmly held opinions into echo-chambers. Ambiguity, ambivalence, doubt and nuance are side-lined. Careful listening, dialogue across difference, and recognition of the multiplicity of world-views and the complexity of human experience are all too rare in the public square. There is little or no space for not-knowing.

Yet, paradoxically, the recent past has underlined just how uncertain the world is, and how little we know about what might come next. A global pandemic has up-ended our lives, forcing us to rapidly re-invent practices of daily existence, with no blue-print to follow. There is widespread political turbulence and conflict within and between nation-states. Economies and markets are unsettled, prices are rising, millions are cast into poverty. And across the world, climate change is destroying homes and livelihoods, and biodiversity is disappearing. What all this means, what the future holds, we cannot know for sure. Indeed, it might be suggested, if we follow the argument on which this collection rests, that our ability to shape our shared future rests on our ability to acknowledge and lean into the uncertainty.

In this context, this education pack is an inspirational manifesto and a textbook for our times – an intervention in the contemporary cultural and ecological moment that provides an exciting array of provocations and resources for those who want to open up possibilities for people of all ages to learn to live and work with uncertainty.

Coming from a wide range of disciplinary and interdisciplinary backgrounds, the contributors share a commitment to education as a creative process that seeks to develop what the early nineteenth century poet John Keats called, in a letter to his brothers in 1817, 'negative capability'. Keats explained this as the capacity to be 'in uncertainties, Mysteries, doubts, without any irritable reaching after fact and reason'. [1] Keats regarded negative capability as a key attribute of the great writer, and subsequently, psychoanalysis has expanded on the idea that the ability to sit with uncertainty, to not rush to close down uncomfortable experiences of not knowing, is important both in the therapeutic relationship, and to psychic health and well-being.

The exercises and projects that are suggested by the authors in this pack are designed to elicit experiences of uncertainty, and to cultivate tolerance of the discomfort that invariably accompanies encounters with new material. Grounded in an empathetic recognition that engaging with unfamiliar ideas and with

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1. Selections from Keats's Letters by John Keats, Poetry Foundation

different perspectives can be unnerving, or even deeply disturbing, there is a profound humanity underpinning the pedagogy presented here. At the same time, the approach also rests on an understanding of the fundamental entanglement and interdependence of human beings with the natural world, of people and planet. Taken together, the resources seek to develop students' capacities for rational, emotional, embodied, and relational ways of knowing, alongside the capacity to abide in a state of non-knowing. In so doing, they support the development of the skills of innovation and invention needed for research, entrepreneurship, and creative practice, as well as attitudes of mind that might enable us to survive and thrive in a fast-changing world.

In 1961 the University of Sussex adopted its founding motto: 'Be still and know'. In the light of the wisdom of this text, we might today, amidst the sound and fury of the present, look to still the voices within and amongst ourselves that (always) know (best), and to cultivate those that don't, encouraging us all to 'be still, and know and know-not'.

Professor Sasha Roseneil
University of Sussex
Falmer, Brighton, UK
June 2023

About the author

Professor Sasha Roseneil
UNIVERSITY OF SUSSEX

Professor Sasha Roseneil is Sussex's ninth Vice Chancellor and its first female VC.

Previously, Sasha was UCL's first Pro-Provost for Equity and Inclusion and Executive Dean of the Faculty of Social and Historical Sciences. Before that, she was Executive Dean of the Faculty of Social Sciences at the University of Essex, and held leadership positions at Birkbeck, University of London and the University of Leeds.

Over more than 30 years as an academic, Professor Roseneil has developed an international reputation for her pioneering research on intimate relationships, citizenship, and social movements. Originally trained as a sociologist, and later as a group analyst and psychotherapist, she has played a leading role in establishing the interdisciplinary fields of Gender Studies and Psychosocial Studies.

She is a Fellow of the Academy of Social Sciences and a Principal Fellow of the Higher Education Academy. She is also a member of the Institute of Group Analysis and a Founding Scholar of the British Psychoanalytic Council.

PART I

INTRODUCTION TO THE EDUCATIONAL PACK

1.

INTRODUCTION TO THE EDUCATION PACK

Perpetua Kirby and Rebecca Webb

What is meant by creating with uncertainty?

We all live with uncertainties. There are no clear answers, and yet nonetheless we must arrive at our own positions about what to think and what to do. This includes how we might live our lives differently and more sustainably, even if sustainability itself throws up many uncertainties about what might happen, what to do and how best to live our lives in ways that mitigate the damage humans are causing to the planet.

This set of resources is designed to support students to attend closely, dig deeply and engage with the complexities of climate change and biodiversity loss in their everyday lives. It consists of ten on-the-ground sustainability topics, each offering different activities that can be used to enrich teaching across the curriculum. They engage students philosophically and practically to work towards a more sustainable world.

But what is key is that this pack offers opportunities to be creative with uncertainty, so that students and their teachers can draw on their own and curricular knowledge, to see what new things they might discover. The invitation is to be uncertain together, where neither the educator nor the student does not (and cannot) know *the* answer in advance. After all there will not be *'one right answer'!*

By encouraging students to use things they already know—whether learned at school or elsewhere—they find out something not yet known. This is why the activities can work (and be easily adapted) for students of any age, aptitude and level, including those in early years, primary, secondary and special schools. Some have even been co-created and used with our own higher education students.

Encountering complex sustainability issues alongside a supportive and attentive teacher offers students the opportunity to stick with the challenge of working through something to consider where they stand on an issue, which might be difficult to do but also deeply satisfying, as well as charting a possible way forward.

Students are supported to be creative with uncertainty to:

- Explore and deliberate diverse knowledge and perspectives.
- Experiment with different ways of knowing, including the intuitive, experiential, multisensory, and emotional, as well as the rational.
- Tolerate the difficulty of 'not knowing' and 'getting lost' and to explore alternative possible pathways.
- Be attentive to the world and to encountering it anew, so as to interrupt 'business as usual' ways.

- Identify how to live with responsibility and justice for others – including other species – as well as oneself, on a planet with limited resources.

Encounters and opportunities: Student target group and activity guidance

The pack is for teachers and other educators working in any educational context whether formal or informal. It is appropriate for all students of any level from early years through to secondary school age (or beyond).

The pack is organised around 10 topics: the sustainability and subject areas covered by each topic are presented in the table below.

The topics include four activities, as follows:

- **Brief encounter:** this is designed to be short activity that can slot into a lesson related to the topic.
- **Deliberative encounter:** this is a longer activity and involves students engaging with different perspectives and experiences in a more sustained way.
- **Visual or sensory encounter:** these activities require students to attend to visual stimuli or engage in other sensory sources.
- **Beyond the classroom encounter:** these activities are designed with the intention that students will do them at home possibly with the support and engagement of their family and friends. The exception is Topic 2. *My Object, My Self*, in which this last activity is a collaborative class exhibition for families/others to view. All other *Beyond the classroom encounter* activities can also be adapted for use in the classroom.

The exception to the pattern set out above is the final storytelling topic, which includes an activity, *Funcertainty*. This is designed to work best either with a smaller group (e.g. an eco-council) or when there is more time to engage with larger group (e.g. during an enrichment week or holiday club).

For every activity within each topic, teacher guidance is provided. This focuses on the following:

- **Opportunities for embracing uncertainty:** Guidance is offered on how the specific activity fosters an engagement with ideas of uncertainty explored in this introduction.
- **Opportunities for all students:** Many of the activities can be adapted to be used with *all* students, regardless of age and level. Guidance is given on how this might be done but respects teachers' knowledge of what works with their own group. The language therefore avoids 'age' or 'ability': the assumption is the inclusion of all students and is less concerned with 'right' answers. What is important is the ongoing engagement, in whatever form is applicable for each student in their diverse contexts.
- **Opportunities for creative thinking:** The activities allow for a creative focus that enables students to surface and acknowledge the many ways that they might respond to the subject-matter, that they

might not otherwise have been so aware. Guidance is offered on how to extend this for each activity.

- **Opportunities for linking to climate justice**: This includes how to extend the activities to include a focus on social justice and diversity, and multilingual and multicultural matters.

Education resource development: co-creating with uncertainty

The development of the activities was led by academics in the Department of Education, University of Sussex, including experienced schoolteachers, together with a team of colleagues with sustainability expertise from across the university and partner organisations. It includes input from those working in the following disciplines: Life Sciences, Media, Arts, Humanities and Global Studies.

The pack offers students the opportunity to engage with current academic research, through the inclusion of links to films of their work and other resources.

Most of the activities have been trialled with students, but others are adaptions of activities that have been used; none have been trialled with students of all ages and levels. We acknowledge our own uncertainty about how the different activities will work with diverse groups of students, across multiple contexts. We welcome feedback from teachers and students about how the activities have gone and any adaptations made to your specific context. Please do email the team to let us know.

The film *Creating with Uncertainty – TRANSFORM iN EDUCATION* highlights examples of practice with students from primary, secondary and special schools in the UK.

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://openpress.sussex.ac.uk/creatingwithuncertainty/?p=56#oembed-1

Guide to topic content linked to curriculum topic

Activity key

- Brief encounter
- Deliberative encounter
- Visual encounter / Sensory encounter (Topic 3 only)
- Beyond the classroom encounter

ACTIVITY CONTENT	1. Adapting to new challenges	2. My object, my self	3. Encountering Others	4. Food shopping	5. Apples	6. Water	7. Kelp	8. Wind energy	9. Forests	10. Storytelling
Sustainability Theme										
Energy								●		
Water						●				
Food				●						
Transport	●									
Consumption			●							
Biodiversity			●		●		●		●	
Climate justice*								●		
Global/Global South/ indigenous	●		●	●		●			●	
Subject/discipline										
Policy / International Relations	●						●	●		
Science	●		●		●			●		
History									●	
Geography	●	●	●			●		●	●	
Technology & design	●		●			●				
Arts and performance	●	●			●		●		●	
Language & literature	●	●	●				●		●	
Maths					●					
Design & technology	●									
Religion						●				

* All activities have guidance on how to address climate justice, captured in the teachers' guidance on 'Opportunities for linking to climate justice'.

About the authors

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http://www.transformineducation.org/

Dr Perpetua Kirby is a Lecturer in Childhood & Youth in the School of Education and Social Work. Her research interests are children and people's rights, participation and agency, including democratic approaches to education, as well as ethnographic and multimodal methodologies. Her PhD explored young children's agency in primary schools, using ethnographic and creative multimodal approaches. She has also researched child and youth participation with multiple and diverse public and third sector organisations. She has a strong research collaboration with Dr Rebecca Webb on transformative models of education that engages conceptually and empirically with children's rights and subjectness, in schools and informal education contexts, with a particular focus on sustainability education in both the Global South and North (see www.transformineducation.org).

Her research has gained national media attention, including on BBC Radio 4's Women's Hour, Financial Times, Huffington Post and BBC Newsround.

Dr Rebecca Webb
UNIVERSITY OF SUSSEX

Dr Rebecca Webb is a researcher and teacher academic in the Department of Education.

Rebecca's research and teaching interests primarily focus on the theory/practice intersections of the purposes of education; especially in relation to the democratic, transformative and sustainability possibilities of education for uncertain times. These interests encompass a focus on qualitative methodologies and ethics; ideas of subjectivity, 'voice' and participation; creative and provocative

approaches to pedagogies and practices of education, encompassing all age-groups and systems of schooling, including nurseries.

2.

CREATING WITH UNCERTAINTY: EDUCATIONAL BENEFITS

At the University of Sussex, we are researching the benefits of working with uncertainty, where teachers alone cannot know the answers. This includes:

- ◦ ***Deep learning:*** providing students with the space to explore uncertainty that can make for deep learning. Students are not simply concerned with identifying correct answers, but engage with home, general and curricular knowledge by asking questions, sharing opinions and exploring different ways of looking at things.

- ◦ ***Self-awareness and being changed:*** students may experience themselves as participants in the world, have an enhanced awareness of their own different intelligences, and a recognition of their ability to know something deeply; to *be* something other than that which they had been previously. Examples of the latter might include: to be moved by a line in a poem that intrigues them; to be captivated by sounds they might hear outside; to be one who speaks about something that matters to oneself; and to be one who does something for oneself and for the common good. Such transformations might be momentary (but still important) or longer lasting.

- ◦ ***Embracing difference and complexity:*** rather than shying away from differences of perspectives and opinions, working with uncertainty engages with these head on. Such opportunities help to avoid the 'good/bad' polarisation and moralising (as evident in popularist movements and some media representations of environmental actions, for example). This is necessary to live respectfully and compassionately with others, in ways that embrace difference.

- ◦ ***School and wider structural change:*** working with uncertainty opens the possibility that students may question or even reject curricular knowledge and taken-for-granted school and wider community practices. This might be later in their adult lives or possibly now. Some students, for example, are currently rejecting what they see as colonising and patriarchal historical accounts of the world; some are challenging school practices that pose a threat to climate change and biodiversity loss. This possibility is key to schooling within a democracy, where something considered to be of worth is offered with integrity on the basis that it may be

taken-up or rejected, now or at some future date. Students may challenge the way things have always been done, and identify ways to transform aspects of their school, the wider local and global community, as well as their own lives.

In the film *Teaching with Uncertainty* three teachers from the UK (primary, secondary and special schools) talk about why they teach with uncertainty. [https://bit.ly/teachingwithuncertainty-film]

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://openpress.sussex.ac.uk/creatingwithuncertainty/?p=60#oembed-1

3.

CREATING WITH UNCERTAINTY: EDUCATION PURPOSE FOR SUSTAINABILITY
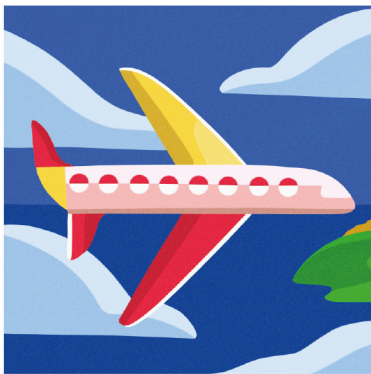
Mastering Knowledge

Discovering Knowledge

Not knowing

Thinking about the purpose of education is important when considering how we might support students to live now and in the future with ongoing and emerging sustainability challenges. These include severe weather events and infrastructure damage; biodiversity loss; threats to food security; technological change; altered lifestyles; mass migration; polarisation and weakened democracies.

The curriculum is important for ensuring students have the knowledge and skills to respond to change. So too is fostering a capacity to embrace uncertainty as an inevitable and important part of living in the everyday world of family, school and work. Creating with uncertainty fosters transformative possibilities that might be key to mitigating and adapting to sustainability challenges.

To think about how we might shift between *transformation* and *conformity* in educational provision, we have developed three heuristics: the plane, the train and the seafaring boat.

The first two relate to ideas of 'conformity' in knowing things (i.e. knowledge acquisition of curriculum content, such as the causes of climate change, and behaviours understood as important for addressing these challenges, such a recycling). These rely both on ideas of 'mastering knowledge' (the fastest route possible, like taking a **plane,** with knowledge communicated by teachers) and 'discovering knowledge' (following slower and scenic routes, like taking the **train**, but with the same destination as the plane, and achieved through group discussion, play and inquiry, etc., involving both teachers and students). These are important for ensuring students know and 'get' existing disciplinary sustainability knowledge.

A third transformation educational heuristic receives too little attention. This invites students and teachers to think and work *differently*, with ideas of uncertainty, in addition to conformity. Here students

are not simply trying to work out what knowledge is expected of them by their teachers to succeed in homework, tests or exams, for example. Instead, they are enabled to respond to a learning situation by asking questions, sharing their opinions and own areas of knowledge, and querying the way things have always been understood or done. We think of this as being akin to **seafaring**, heading off without a clear destination. We borrow this metaphor from the anthropologist, Tim Ingold, who distinguishes seafaring from the transported traveller; he describes the seafarer as the one that 'has no final destination, for wherever he is, and so long as life goes on, there is somewhere further he can go.'

With teacher permission, it is in the moments of seafaring that students can encounter the world, in order to work out who they are and what matters to them; how to be versatile and flexible; to shift their response to the existence of other beings and alternative opinions; and to challenge the idea that there is only one way to look at the world, so that they might respond to its limitless demands. This is where they can work out what sustainability means for their own lives, including any action that they might take.

In any education system functioning within a democracy, students must come to their own position themselves; this cannot be dictated or 'persuaded' by teachers. A democratic education requires students to have the space and time to grapple intellectually and emotionally with difficult questions and challenges, to see where it is that they might land, always acknowledging that others might see things differently.

We have used the above images with students aged nine and ten to signal to them the shifts being made between the different heuristics. When in the boat, we have invited them to be 'researchers' alongside us, to think through what it is that we all do not know.

In the film *Uncertainty in education* Dr Perpetua Kirby and Dr Rebecca Webb talk about why this approach matters for education.

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://openpress.sussex.ac.uk/creatingwithuncertainty/?p=32#oembed-1

4.

TEACHER AND STUDENT ROLES IN SPACES OF UNCERTAINTY

Creating with uncertainty is highly demanding of effort, to use the different intellectual and emotional resources we each have, whether as students or teachers. It requires us all to cope with unpredictability, to think on our feet, to engage with nuance, and to emphasise the richness of the experience of others (including nonhuman species) who may be very different to us.

This demands a language—**and by this we include a multitude of nonverbal communication**—of considerate challenge and critique that is not simply obedient and pleasing. It requires a mind-set from both teachers and students alike that it is absolutely okay to assume that 'we are going to think from an alternative perspective', and that we can 'approach/do things another way', by asking questions, pondering and wondering 'what happens if . . ?' It also requires us to take seriously diverse ways of communicating and engaging from all students.

Core questions for creating with uncertainty

- What do you see? hear? sense?
- What emotions do you feel?
- What do you think about it?
- What do you make of it?
- What does this demand of you?
- What role can I play in supporting you?

Teacher role

Teachers play an important role in requiring students to consider what absorbed curriculum knowledge might mean for themselves, as well as how they might engage with others in their communities. What students think, feel or do as a result of undertaking activities should not be dictated; nor can it be predicted. There are four key areas for teachers to attend to:

1. Share your knowledge

- Share what you know with students (where this may be useful) and be clear about what you don't know.
- Draw students' attention to that which you want to preserve and believe is worthy of study.

2. Invite and support all students to share their experiences

- Work from the assumption that every student can engage with uncertainty.
- Listen to what students know, what they don't know, their questions and feelings.
- Support students to articulate – in a way appropriate to them – how they experience the subject matter.
- Use creative and deliberative activities that encourage students to surface/reflect on/communicate their perspectives.
- Require students to listen carefully to others.
- Support students to identify a respectful uncertain language e.g. 'Let's try out another way' 'I wonder whether . . .'
- Be careful not to push your own ideas onto students.
- Attend carefully to what concerns students and what touches them deeply (and where a window of tolerance is shaken).

3. Challenge students to think deeply together and to verify what can be claimed about the topic

- Require students to pay close attention to what has been shared.
- Support students to investigate, speak about, persuade and deliberate together.
- Require students to justify their workings out (while refraining from asserting one right answer yourself).
- Challenge students to question themselves about what their ideas might mean for themselves/others.
- Encourage students not to settle for comfortable but unsatisfying solutions.
- Introduce inconvenient truths and difficult questions in response to contributions that are concerning.

4. Reflect on the possible educational value of engaging with uncertainty

- Discuss what was possible or limited in opening up spaces for uncertainty.

Core verification questions to ask students

- Does what you want/desire affect others (human/nonhuman)?
- How do others experience this?
- What questions would you expect others to ask you about this?
- How can you accommodate different views?
- When others think differently, what more do you need to know? How can we find out? What difference might that make?
- When people act in ways you disagree with (eg buying fast fashion; cutting down trees) can you imagine what they might see/think/feel/imagine?
- What would you like to ask those who think or act differently? What would you like to say to them? How could you do this in a way that they can hear? What might they say to you? What can you teach each other?

Student role in this uncertain space

This demanding work requires students to:

- Listen to what others know, including other students, teachers and others.
- Share what they know, think and feel, as well as their own experiences.
- Ask difficult questions of themselves and others (including of peers, teachers, experts, family).
- Communicate what they think and feel in different ways (e.g. speaking, drawing, writing).
- Reflect deeply and verify their work.
- Negotiate a way forward with others.
- Be open to noticing and being surprised by what they and others can do.

Role of everyone in this uncertain space

- Follow the ground rules or revise them together where necessary.

Core questions for creating with uncertainty for sustainability

- What are your sustainability interests and concerns?
- What do you feel you already know and what do you want to know?
- How do you know? (ie sources of existing knowledge)
- What puzzles, worries, confuses you?
- What do you notice as you walk/look around: what questions/feelings/thoughts does this raise for you?
- What do you hope for and why?

PART II
THE RESOURCES

TOPIC 1: ADAPTING TO NEW CHALLENGES

Brief Encounter

Being Uncertain

Draw what you think or feel about being uncertain. Use the words and phrases below as a source of inspiration.

- Blind alleys
- Disagreement
- Serendipity
- Humility
- Vulnerability
- Meandering
- Wandering and wondering
- Different points of view
- Uncertain world futures
- Doubt
- Failure
- Confusion
- Knockback
- Unplanned or unexpected
- Things not what they seem
- Not knowing
- Engaging with different ideas
- Involving people who see things differently

- Changing our minds

Fostering a vocabulary for working with uncertainty

Opportunities for Embracing Uncertainty

Life, the world and lots of professions are full of uncertainty. This invitation places the unknown at the heart of how our world functions. Students might consider how situations of uncertainty make them feel, and how much uncertainty they feel they encounter on in their everyday lives.

Opportunities for All Students

This invitation is suitable for students of all ages as it can adapt to different levels of complexity when considering how we all have to manage situations of uncertainty. In the early years, it may be used to discuss situations that characters in stories find themselves in – how do these situations make the characters feel? For other students, the example words can represent the launch of a much greater list of words that they associate with uncertainty as they depict these using cartoons as the imagery.

Opportunities for Creative Thinking

The activity can generate discussion about the creative possibilities of uncertainty. Are students able to embrace uncertainty with enthusiasm or only with fear? Can they identify ways in which uncertainty might create something new? Is uncertainty a necessary part of life? Is uncertainty the key to society making progress, searching for new solutions, making new discoveries? Is it possible to create conditions in which we all feel comfortable with being in a position of uncertainty? Students might be encouraged to use a particular medium to draw, such as a cartoon.

Opportunities for Linking to Climate Justice

A focus on uncertainty throws up how some groups experience greater uncertainty in their lives than others due to social and economic precarities. This includes many living in the Global South, but also those locally experiencing food poverty and a lack of appropriately insulated housing, for example. Students could be asked to think how schools can be a place to explore lived uncertainties, in order that they might go out into

the world more equipped to respond to their multiple daily challenges where no trusted teacher is to hand. They might consider whether there are cultural differences in how we embrace uncertainty. This links to themes in Vinita's film about young people in India (Topic 2), and here is a resource on how pastoralists globally respond to uncertainties: https://seeingpastoralism.org/an-uncertain-world

Visual Encounter

Exploring an image

- What do you think might be going on in this image?
- Have you ever been in a situation like this?

- How did you feel, or might you feel in a similar situation?
- What might the person see or be looking for in the distance?
- Where do you think these people are?

Thinking metaphorically using an image

Opportunities for Embracing Uncertainty

There is enough in this image that will be familiar to students but also much that is left open for them to consider ideas of the unknown. To answer the question, they will have to draw on experience, imagine possibilities and engage with their own feelings. They might begin to think of getting lost as a metaphor for feeling one's way through a landscape and how this can offer potential to explore new paths and the unexpected, as well as inducing anxieties. Students will probably have great questions of their own that they may want to offer and/or explore. Useful prompts can include: what, where, why, how, who?

Opportunities for All Students

Younger students might play at going on a journey or an adventure and think about what they might need to pack. This could tie in with related stories, such as *Going on a Bear Hunt* by Michael Rosen and Helen Oxenbury, where children work things out together and support each other along the way. Other students can share stories of their own experiences of getting lost, either quite literally or more broadly, including in their studies or relationships. This can evoke a multiplicity of feelings to be explored. Students might talk about what supports them to navigate these situations in ways that remain open to their possibilities and do not simply respond to felt risks.

Opportunities for Creative Thinking

This activity offers opportunities to expand on the idea of getting lost as a metaphor, that can be developed using different media, including literature and the arts (e.g. a labyrinth). They might speak about getting lost in something they are engrossed in.

Students could also plan to go somewhere where it is possible to get lost for a while, with a supportive teacher nearby. This might be a park or woods. For younger students, this could be an area of the school or outdoors with which they are unfamiliar. Discussing the risks and how to mitigate these would be key to the students' planning.

Opportunities for Linking to Climate Justice

Students can be invited to draw on their own cultural references, including linguistic backgrounds, family stories, films or books, myths or religious parables, that might play on the contradictions of both the possibilities and risks of getting lost. This can lead to a discussion of what might be discovered by getting lost, that otherwise could not be known.

Deliberative Encounter

Little Did I Know...

1. Watch the film by Vinita Damodaran, a professor of South Asian History. She talks about her research with young people living in India who experience climate change in their daily lives. Create a drawing or artwork to reflect your response to the uncertainties mentioned in the film. How can you bring together your own shared or different concerns and uncertainties with those experienced by the young people living in India? [https://youtu.be/yS5C3NfHiAc]

   > *One or more interactive elements has been excluded from this version of the text. You can view them online here: https://openpress.sussex.ac.uk/creatingwithuncertainty/?p=91#oembed-1*

2. Watch the film by Peter Newell, a professor of International Relations. He talks about his work that tries to reduce fossil fuel production globally. Think about:

   - What surprised you? In what ways?
   - What insights did Peter give you about making change happen?
   - What language of uncertainty did Peter use? How did his words link to the list on the Brief Encounter activity? What do they make you think of and feel?

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://openpress.sussex.ac.uk/creatingwithuncertainty/?p=91#oembed-2

3. Watch the film by Adam Vaughan, Environmental Editor at *The Times* (previously at the *New Scientist* and *The Guardian*). He talks about trialling an electric car. Discuss:

- What supports Adam to be uncertain on his journey?
- What messages does Adam give, do you feel?
- If you met Adam, what questions would you like to ask him? Why?

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://openpress.sussex.ac.uk/creatingwithuncertainty/?p=91#oembed-3

Uncertainty as a driver of new knowledge

Opportunities for Embracing Uncertainty

The films immerse us in the world of uncertainty through the lens of three very different experts seeking solutions within their roles. It is important that students have opportunities to interrogate knowledge, including that espoused by experts, in order to consider its veracity and relevance to their own lives.

What things stand out as most significant to the students? How do the accounts make them feel? What role does uncertainty play in all our lives, and in the lives of professionals seeking to explore the world and how to change it? Is there any action that might follow from what the students have identified as important to them from the films?

Opportunities for All Students

Younger students might find it easiest to engage with Vinita's film, whereas others could watch them all. More experienced students might engage deeply with Peter's film: they can also discuss whether the experts

convey qualities that enable them to engage with uncertainty in ways that students think might be helpful in their lives.

Opportunities for Creative Thinking

The films offer the opportunity to engage with a range of creative responses. As the students watch, they can be invited to draw, doodle or note take anything that comes to mind. This can help to surface responses (including thoughts, feelings, associations, ideas). The invitation to create an artwork in response to Vinita's film might be supported by enabling students to spend time viewing the pictures drawn by the young people in India.

Opportunities for Linking to Climate Justice

Vinita's film draws attention to the types of uncertainties experienced in one area of the world. It can be used to prompt a discussion of our global connections and responsibilities to those we do not know. What might we learn from these young people living in such climate-challenged environments?

Beyond the Classroom Encounter

Out of uncertainty comes change

Medicine

Architecture

Technology

Environment

Faced with huge challenges and uncertainties, experts across all fields have made significant discoveries that change the way many people live.

Talk with friends and family to identify a discovery in each of the four areas above that you think is interesting to share in some way.

Opportunities for Embracing Uncertainty

This activity encourages students to listen to what others know and value, and to come to their own position on what they think is worthy of sharing with the class. They may need encouragement to think about change as not being purely progressive and positive: change and innovation can benefit some and not others; at first sight things can appear positive but then prove problematic (e.g. oil and the combustion engine; chemical fertiliser); others are disregarded long before they are valued.

Opportunities for All Students

This activity can be used with students of any age. What will vary is the depth of engagement with the ethical implications of the complexity of change.

The activity requires students to give attention to what might appear to be a beneficial change but may also have an environmental consequence. As well as thinking about the benefits of introducing new technologies, they might also consider changes that demand giving up something or using less of something.

Opportunities for Creative Thinking

This activity can allow for philosophical and deliberative focus on the value of change. For example: Are all discoveries good for society? Was it better to live in Victorian times or now? Does social media and the internet improve people's lives? Can technology save the world?

Opportunities for Linking to Climate Justice

This activity can be used to explore issues of social justice in their own communities and around the world. This might include the following: Does everyone benefit equally? (e.g. global access to Covid vaccinations – this link might be helpful background reading: https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(22)00328-2/fulltext); Are there problematic outcomes from new discoveries for particular groups? (e.g. electrical equipment requiring the mining of components that might cause environmental damage and community disruption and/or displacement); Are there unintended consequences? For an example, see debates about electric cars that the actor Rowan Atkinson has participated in: https://www.theguardian.com/environment/2023/jun/08/fact-check-why-rowan-atkinson-is-wrong-about-electric-vehicles

Vinita Damodaran, Perpetua Kirby, Andy Lowe, Pete Newell, John Parry, Marcelo Staricoff, Adam Vaughn, Rebecca Webb

TOPIC 2: MY OBJECT, MY STORY

Brief Encounter

An object that matters to me and to the world . . .

In this photograph, a student in the United Kingdom is taking their time to handle, smell and speak about a pot made from the seed of the 'Guayacán salero' tree, which had been decorated by young people in Ecuador in ways that enhances its intrigue. The tree has strong associations with critically endangered Great Green Macaws.

1. Select an object that says something about what matters to you in relation to a sustainability topic.

- This could be to do with biodiversity loss, pandemics, climatic change, seasonality, resource scarcity, carbon emissions, energy, etc.
- Your object could be something found outside or something from your home (including things passed on through the years).
- If your chosen thing is too large or global, you can choose an image to convey the thing.

2. Tell others about your object and why it matters to you.

Thinking metaphorically using an image

Opportunities for Embracing Uncertainty

Wide ranging discussions can be prompted through objects that tap into students' varied concerns, experiences and imaginaries about issues related to sustainability. This activity offers an opportunity to find out what it is that matters to them. Follow-up activities and input can respond to their concerns.

The choosing of the object prompts students to think about something valuable to them that could be threatened in an uncertain world and/or something that highlights their concerns about threats to the world or perhaps a love for something they want to be preserved for future generations.

Opportunities for All Students

The invitation to share an object is appropriate for students of all ages. Each will bring their unique and diverse knowledge, experiences and attachments.

Opportunities for Creative Thinking

The choosing of objects is itself a creative endeavour as is the telling of the story of the object. Their story may change and build as they re-engage with their object, and as they share it with different audiences over time.

Students may choose something metaphorical or very literal.

They can be encouraged to ask questions of each other beyond the factual. For example, why is this so important to you? How would you feel if you lost it?

Opportunities for Linking to Climate Justice

Students may choose an object that is reflective of their cultural heritage or something that symbolises a connection with other parts of the world or family members present and past. The variety of objects collected offers an opportunity to discuss different experiences, values and cultural diversity.

If the school has links with those in other parts of the local area, across the country or another country, it might be possible to arrange to exchange objects that matter with others. This can provoke curiosity about the commonalities and differences of experiences and what matters. It would draw attention to different zones of experience and influence, requiring students to think about where they are connected to and how others are connected differently to their own zones. They could be invited to think about a web of connectedness within their own space as well as across other spaces.

Deliberative Encounter

Creating something new from what matters to me

1. Take your chosen object and now change, adapt or embellish it to create something new.

- Choose which materials to use to do this. These might be human made things (e.g. tape, string, coloured bits of paper, material, stickers), natural materials (e.g. leaves, stones, sticks), and/or digital technologies (e.g. photography, animation, digital art).

2. Tell a story about what you have created. You might like to describe your thinking:

- Why did you create this?
- How did you create this?
- Why did you choose these materials or processes?

Creating something new to make deeper connections

Opportunities for Embracing Uncertainty

Through creating something new with their original object, students will begin to make further connections and possibly surface previously unacknowledged thoughts, feelings and ideas. These may relate to their own histories and experiences, as well as to wider social and political sustainability concerns. Students might engage with a range and complexity of feelings and thoughts, which may not be (and do not need to be) fully coherent. They might, instead, demonstrate the complexity and uncertainty of sustainability issues.

Opportunities for All Students

The hands-on creative and personal engagement can work with all students. They can adapt the activity to suit their interests, experience and knowledge. It may involve the telling of simple or complex stories.

Opportunities for Creative Thinking

Students create something original from their chosen object, using their preferred media. There are possibilities to extend this activity in multiple ways, including filming, recording, and photographing the objects as well as the corresponding narrative. This draws attention to the aesthetic presentation in order to invite the engagement and comment of an audience.

Opportunities for Linking to Climate Justice

As with the previous activity, the opportunity to create something new can enable students to engage more with their cultural diversity and own histories. This might be transglobal or deeply situated in one location.

Visual Encounter

Creating an exhibition

1. Make an exhibition of all the different artworks that your class have created about what matters to you. Consider these questions when curating your exhibition:

- Who is your audience? (e.g. families, friends, staff, governors, members of the local community, local decision makers, the local press)
- How will you curate all the artworks in your exhibition? What story do you want to tell with your artworks?
- What labels or other writing will you include and why? What message do you want to send?
- How can you share your exhibition with others? How will you advertise the exhibition?

2. Try to find a connection between your own object and another person's object.

Create the story of how they are connected. This might be a made-up story, a shared experience or connection to something bigger.

3. Can you make a link between your exhibition and the different U.N. Global Sustainability Goals?

Might this be of interest to your audience?

Engaging the community with what matters

Opportunities for Embracing Uncertainty

Creating an exhibition requires students to consider further what it is that they want to communicate, and how might they best do so through the curation of their artworks. They must also negotiate how to do this together with their peers. Whilst students may have a clear message that they want to convey, the challenge for them is not to dictate a set meaning or to generate a moralising message (e.g. *you must do this or that)*. It is easy to fall into the trap of simply telling people how they should think, feel or behave.

Opportunities for All Students

In primary schools, students can be offered the opportunity to design the exhibition using their whole classroom as a place for exhibits.

Some students will have wider relevant knowledge and experiences that will allow them to think in-depth about how to curate each work of art for the intended audience.

Opportunities for Creative Thinking

The activity could be undertaken alongside a class visit to a public exhibition, which may prompt further discussion of how the students want to curate their artefacts and why.

Students may want to write their own labels and descriptions, which facilitates further thought about the power of language and storytelling. This will require decisions about what to include and leave out, in order to foster the creative interest of the audience.

Opportunities for Linking to Climate Justice

Students could draw on online research of global gallery exhibitions or their own experiences, to think about the design of their exhibition. They could describe their artworks using any language they prefer, as well as the primary language of instruction. This might strengthen connections to the students' own heritage or the global sustainability issues addressed by their exhibits. By engaging with the UN Sustainability Development Goals, they are encouraged to think globally rather than simply locally.

Beyond the Classroom Encounter

Exhibiting what matters

1. Think about who you have invited to your exhibition.

- How will you welcome and speak with your visitors when they come to the exhibition? What do you want to ask and tell them?

2. How will you invite your audience to discuss what the artworks mean to them? For example, you might ask:

- What do you see?
- What do you think?
- What do you feel?
- What might you do differently?

Being open to a diversity of community perspectives

Opportunities for Embracing Uncertainty

Having created an exhibition, the students can now consider how to engage the audience more deeply with their artworks.

The challenge will be to remain uncertain and open to hearing how the audience responds, without being too sure about how they *should* respond. It requires them to be open to listening to things that they may not agree with, things they have not thought about themselves, or to responses that are highly unexpected. Are they open to having their own perspectives change by listening to others?

Opportunities for All Students

It may be useful for some groups to send a preview of the work being displayed for a discussion at home before parents/carers visit the classroom gallery. This gives each student the chance to share their object and meaning of it with their family in a more intimate environment. The activity offers all students the opportunity to engage in discussion with their community but some more than others will take up the opportunity both to listen and to deliberate with others.

Opportunities for Creative Thinking

After the exhibition, the students could be encouraged to reflect on the impact that their artworks and their curation had on the audience, as well as on themselves. How did they feel? What was most powerful? How did others engage? What surprised them? Would they change anything next time?

Opportunities for Linking to Climate Justice

The exhibition creates an opportunity for families, carers, friends, and potentially local professionals with relevant expertise and local decision makers, as well as others from diverse backgrounds, to engage with and to respond to the students' concerns through their exhibition. By inviting the response of the audience, and being open to a range of responses, the exhibit signals an embracing of the diversity of the community. The purpose is not to instruct but to inform and to engage with multiple challenges and perspectives.

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TOPIC 3: ENCOUNTERING ENVIRONMENTS

Brief Encounter

Creating networks

You will need a large ball of string or twine:

1. Stand in a circle, facing inwards, with one person holding the ball.
2. Give the ball to someone to start. This person throws the ball to someone else, while holding onto the one end (this is important – don't let go!)
3. As you throw, say something that you are dependent on or else something that is dependent on you. This might include a person, an animal or plant, or something else.
4. Each person takes it in turns to throw the ball to someone else. Each time you throw you must hold on to the end of your bit of string, and say something you are dependent on or that is dependent on you.
5. As you throw the ball, you will notice a web of string being formed between you: keep the string taut to hold the web above the ground.
6. Once you have all had a turn, carefully lower the web down to the ground, keeping it taut at all times. You will need to work together to do this.
7. The web you have created mirrors the hidden underground mycelial networks that link plants and trees to keep them healthy.
8. Close your eyes and use your senses to notice what and how you are connected to other things or people around you. What do you notice?

Creating an intricate and interconnected network, using the human and nonhuman

Opportunities for Embracing Uncertainty

The purpose of this activity is to notice connections and to gain a sense of how we are part of a wider world (requiring human collaboration and *interbeing* connections). Firstly, it relies on group collaboration,

with uncertainty about what happens if someone drops the string. The activity also depends on all those involved attuning their senses, concentrating, quietening the mind, and beginning to soften the boundaries between the 'self' and others. Uncertainty lies in what different students might sense, notice and draw attention to. It also lies in how much students allow themselves to be vulnerable.

Opportunities for All Students

Very young children will require smaller groups, and thicker rope, and they can have a lot of fun getting caught up together. This still allows them to imagine how different beings are entangled in the world in ways that we all depend on. Others might explore in some depth the different ways in which humans are dependent on other beings and things that are not perceived, noticed or valued in a fast-paced daily existence. Listening to sound using cups joined by string would make a good accompanying activity for some students.

Opportunities for Creative Thinking

This activity lends itself to creating art works: this might include string prints, weaving or a montage of found objects to create webs of connection between different sorts of natural materials, and with humans: linking humans with the rest of the living world. To create this work, the students might begin with themselves, and freely associate other humans, precious objects, natural objects or even ideas that are connected to them in some way. They can think how they might represent these as part of an artwork. These links might inspire: https://www.pinterest.jp/pin/202873158186377126/ or https://www.pinterest.jp/pin/345369865143876154/

Opportunities for Linking to Climate Justice

Using all the sense allows for a diversity of ways in which we know the world. Consider adapting as follows:

- **For touch:** students could take it in turns for one person to tug gently and others call out the name of who they think it is (this could get raucous)
- **For sound:** everyone listens for 3 minutes with eyes closed. In this time, the teacher taps 3-5 children on their back. What did you hear, what or who was making the noise? Was it by accident or on purpose? If on purpose, why did they make the noise, for who? How did it make you feel?
- **For smell:** can this only work outside, or what might be smelt inside?

Deliberative Encounter

How can listening help us to explore and appreciate our place in the environment?

1. Listening warm-up

Sound memory

Can you name 5 sounds that you heard on your way to school? Were they made from other living things (biophony)? From weather or natural processes in the landscape e.g. wind and rain in the trees (geophony)? Or by human-made machines (technophony)?

Inside listening

Sit or lie down in class and listen for 5 minutes. Do not talk. Try to be still. What sounds can you hear very close by (your clothes, your friend's breathing)? What is the furthest sound you can hear? What sounds are happening in-between?

- Share 3 sounds each: close, far and in-between

Try it again, this time with your eyes closed.

- Share how this affected what you heard. How did it affect how you felt?

Soundwalk

A soundwalk is where you focus on the sounds around you and immerse yourself completely in the environment that you are in. The aim is to become aware of your environment through listening and to become aware of your own sounds (voice, footsteps, etc.) in the environmental context.

- Share what you heard or thought or felt that surprised you.

2. Soundwalk for environmental connection

Walk in silence for 5-15 minutes. Tune your attention and listen to all the sounds around you and made by you. Try to walk in silence.

Here are some ideas to help focus your attention:

Listen to sounds close by and far away.

Walk gently and listen to the sounds that you make as you walk and to the sounds made by others nearby. Can you walk so that nobody might hear you? Can you detect the sounds of different shoes and clothing fabrics?

- Stop in one place and close your eyes. What do you think is the furthest sound you can hear? How far away might it be? From which direction do you think it is coming?
- If the path is clear and the space is safe, in pairs take it in turns to close your eyes whilst the other guides. Can you *hear* your way through the environment? How does this change how you hear? And how does this change how you experience being in the world?

As you walk listen carefully to everything you hear:

- Where is the sound coming from?
- Can you identify what is making the sound?
- What is the texture of the sound? Is it loud, quiet, smooth, shiny, how would you describe it? Could you draw it?
- How does it seem to fit with the other sounds you can hear? What makes you say this?

Listening as a practice of deep attention to gain new insights

Opportunities for Embracing Uncertainty

The uncertainty of this activity is that it involves a common experience (that of listening) which can have profound effects that are unique to each person. Deep listening surfaces different connections and associations with the environment, and it can draw attention to other species and interspecies connections (this can include, for example, an appreciation of how animals might experience the loudness of human made sounds). The sounds emerge in the moment: they are unpredictable and often uncontrollable; some sounds are constant while others have a regular or fleeting quality. The activity is not about correctly identifying sounds (although students may do so or want to find out more about what they hear), but about how they resonant individually and as a group.

Opportunities for All Students

The length of a walk will depend on its appropriateness for your class. You might want to split groups up, if that makes it easier, or work in 5-minute blocks of silence with time for students to discuss what they hear in between. Some students may identify sounds according to pre-defined categories of biophony, geophony, technophony: how did that change as you walked through different environments?

Opportunities for Creative Thinking

There are multiple options to adapt this activity creatively. For example: 1. Draw the sounds and the whole soundscape. 2. Record sounds on a phone to listen back to later in class to reflect on how they are experienced differently in the two contexts. 3. Explore playful directions, as follows:

- Lie down on your back on the ground for 5 to 10 mins. Lie still with your limbs relaxed and apart, as if you were dead. Sound is vibration heard through our ears. Can we *feel* sound through our *bodies*? Relax your body completely but keep your attention alert. What sounds are you aware of with your ears? What sounds are you aware of with your body?
- "Walk as if your feet had ears". Relax your body and put all your attention in your feet. What can you hear through your feet?

Opportunities for Linking to Climate Justice

This activity support students to consider different perspectives, including of other people, species and landscapes. Students can be asked: How does the experience of listening change according to your

environment (e.g. being in town or in the park)? How did closing your eyes change your experience? How might those with a visual impairment, or a sensitivity to sound, experience the environment? Has listening deeply changed your experience of a familiar environment? How might other species experience human made sounds?

Sensory Encounter

How do different people value their 'soundscape'?

Watch the Sacha Taki film *Songs of the Forest*:

https://sachawarmi.org/en/sacha-taki-songs-of-the-forest/

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://openpress.sussex.ac.uk/creatingwithuncertainty/?p=111#oembed-1

- What does *Songs of the Forest* mean?
- Who sings the songs?
- How do the songs guide the daily lives of the people of Kawsak Sacha?
- Are there any Songs of the Forest left in your local town?
- Who sings them and what do they tell you?

ANCESTRAL KICHWA POPULATION
- KAWSAK SACHA -
Sacha Taki: Voices and songs of the forest

"Our jungle sings through all the living beings in it; we sing to the jungle, and we want it to be like this forever". (Nancy Santi, 2019)

Strange sound of CICADA + the sound of THUNDERSTORMS without rain.

FEEDING: At dawn (05:15), the ARRIERAS ANTS will fly and the locals catch them for food.

SCHEDULE: 05:15

Cigarra / Cicada orni

BEHAVIOUR: When the branches of a tree, when moving, sound like the cry of a baby in front of a pregnant woman, the woman must clean her body with those same branches to prevent her child from being a crying baby.

LOCATION AND ALERT: The sound, direction and force of the WIND guide the locals in the jungle. It helps to recognize the way back and warns about the presence of Supays (spirits).

ALERT: When the COTOS monkeys howl, there may be a jaguar nearby.
WEATHER: If the howling of the monkeys occurs between 05:00am and 07:00am, there will be a sunny day.
FUTURE: If they howl in a strange way, a deep sadness will come (possible death of a family member).

Mono coto / Alouatta seniculus

Atta cephalotes

FEEDING: When the toad SARASAPO sings, it is time to plant corn to ensure a good harvest.

Sarasapo / Rhinella marganitifer

(SPATIAL RECOGNITION THROUGH SOUNDS)

BEHAVIOUR: The locals can ask for help, vision or power to the sacred trees like the UCHUPUTU.

LOCATION: SALADERO near the source of the sound.
BEHAVIOR: Do not hunt, urinate, or defecate nearby.
ALERT: Possible attack by dangerous animals, thunder, rain and fog.

Saladero

Uchuputu / Cedar protatada

ALERT: The JAGUAR prowls the banks of the river during the spawning season of the charapas turtles.

Panthera onca

CYCLES: When the water level drops, the CHARAPAS turtles lay their eggs on the banks of the river.

FEEDING: When the toad SARASAPO sings, it is time to plant corn to ensure a good harvest.

Corvina / Plagioscion squamosissimus
FEEDING: CORVINA near (fishing).

LOCATION: Lagoon or river nearby.

BEHAVIOR: Find what makes the sound.

CYCLES: The Cucha challua fish is in the spawning season.

ALERT: possible boa nearby. Get away immediately although no animals are observed.

① LOCATION: Herd of huanganas nearby. From 20 to 300 individuals.

② ALERT: Possible attack by huanganas. Climb trees, at least 80cm high, to be safe.

The SUPAYS (spirits) scream in the middle of the jungle, with a sound that is neither animal nor human.

Kua / Dendropsophus triangulum

The KUA toad sings when summer begins and the water level in the river drops.

Sound of the CUCHA CHALLUA fish, similar to a purr.

Cucha challua / Potamorina latior

The SUPAY are spirit owners of animals, plants and elements. They communicate with the locals through visions and dreams in which they are shown in human form to share information about the jungle, give premonitions, grant powers or make pacts of mutual care.

Yegaru Supay

The PUCTZÉRI bird sings when the river is about to rise.

Pardirallus nigricans

Guacamayo / Ara macao

Rumistalahuali / Chloroceryle amazona

The songs of the birds bring with them a lot of information about the weather, dangerous places, predictions of the future and even warnings about possible infidelities. Knowing how to recognize the song of each bird is essential to be able to decipher their messages.

Listening is the first step before understanding.

Witiruso / Saltator grossus

The MISHAS (stones of power that choose their owners), on some occasions, emit sounds to be found.

Boa constrictor

The BOAS emit a sound similar to a hiss and make a vibration on the ground that stuns people (loses strength and falls asleep).

HUANGANAS:
❶ Crash sound of the teeth
❷ Sound similar to the murmur of an engine.

Ramphastos tucanus

CLIMATE AND FEEDING: TOUCANS sing when the sun is about to rise and when monkeys are around (hunting).

Huangana / Tayassu pecari

More information about the Ancestral Kichwa Population Kawsa Sacha (PAKKS): www.pakks.org.ec

Graphic interpretation of the artist Sozapato / Ecuador - 2021

Sacha Taki: Voices and songs of the forest. Copyright Sozpato 2021. All rights reserved. Used with kind permission.

Practices and cultures of listening

Opportunities for Embracing Uncertainty

The film and handout draw attention to how sounds signal uncertainty, as well as the need to be alert to specific responses which might require immediate and urgent action. Students might like to think of sounds in their own environment that communicate something specific, including danger (e.g. fire alarm) or urgency (e.g. school bell), and how sounds can be heard at particular times (e.g. day/night; seasonally) and in specific places. Uncertainty is also evoked by cultural variability (see the section below).

Opportunities for All Students

Many students might benefit from watching the film in 5-minute chunks and being given the chance to response after each viewing. For some, if the film is too long, an extract can be shown. Those students who cannot read the subtitles can watch and listen for the multitude of sounds: what is it that they notice, and

what feelings do the sounds evoke for them? Other students can discuss their responses to what is both heard and read on screen, as well as to the content of the handout.

Opportunities for Creative Thinking

Some students might make the sounds themselves using existing or own-made instruments. Some could work as a group to draw and illustrate a map, similar to the handout, for their own environment: what decisions would they make about what to include and why?

Opportunities for Linking to Climate Justice

This activity highlights how sounds are valued, and the ways in which their meanings can be culturally specific and diverse. It draws attention to the different sorts of precarity experienced by humans and other species in particular environments, contexts and times. An extension of the activity is to think of interconnections with each other: across society, cultures, nations. Another example to link to is the Australian Aboriginal songlines: for thousands of years, Aboriginal people have had no language or maps and have instead narrated their landscape through song.

Beyond the Classroom Encounter

Listening to the lives of other beings in a rewilding landscape

Most people now live in cities where there are fewer other species around us. Plants and other animals are critical to the health of the environment and to the survival of humans. Across the United Kingdom, scientists are studying what happens if we stop controlling nature and let other species take over areas of land. One such place is the Knepp Estate, in West Sussex.

In May 2022, a pair of beavers were introduced to a small brook that runs south-north through the estate. Beavers are ecosystem engineers: they coppice shrubs and trees to build dams. The

dams built by these two beavers are already altering the flow of water and creating a wetland area.

Researchers at the University of Sussex have installed a solar-powered live audio feed just north of the dam. A pair of hydrophones brings us closer to the sounds of the water itself and tiny fresh-water organisms. A pair of microphones in a fallen willow tree monitors the birds and mammals that live nearby and that visit the water. It also records the play of weather in the trees.

You can tune in any time of day or night to listen, and across seasons, to all the beings that live in or visit the stream. You can listen in to the sounds made in the air or under water. It is best to use headphones, or stereo speakers, but it is fine to listen on a phone. https://wilding.radio/

Listen for 5 mins in the morning and 5 mins before you go to bed.

- What or who do you think you can hear?
- What might they be doing?
- Do you think they might be communicating with any other animals?
- How do the sounds make you feel?
- Can you imagine the space in which the sounds are made?
- What questions, comments or feedback do you have for the scientists?

Listening through time and space

Opportunities for Embracing Uncertainty

Scientists do not know the answers in advance to what they are researching. Students will not know what they will hear, as the environment is constantly regenerating. It allows them to consider a world without humans, that is paradoxically managed very closely by them. This space is also intimately linked to humans, in ways that could not have been before, through the advancement in sound technologies. The rewilding of the land is creating something completely new with all the uncertainties that this brings. There is most activity in the spring, but this could be a point of discussion about the seasonal change and how this might vary with climate change.

Opportunities for All Students

This activity is appropriate for all students. Some might listen whilst playing and the sounds might become integrated into imaginary worlds for them. Others might be drawn more to the scientific interests that the

sounds evoke for them. Some students may need to be reassured not to worry if they get distracted by thoughts when listening: invite them just to notice that they are having a thought and then to put their attention back onto the sounds. Some might practice this everyday and notice changes over time, including how their own energy levels interact with how sounds are perceived. If doing this activity in class, you might ask students to listen and play with the sound controls, inviting an initial response before sharing and discussing the provided background information.

Opportunities for Creative Thinking

Students try out listening while lying down, standing, upside down, etc. They might like to try the following:

- Listen where they are undisturbed.
- Start by relaxing their body: everywhere, completely.
- Do the sounds have movement, colour, texture? How do they make students feel?
- Sound is vibration, can students *feel* the sounds come into contact with their body?
- Instead of sending one's attention out to the sounds, let the sounds come to you.
- Can students feel different sounds on or in their body? How does it make them feel?

We recommend some further online resources from *Emergence Magazine,* particularly the work of David Haskell:

https://emergencemagazine.org/practice/the-aromas-of-trees-five-practices/
https://emergencemagazine.org/practice/listening-to-the-language-of-birds/
Also, some stories:
https://emergencemagazine.org/essay/the-voices-of-birds-and-the-language-of-belonging/?fbclid=IwAR1iarmod5csrK9Itzl9OJy2ddbWQ5YO0c6THY0nDIhsCriS9g1BLW9msyc
If you enjoyed listening with your class, you might explore Minute of Listening:
https://www.minuteoflistening.org/

Opportunities for Linking to Climate Justice

This activity is about attending to other species and how their sounds communicate something (both to us as humans and to other species). It invites students not to place themselves in the centre of the world – something that has arguably been the cause of reckless human harm to the planet – but to see themselves living alongside other species. This could start a discussion around ego-centricism vs eco-centricism: How would it feel to live in a world where humans are a part of the ecosystem, not always on top, trying to control it?

Alice Eldridge, John Parry

TOPIC 4: FOOD SHOPPING

Brief Encounter

Imagine you run a shop . . .

You are in charge of a brand-new food shop that is about to open in your area. You have decided to make your shop really interesting and different to other shops by changing the way that food products are grouped.

1. Think about the ways in which shops you are familiar with group their products.

- Why do you think they group them in the way they do? Sometimes shops change where products are grouped and placed – why do you think this might be?

2. How many ways can you group the foods sold in the shop? For example:

- Food Groups (e.g. fruit; vegetables; dairy)
- Size
- Colour of label
- Countries of origin
- Cost
- Any other way?

3. Think about how groupings can convey a message.

For example, 'locally sourced', 'organic' and 'recycled' suggest that these products are good for

the environment. Can you think of any other groupings that might give customers a message about helping the environment? You might think of groupings already used in shops or you might think of new ones.

4. In what ways do you think your groupings might **help** or make it **harder** for a) the customer and b) the shop manager?

Shop manager – grouping products

Opportunities for Embracing Uncertainty

There is an infinite number of ways for shops to group their produce and yet they all typically use similar groupings. These will have been found to help customers source products as well as to maximise profits. Sustainability challenges require us all to think in new ways, including shop managers and their customers. This activity first engages students with the decisions that shop managers must make when sorting produce. It then encourages them to re-imagine possibilities for alternative groups that place a premium on sustainability. It invites everyone to reimagine possibilities.

Opportunities for All Students

This invitation is appropriate for students of all ages and focuses on both a familiar context (a shop) and grouping activity. For younger students, the classroom can be converted into a shop – using actual or pretend products made by themselves – to group. It might be useful to ask some students to think about a shop that they know well and to map it out, draw it or simply to imagine it in their mind's eye. Some may need to look at images of shops on the internet or even to visit a shop either with teachers or family. This activity links to a curriculum focus on healthy living and eating. Many students can be encouraged to reflect on the complexity of different groupings (for both customers and managers) and possible messages that they convey.

Opportunities for Creative Thinking

There are numerous opportunities to develop creative and philosophical thinking through this invitation. Students may consider how habits of shopping are changing from the existing practices that we are used to, including where, when and how to shop. For example, shops where it is possible to refill packaging, online shopping sites, and the possible wider social and community implications of shopping (e.g. shopping in small local shops). They may explore tensions between the ethical and practical possibilities, for example.

Opportunities for Linking to Climate Justice

Students can share family shopping experiences, including what they buy and from where. Some may share other country shopping experiences, whether through visits or knowledge of extended family practices. How are foods grouped elsewhere (e.g. souks; animal markets; people selling from their homes)? Why might this be done differently? What varied messages may these practices convey? Students could also explore the concept of shopping without money, such as the Lewes pound (https://www.thelewespound.org/).

Deliberative Encounter

Making decisions and buying a group lunch

Working in groups, you have to buy lunch with a budget of £4 for each person. Which of the following factors will influence your decisions about what to buy?

- **Nutrition:** how nutritious is the meal and does this matter to you in any way? (Healthier products usually cost more than less nutritious products with a high sugar content and other refined carbohydrates).
- **Dietary needs:** does anyone in the group have allergies or other dietary conditions that restricts what they can eat?
- **Animal welfare and environmental concerns:** is anyone in the group flexitarian, pescatarian, vegetarian or vegan? Is free-range a priority for you?
- **Dietary preferences:** what is it about the food that you like? For example, is it the taste or texture, or is it familiar to you?
- **Aesthetic preferences:** food producers put in a lot of thought into how their products look. And some supermarkets only choose fruit and vegetables that have regular shapes and discard 'wonky' samples. How much does the look of the food matter to you?
- **Shop preference:** is there a shop that you prefer to shop from and, if so, why is this?
- **Availability:** some foods are not always available in the shops, due to a range of factors including: seasonality, environmental factors such as drought, global food supply chains

(which are themselves disrupted by pandemics, wars, lack of migrant agricultural labour and other logistical factors)

- **Brand preferences:** why do you prefer a particular brand, and how is it presented to encourage you to buy it?
- **Cost:** how will you use the money to buy a group lunch – will you pool the money, buy for each person or some other way? You could search the cost of items online from your local supermarket, and even compare the cost across different shops.
- **Food miles:** does it matter how far food has travelled or not? (It is difficult to calculate food miles because there are so many things to consider. For example, the type of transport – plane/boat/train/lorry – and whether foods need to be refrigerated when transported.)
- **Buying local:** to what extent is it important to you to buy products grown or produced by local people, organisations or companies?
- **Recyclable packaging:** does it matter how much of the packaging is easily recycled?
- **Boycotts:** are there some ingredients or products you refuse to buy (e.g. palm oil) or some countries you refuse to buy from? – if so, why?
- **Growing standards:** products grown without pesticides and other chemicals often cost more, so how important is it to you to prioritise growing standards?
- **Workers' standards:** do you consider the rights for workers who make or grow the products? Products often cost more when employee wages and working standards are prioritised by companies.

Engaging with the complexity of food purchases

Opportunities for Embracing Uncertainty

Placing students in a position of uncertainty that includes constraints is challenging and thought provoking. In this case, although they can choose anything at all they like, the constraint is that they can only spend a maximum of £4 per person. Students are encouraged to consider multiple 'choice' possibilities, including the ethical dimensions of shopping, and to come to a final decision that navigates the tensions between needs, desires, beliefs and cost. There is no easy way to do this.

We have become so used to the certainty of food availability, but this can change. It might be interesting to explore what the uncertainty of variety and quantity of food might look like in the future; its possible causes and implications, including possible ways to ensure greater food security locally.

Opportunities for All Students

The list of factors can be varied depending on the student group. The activity can be simplified for those groups who need it. For example, by removing the management of money (or else making this very simple) as well as limiting the factors that they might consider as a group.

Students could be asked to choose one factor (such as *Workers' standards* or *Buying local*) in the list to create a concept cartoon: this is where four people offer different points of view all relating to the same theme, and the class then discuss the merits of each suggestion. To encourage deliberation, students can be asked to rank the four suggestions in the concept cartoon, from most to least important, and to discuss their rationale as they do so.

Some useful resources:

Food miles calculators: https://www.foodmiles.com/more.php

Book containing carbon footprint calculations of different products: https://profilebooks.com/work/how-bad-are-bananas/

Organisation supporting British food producers: https://redtractor.org.uk/

KS2 resource on plastic packaging: https://www.bbc.co.uk/bitesize/topics/zshp34j/articles/z6m7vk7

Organic foods: https://www.soilassociation.org/take-action/organic-living/what-is-organic/

Organisation promoting workers' health, welfare and employment: Rainforest Alliance: https://www.rainforest-alliance.org/ and Fairtrade Foundation: https://www.fairtrade.org.uk/

Report on the affordability of healthy diets globally: https://www.who.int/publications/m/item/state-of-food-security-and-nutrition-in-the-world-2020

An example of global food logistics is the tanker that was stuck in the Suez Canal: https://www.bbc.co.uk/news/world-middle-east-56505413

Opportunities for Creative Thinking

Students engage in philosophical thinking by taking an everyday activity (shopping) and drawing out wider implications of how to live on a planet with limited resources (both financial and material). Students could be encouraged to consider the role of creative industries (advertising, social and other media, music, arts, books, etc.) on their shopping choices. To what extent, and in what ways, do they feel consciously or unconsciously persuaded? How might this be achieved? They are likely to have very different perspectives.

Opportunities for Linking to Climate Justice

This activity works particularly well with diversity: students must work as a group, taking account of the others' needs, as well as their cultural and other preferences. Students might discuss cooking with raw ingredients and sharing family recipes. It gives scope to draw out global perspectives on food choices. This includes country of origin, boycotts and workers' standards. This may draw attention to the sustainability

tensions of importing foods (e.g. food miles and growing practices). What proportion of the products are from the UK? How many countries are represented in the food the shop sells? Are the food miles justified in some cases but not in others? Is genetic modification of food a good idea? Is there enough food to feed the whole world? A useful film for more advanced students on this last issue is *The Paradox of Hunger in the World*: https://www.youtube.com/watch?v=BZRFrvmjfDs

Visual Encounter

The art of persuasion

1. Find a Ribena advert image online or watch this Ribena advertisement:

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://openpress.sussex.ac.uk/creatingwithuncertainty/?p=113#oembed-1

https://www.youtube.com/watch?v=pyrptISjqck

2. When you look at the image or watch the film:

- What do you see?
- What does it make you think about?
- How does it make you feel?
- Why do you think Ribena has chosen to include these different images or words?
- What messages are they trying to give?
- Which age group are they trying to appeal to?

3. If you were able to interview someone from Ribena, what questions would you ask them about the advertisement, the brand

and the drink?

4. Does the advertisement address any of the considerations discussed in the earlier activity when you had to choose a group lunch?

- Think about whether Ribena would be included in your £4 lunch. On what might you base your decision?

The power of storytelling

Opportunities for Embracing Uncertainty

Advertising, like all creative industries, tells stories. Storytelling is inherently uncertain because how the story is read can vary widely. It can be powerful for students to place themselves in the position of the people creating an advertisement to consider how messages are created through words and images, for what purpose, and to what effect. The activity enables students to think more deeply about their own purchasing decisions, and how they might take up or resist the messages being promoted.

Opportunities for All Students

Some students can be invited to tell their own story from the advertisement images. They could also select an advertisement with which they are very familiar (e.g. associated with items from their lunchboxes) to tell a story. Consider using role play for the interview activity; try using hot seating (https://www.teachprimary.com/learning_resources/view/primary-resource-hotseating-in-drama) or De Bono's hats (https://www.bbc.co.uk/bitesize/guides/zxyxtyc/revision/11) for this too. For the latter, the person being interviewed can be placed in a position where they are expressing their thinking through six different 'hat' scenarios that tap into 'knowledge', 'feelings', 'new ideas' etc.

Opportunities for Creative Thinking

Students can explore the *art of persuasion* in society through different means. As well as advertising, this might include a focus on celebrities and social media influencers. They might also compare product advertising to the techniques used by politicians to persuade people to vote for them. Students might draw on their school council to think about how they aim to influence others, as well as talks, leaflets and canvassing. What do students feel is effective and why? They might extend discussions to think about

how different stories are told about climate change, including those told by politicians, environmental campaigners and the media.

Opportunities for Linking to Climate Justice

When discussing the advertisements, the students can explore who is being targeted and whether the images or text appeals more to particular groups than others. Those from different cultural and language backgrounds can speak about how the image might say something different to them. Students could also share an example of advertising from different countries, cultures or times, and explore differences in approaches used: for example, is humour used differently?

Beyond the Classroom Encounter

Creating your own advertisement

Your task is to create your own advertisement for something that you frequently eat at home.

1. Look back at the factors that you discussed when deciding what to buy for lunch. Which of these factors do you want to promote to shoppers? Why? How might you do this?
2. Think about which group of people you trying to appeal to. You can create an advertisement for television, radio, social media or print.
3. When you share your advertisement with your class, see if others can identify what factors you highlighted as important for you.

Exploring what matters

Opportunities for Embracing Uncertainty

Through creating their own advertisements, students must think through what it is that matters to them

and that they want to promote to others. This is complex and personal, and it requires justification, but there is no right or wrong answer. There is also no guarantee that their message will be heard or heeded. There might be unintended consequence that could be useful to consider when discussing designs, such as allegations of copying pre-existing brands or images; offending some people's tastes or sensibilities; accusations of inappropriate age targeting; or audiences reacting to a perceived greenwashing, moralising or instructional tone.

Opportunities for All Students

Students of all ages can design or depict something that they value. Some may find it hard to think what will appeal to others when creating a design that also persuades others of the value of the product: they can be asked what matters to them about the product and how they have shown this in their design. They could ask each other to say what they think of it, and to consider how people have different thoughts and feelings. Some students may also find it challenging to consider their audience, but the activity is designed to draw their attention to this.

Opportunities for Creative Thinking

The themes that need to be considered when designing an advertisement are incredibly varied and promote creative and philosophical thinking. For example:

- What are the ethical issues encountered when deciding what to include/exclude in their advertisement?
- Is advertising ever ethical?
- How much of a product should an advertisement reveal?
- Should advertisements reveal possible health, wellbeing and environmental harms?

Opportunities for Linking to Climate Justice

This activity can prompt discussions about how the world of advertising not only varies across regions and countries but over time. Students might want to consider how global sustainability challenges have influenced current advertising, as well as how 'nature' has been used historically in advertising, and why. The activities allow students to surface how advertisements might 'work' (or not). They might consider the value of such work given the advancement of artificial intelligence (AI) and why knowing sources, their intentions and methods becomes important.

Perpetua Kirby, Andy Lowe, John Parry, Marcelo Staricoff, Rebecca Webb

TOPIC 5: APPLES

Brief Encounter

Apples and us: how do you respond to apples?

1. Listen to the meditation on an apple (below) being read aloud and take a moment, remaining silent, to take in and experience what you have heard.

2. Use your senses to describe how apples feel, look, sound, smell, taste to you.

How do they make you feel?

What do they make you think of?

3. Create a Haiku to convey your experience of apples.

You might find inspiration by looking up the hundreds of different apple varieties and their unusual names, or by looking at other writing about apples – here are two examples:

Turn this way!
I too feel lonely
Late in autumn

Matsuo Basho

an apple a day

will keep the doctor away

well that's what they say

Angela Kirby

For the love of apples: a meditation

Hold an apple in your hands, shut your eyes, breathe in its scent, imagine how it will feel to bite into the crisp flesh, taste that sweet freshness, allow its juices to trickle down your thirsty throat.

Now open your eyes, caress your apple's smooth cheeks, reflect on its journey, how all its forbears come from ancient trees that grew long, long ago in Kazakhstan, Uzbekistan, Afghanistan, beautiful names for distant places. There they were treasured and tended lovingly for thousands of years. Now we too attend to our orchards, giving thanks to those long ago ancestors who unknowingly bequeathed this precious fruit to us. We remember the bees, wasps and moths that pollinate the trees, and the unseen soil community of bacteria, protozoa, yeasts, fungi, worms, beetles and mites.

Imagine all the children who have raided those orchards, shared their guilty pleasures, and remember too those elders who brewed rough powerful scrumpy and smooth sparkling ciders to ease their working days.

How far you have come, my sweet red apple, how widely you have spread, how many young you have spawned from those small black seeds that nestle in your heart. You are not proud, you allow bees deep into your blossom, let birds and beasts eat your flesh, spatter your magical seeds generously across the world, you permit children to fight or play 'catch' with you, leaving your seeds and broken flesh to settle in fields, hedgerows and ditches, you reach out to the poor, to the hungry, to the traveller, nurturing refugees, soldiers and sailors far from family and home. With you in my pocket, oh lovely apple, I shall go happily on my way.

Angela Kirby

Fostering an affinity for everyday foods that we can take for granted

Opportunities for Embracing Uncertainty

This activity requires students to slow down to pay attention to the wonders of those things we take for granted. You may want to do the activities outside to connect to senses and to transport the imagination to where an apple might be grown.

Growing foods calls on an ability to care and attend to the needs of the plant or tree, while recognising that we, as humans, are not fully in control of what might happen. With apples, this includes its journey through time and space, how much fruit might be produced, possibly as a result of threats from pests or weather conditions, the prevalence of pollinating insects, and how its taste can vary yearly.

Opportunities for All Students

This invitation is appropriate for students of all ages. Some will enjoy the pleasures of feeling, tasting and thinking about apples. For others, this activity also encourages them to relook at something that they might think they know well, to consider what more might be revealed. They might extend this practice of paying attention to thinking about other aspects of their studies or lives, where a slowing down allows a renewed perspective. A longer beautiful apple meditation can be found at the following site (we recommended shortening it to include only paragraphs 3, 4, 9, 10, 11, and 15 from line 3): https://www.ecoliteracy.org/article/meditations-apple

Opportunities for Creative Thinking

Haikus provide a tight structure, within which there are infinite possibilities for imagination and creativity (which is itself a paradox). Information on different apple varieties and names can be found here: www.nationalfruitcollection.org.uk. When first attending to their apple, there may be possibilities to cut it open offering a link to fractions. Cutting horizontally reveals the wonder of the star shape of the core: this geometry might prompt connections to mathematics and to other five-pointed stars in nature (e.g. Morning Glory flowers, starfish, raspberry sepals).

An alternative starting provocation is to ask students to write the first thing that comes to mind when the word 'apple' is spoken: explore how many identified a fruit; a technology company; a Garden of Eden

association within Judaism, Islam and Christianity; or something else. This can be used to discuss apples as metaphors, which might lead to a discussion on the power of branding and the use of nature to sell products.

Opportunities for Linking to Climate Justice

The haiku, which is itself a cultural variation of poetry, lends itself to engage with the diversity of language used to name and describe apples in multiple languages. This challenge provides an opportunity for students to act as apple researchers. For example, they can investigate how apples are migrants, rather than indigenous to the UK, originating from the east. These sites might be helpful:

https://www.britishapplesandpears.co.uk/

https://www.bbc.com/future/article/20160523-kazakhstans-treasure-trove-of-wildly-flavoured-apples

https://www.bbc.com/travel/article/20181120-the-birthplace-of-the-modern-apple

More advanced students could engage with Henry Thoreau's (1862) *Wild Apples: The History of the Apple Tree*, exploring the question of why wild apples are significant, which also includes references to different practices across times and cultures, including 'apple-howling': https://www.theatlantic.com/magazine/archive/1862/11/wild-apples/411517/

Deliberative Encounter

Can you consider environmental scenarios from different perspectives?

1. Watch this film about a couple of orchards:

https://brightonpermaculture.org.uk/orchards-and-fruit/our-work-with-orchards-and-fruit/#

Whilst watching the film, pay attention to the following:

- Notice how different humans experience the orchard.
- Have you ever been in an orchard? What did you do there? How did you feel?

- If you were in an orchard now, what would you want to be doing?
- Have you both given similar or different answers?

2. Share with a partner what you noticed, thought and felt, and listen to what they tell you. Did your partner tell you something that you'd not thought of before?

3. Now reflect on these questions:

- What key messages did you take from the film? What did you think or feel about what was communicated?
- Think about and discuss the value and challenges of diversity in your own community?

Uncertainty as a driver of new knowledge

Opportunities for Embracing Uncertainty

This film reveals the importance of a diversity of species, including varieties of apples and different plants and animals. It also shows the interdependence between the human and nonhuman worlds, where we require foods to survive, but must cultivate conditions for foods to grow. Humans also enjoy and benefit from the ambience and richness of the orchard setting, which become places for a slowing down, where unexpected, emotional and existential encounters might happen.

Opportunities for All Students

This activity is suitable for all students. Some may draw on their experiences of trees, being outside and eating fruits, to help them reflect on how orchards might make people feel and what they have to offer human and nonhuman communities. Others can think deeply about the range of diversity issues in the film (see below). The film emphasises resilience and diversity as opposed to monocultures, and students might consider the challenges to growing apples as result of climate change and biodiversity loss (e.g. disease; pollinator population collapse; late frosts; storms; drought).

Opportunities for Creative Thinking

The film can be used to prompt several opportunities for developing creative thinking: What part do orchards play in our local community? What are the challenges of running a community orchard? Can we

create an apple press at school? What knowledge would we need? Who would we consult? How can we make this happen?

Opportunities for Linking to Climate Justice

The orchards in the film are used by a diversity of community groups, including those of different ages, social class and experience. Some students can explore diversity through making connections to biology and ecology; exploring human dimensions of social and cultural diversity; and considering how diversity of habitats as well as different knowledges and cultures might help to address climate change.

Uncertainty Pollinator Session

Below is a companion activity exploring the uncertainty of bee survival including the impact of habitat loss and bees having to travel further to collect nectar.

1. Pollinators, such as bees, moths and hoverflies, are declining. Scientists suggest some reasons for bee decline, but there is also a lot of uncertainty about the scale of decline in some places in some circumstances. What can you find out, what don't you know, what are you left wondering?

2. Split your group into half. Half of you dress up as flowers (e.g. flower hat/crown) and half dress up as bees (e.g. antennae). The flowers should spread out a bit so that the bees have to run some way between them.

The role of the flowers is to attract the bees, who will visit them and collect pollen (fuzzy balls) and carry it to another flower, pollinating it. The role of the bees is to visit a flower, collect and take away some pollen from their hand (e.g. sticky arm band) and deliver it to another flower. To make this more complicated you can have flowers of different types (e.g. different colours), and a flower can only be pollinated by pollen from a flower of the same type (e.g. the same colour).

Once pollinated (i.e. once receiving pollen from a bee) the flower should crouch down and develop into a seed and then a fruit. Think about how you will represent this (e.g. by acting, using a picture, an object or piece of clothing).

To attract the bees the flowers have nice colourful petals and strong scents, but in this game they can also use their voices to call to the bees and say nice things to them. What will the flowers say to attract the bees?

The aim is for the flowers to get pollinated as quickly as possible. To make it more urgent you can give a time limit to the game but try to make sure every flower does get pollinated.

3. When you have run the game once and the bees have had fun running about, you repeat it but with only about half the number of bees.

As the antennae are ceremoniously removed from half the bees' heads, discuss reason for their populations decline (e.g. you ran out of food, you were poisoned by pesticides, you got a disease). This time many of the flowers will not be pollinated within the allotted time as there are not enough bees to travel between the flowers. Alternatively, you could keep the same number of bees, and the same time limit, but spread the flowers out further.

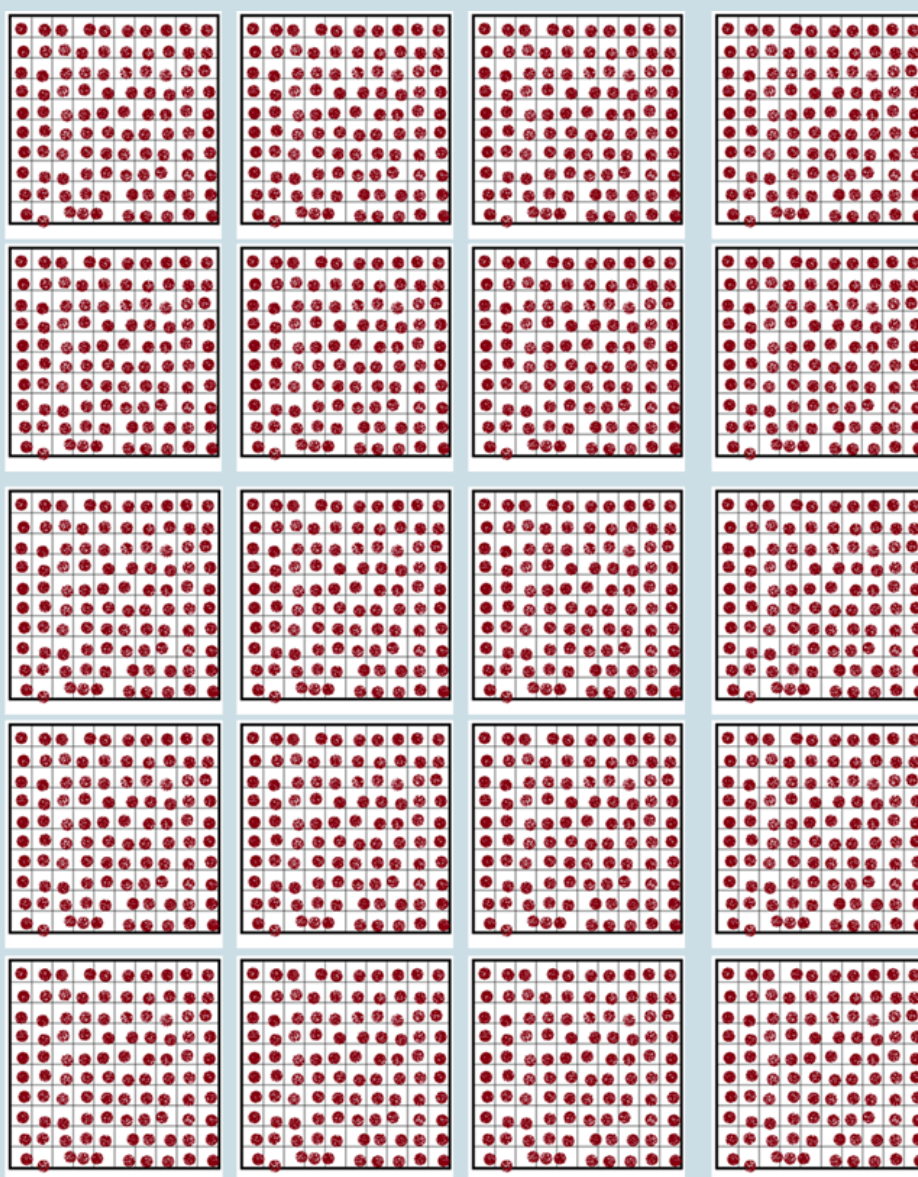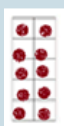4. After this activity, consider these questions:

- What did this make you think?
- What did you feel?
- What are you left wondering?

Visual Encounter

Looking at diversity

The image to the left represents the number of apple varieties sold

in UK supermarkets. The image to the right represents the number of apple varieties grown in UK orchards.

- What do you notice?
- What do you think?
- What do you feel? Why?
- What questions do you have? And where could you find some answers?
- What might you do?

Working with scale

Opportunities for Embracing Uncertainty

Students will respond to this provocation in their unique ways. They might be drawn to the aesthetic of the image as much as the power of its message, which for each student will resonate differently. The activity might generate a range of questions: the answers for many of these will be unknown or hard to respond to definitively (e.g. why do supermarkets select only these particular apples to sell; does the selection change or remain the same, and why might this be?).

Opportunities for All Students

For some students, this image can be used alongside maths activities on quantity and representing quantity: they might recreate the ratio using different objects. Some students might want to contact a supermarket, or the British Apples & Pears organisation which aims for at least 60% of apples sold in the UK to be British by 2030 (https://www.britishapplesandpears.co.uk/the-organisation/), to ask questions about the decisions these organisations feel they have to make about what they grown and sell, as well as the possibilities to include more diverse varieties.

Opportunities for Creative Thinking

The images might be used to stimulate students' own ideas of representing diversity (or lack of it) either through a grid like images or something else. Students could look up some of the varieties of apples (from the sites mentioned earlier) and add representations of these into their artworks. They might also play on the language of existing names or invent their own. An additional task, for students in primary school, would be to place their own-made apples on a large drawing of a tree, helping to convey ideas of quantity and diversity.

Opportunities for Linking to Climate Justice

The variety of apples connects well to discussions on the value of diversity (and its benefits beyond monocultures). The richness of the history of the varieties and their names can prompt discussion about where these names might have come from, and whether they are historically 'British' and/or connect in some way to other places.

Beyond the Classroom Encounter

Thinking about our relationship with the local environment

Take a walk around your local area. During the walk:

1. Notice the different things the ground is used for and where the areas of diversity are.

This could be a diversity of plants, animals, humans, or things such as buildings, equipment, technology, transport.

2. Identify an area where it might be possible to plant an orchard of 8 or more trees.

Take a photograph. For example, this might be a bit of land that no one is using, an area of park where new trees could be planted, or land between buildings or other structures.

3. Discuss your idea of growing an orchard in this place with your family, friends and neighbours, to see what they think.

4. Share your photograph in class and tell others:

- Where is it?
- Why do you think it might be a good place to grow food that could be eaten?

- Who might have an opinion or feelings about changing how this place is used (and why)?
- Who would eat the food? Who might decide?

Invite questions and comments from your peers to hear what they think about your suggestion.

Working with multiple perspectives to adapt local environments

Opportunities for Embracing Uncertainty

Considering where and how to change a piece of local land requires students to think about where might be appropriate to grow food, as well as to consider different perspectives. Both considerations are full of uncertainty. Students are encouraged to engage with a wide range of opinions or feelings in their local community. If this activity is done in class, students could be encouraged to speak with those with whom they may not regularly come into contact who have knowledge of and an interest in public land use (such as local planning officers). This consideration of other perspectives encourages them to engage with complexity and to look beyond simple assertions about what must change.

Opportunities for All Students

All students can engage in this activity of noticing how land is used (and disused/neglected) and talking with those they know. With parental support, some might reach out to ask others in their community that they know less well or not at all (such as neighbours). Some can be encouraged to consider the detail of who might be needed to look after the orchard, to care for the trees and land, to harvest the fruit, as well as to deliberate the rights to the land and access to grown food. This could be a good introduction to local government procedures and the challenges of democratic processes that must account for competing perspectives when making decisions. If doing this with your own class, you might ask them: if you wanted to plant the orchard, how would you ensure that everyone feels heard and their views are taken seriously?

Opportunities for Creative Thinking

This activity requires students to imagine other possibilities for land use. To foster this imagination, they might be encouraged to draw, map out, photograph from different angles, and annotate visuals. They may need to think through different ways to present and share their ideas and what they have discovered about what others think: this requires students to consider why people have different views. Students might also

be encouraged to create the imagined space, using drawings, written stories or building small dens in an outdoor space, for example, in which they make up the names, plants and species for whom it becomes a home, as well as the different people who congregate there.

Opportunities for Linking to Climate Justice

This activity engages with a diversity of views, enabling students to take seriously those who think differently. With time, they come to an informed position themselves, one that takes account of others' knowledge, experiences and perspectives. They might draw on older generations' experiences of growing things, as well as family and friends from other cultural backgrounds with knowledge of different plants and growing practices. Students could discuss how property rights in their context might be different in other country contexts.

Will Abberley, Perpetua Kirby, Michael Jonik, Andy Lowe, John Parry, Beth Nichols, Marcelo Staricoff, Paul Wiggins, Rebecca Webb
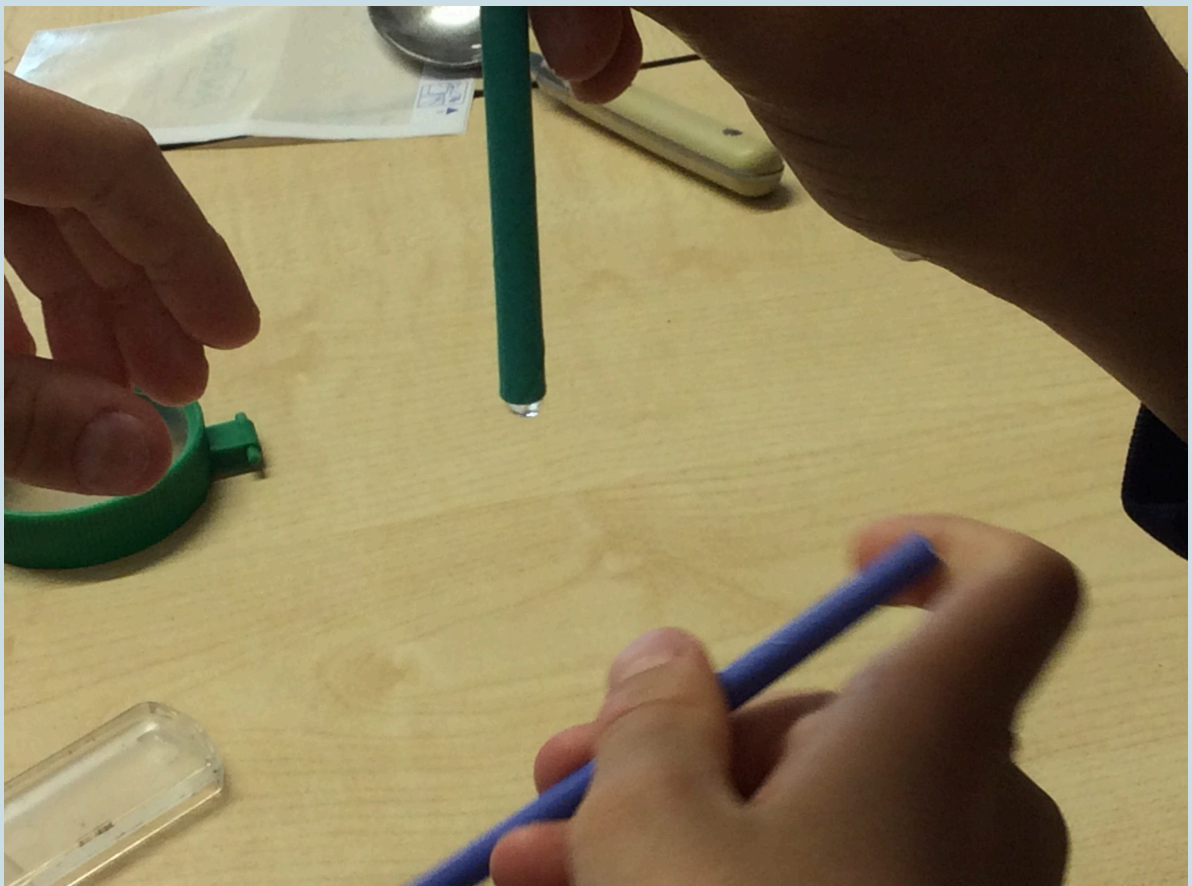
TOPIC 6: WATER

Brief Encounter

Think about the place of water in your lives

1. Collect from the teacher a small bottle-top cap full of fresh water.

Carefully carry it to your table, and be sure not to waste any, as it is a limited resource and there is no more to share

2. With your partner, find a way to look at a droplet of water (you might need a straw).

- What do you see?
- What do you feel?
- What do you think?
- What does the water tell you?

3. Water is part of many rituals, celebrations and festivals.

Can you think of any in your life? Why do you think water is so often used in this way?

Reflecting on the power and preciousness of water

Opportunities for Embracing Uncertainty

There is a great opportunity here to use the compound, water, as the stimulus to evoke its power that draws humans to it, as if beyond our control, and how it is fundamental for existence and survival, as well as emotional and spiritual well-being. By enabling students to attend very closely to water, in ways that they may not have done since they were very young (if at all), it allows them to reflect on its mysteries and preciousness that is not easily explained.

Opportunities for All Students

This invitation is suitable for students of all ages as it can be adapted to different levels of complexity. All are invited to 'play' with the water. Some can explore multiple personal experiences of engaging with water in their wider lives; others can act as researchers to find out and reflect on the use of water for different religious and celebratory purposes, and its value as a spiritual symbol. They might also investigate how water droplets behave on different materials.

Opportunities for Creative Thinking

As well as thinking creatively about the different ways in which water is used spiritually across the globe, students may also use this activity to ponder why 'water' is so special. Links can be made to the scientific properties of the compound: it exists in three different states (gas, solid and liquid); it cannot be made or lost; it is colourless, odourless and tasteless; it defines our Celsius temperature scale of 0-100 degrees; it is what scientists look for in other planets as an indicator of potential life.

Opportunities for Linking to Climate Justice

This activity offers students from different religious and cultural backgrounds the opportunity to share something of how water is important to their lives. This exchange requires others to listen, and for everyone to draw out the similarities and differences, and to consider what might (if anything) be the shared experience of water. Links can also be made to the words used for water in different languages (see Topic 7: Kelp for examples).

Sensory Encounter

Looking closely at an image

This image portrays the Emirates Golf Club which was presented with the Efficient Use of Resources Award at the prestigious International Association of Golf Tour Operator (IAGTO) Awards held in Lake Como, Italy, in 2015.

- What do you notice about the setting for this golf course?
- What do you notice about the different types of terrain in the picture?
- What does the image make you think of?
- How does the image make you feel?

The power of photography to invite questions

Opportunities for Embracing Uncertainty

Photographs provide an opportunity to engage students in questioning, theorizing, thinking critically, and noticing unexpected tensions in the scenes portrayed. In the image, the students might notice stark contrasts that raise questions for them about the setting.

A broader issue that might extend the discussion is the uncertainty of water quality: caused by the discharge of sewage into the sea and agricultural runoff into rivers, for example. This issue can evoke community passion, conflict and resistance through the sharing of information (e.g. Surfers Against Sewage www.sas.org.uk), and government regulator intervention through the issuing of fines. Students might consider their own felt response and their possible individual or community action.

Opportunities for All Students

Younger students might notice contrasts and have questions, such as why is there so much sand and why are the buildings so tall? Other students might begin to engage more with ecological and social issues: they might make links to water, biodiversity and climate change, for example.

For some students, it might be a leap to jump to a context with which they are unfamiliar. In which case, we suggest first introducing a local example that exemplifies similar issues. Or else, to show a film about local drought and to invite them to respond by reflecting on anything that feels important to them. Here is an example of a film: https://www.youtube.com/watch?v=oL2TFdLDFGA&t=10s

Opportunities for Creative Thinking

What does the image show us? This activity invites students to think about the power of images, through paying attention to the details and how it might speak to each of us. Can students say what they are drawn to in the image and why? How would deleting particular details of the photo tell a different story? (This activity links to the one on the power of advertising in Topic 4: Food Shopping.) Some students could take photographs of places around the school grounds or locally that tell a 'sustainability' story, which they could then show and invite a response from their peers.

Opportunities for Linking to Climate Justice

Students might think about who will use this golf course and who will not. This activity allows for a more complex engagement with climate justice, that can include both 1) the binary between the Global North and South in carbon emissions (see these useful charts: https://theconversation.com/climate-change-is-a-justice-issue-these-6-charts-show-why-170072 – this relates to Topic 8 Wind Energy), as well as 2) The unequal distribution of resources within some Global South contexts. For example, The World Inequality

Lab reports that the most unequal region globally is the Middle East and North Africa, where the richest 10% take around 58% of the income, compared to Europe where the comparable figure is 36% of income (see: https://wir2022.wid.world/executive-summary/). Links can also be made to the UNESCO Sustainable Development Goals, especially No 6: 'Clean Water and Sanitation' (https://sdgs.un.org/goals/goal6), which sets out drinking water, sanitation and hygiene targets.

Deliberative Encounter

Consider environmental scenarios from different perspectives

Here is some information about the Golf Club Environmental Award.

Challenges for the golf course:

- Low rainfall
- High humidity (water evaporates)

Solution made by the golf course:

- Careful storage of rain
- Recycled sewage water
- Water pumped through underground pipes to target watering
- Computer to monitor and reduce over-watering

It is now your turn to consider whether to give the golf course the award.

1. Form five interest groups as follows:

- Gold club owners
- Brighton golf tourists

- Golf ground staff
- Environmentalists
- Hares

2. In each group, consider what are your thoughts, concerns and questions about giving this golf course an environmental award. A separate group of 'jurors' will come around and listen to your discussions: they will make notes, but not say anything.

3. Each group will then present their case to the jurors, who will make the final decision about whether or not the golf course deserves the award.

Deliberating different positions and vested interests

Opportunities for Embracing Uncertainty

This activity enables students to grapple with the competing interests of different stakeholders attached to the golf course. There is no obvious answer about whether the course should be given an environmental award given the multiple tensions involved in this decision. The activity offers the opportunity to think beyond human needs, with the inclusion of hares (which are indigenous to this region).

Opportunities for All Students

For early years students, this encounter could form the basis of a discussion of how to improve the school grounds: what changes would the students make to the school outdoor environment? What would they like to introduce? For example: vegetable patch, outdoor learning area, scooter racks, sandpits, recycling bins, etc. This will require them to engage with different ideas and views.

Some students may lack knowledge on which to deliberate the position of their interest group. For example, they may think hares enjoy grass without considering the effects for them of biodiversity loss: they might benefit from being able to ask questions of the teacher or others. Other students will have more knowledge or could use the internet to research in depth.

Opportunities for Creative Thinking

Adaptations for the golf course have involved enterprising creative use of technology to respond to the challenges of a water denuded environment. The activity requires students to place themselves in another role and to use their imaginations. They also have to think how to convince the jurors of the veracity of their position. Students might also discuss how each of the aspects that led to the award can now be used to improve the quality of life in other parts of the world: what other uses do the students think these advancements can be applied to? This article about the award might be useful pre-reading: https://golfbusinessnews.com/news/management-topics/emirates-golf-club-receives-sustainability-award/.

Opportunities for Linking to Climate Justice

This award highlights how technology can be used to address environmental challenges throughout the world. How can the initiatives used to build and irrigate this golf course be used to improve the lives of people across the globe? Which areas of the world would benefit from these adaptations in water usage and recycling? Students could be encouraged to reflect on how innovative uses of technology might be used to improve the lives of people locally and globally, including in areas of water shortage. Other students might reflect on the tensions between the desires of affluent tourists (whether from the same or other countries) and uncertain local impacts. For example, the golf course might bring immediate economic benefits but acerbate long-term negative climate effects.

Beyond the Classroom Encounter

What can we all do to conserve water?

Create a water catcher to help conserve and recycle water in your home or outdoor space.

- Where is there excess water when it rains?
- Where is there an excess of water used in your home?

- How might it be captured and stored?
- What recycled materials might you use?
- What could the water be used for?

Reflecting on the power and preciousness of water

Opportunities for Embracing Uncertainty

This activity supports children's citizenship and environmental awareness, which is an important role for schools within a democracy and for the purpose of educating students to be able to contribute to a sustainable world. As students build their water catchers, they can consider how conserving water makes them feel and what it makes them think about.

Opportunities for All Students

This activity can be used with students of any age: the scaffolding would be greater for younger children both at school and with their families if building this at home. There are opportunities for all students to think about what materials can be used, measuring the volume of water collected and, for older students, predicting how much water will be collected. Students working at a higher level can use different technological solutions to address the challenge.

Opportunities for Creative Thinking

This activity invites discussion about why catching water may be desirable, as well as the challenges involved and how to overcome them. The students might do an initial audit of how water is used in school and make recommendations for change. Students can also consider: which designs might catch the most water; where should they place water catchers around the home or school; how will they make sure they do not get moved or damaged; how will they monitor, collect and use the water?

Opportunities for Linking to Climate Justice

Some arid areas of the world have always had to live with water uncertainty, and they have developed their own cultural and context specific strategies. For example, the San people of the Kalahari Desert have used empty ostrich eggs to store water, which they buried and marked the spot with a feather so that they could find it later. You can find an image and more information here: https://www.britishmuseum.org/collection/object/E_Af1910-363

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TOPIC 7: KELP

Brief Encounter

Can you construct an A-Z of life of the sea?

Use facts, feelings, and any figure of speech, with words from any language!

Here's an example below, but write your own in any way you want.

A Agua	N. Never give up supporting sea life
B Beaches	O. Ozean
C Climate change	P. Pongy polluted rock pools
D Diversity in the sea	Q Questions, challenges, problems
E Environmental jewel	R Regeneration of kelp populations
F Flora and fauna	S Silken purse of possibilities
G Governments act to clean up seas	T Tremendous sounds
H Helping to regenerate ocean life	U Underwater Life
I Incredible scientists	V Vulnerability of life under oceans
J Juggling environmental priorities	W Water as clear as a crystal
K Kelp populations	X X-rays as a tool to monitor Kelp
L Loneliness of kelp absence	Y Yearning for More Kelp
M Marine mollusc phylum	Z Zoology in oceans needs Kelp

Word play for deep interrogation

Opportunities for Embracing Uncertainty

There is no obligation to have a response to each letter. The combined class collection offers possibilities to encourage new responses and further interrogation: 'Tell me more about that . . .' 'How would you show us that idea without words? (For example, with your body, drawing, making) Can we spot any connections between each other's ideas? What made you laugh? What made you think?

Opportunities for All Students

This activity is suitable for students of all ages as it can adapt to all levels of complexity when filling in the responses for each letter of the alphabet. For some students, it may be a good idea to create one as a whole class. Others might bring a depth of factual knowledge or literary genres.

Opportunities for Creative Thinking

There is no limit to what the students can contribute with these starter invitations. Very often students will think of several alternatives for the same letter. The freedom to think and use language creatively is appealing for students and this can include any realm at all: nonsense, rhymes metaphor, adjectives, alliteration. Examples of class lists could be displayed with the invitation for others (students and teachers) to contribute their own sea-related ideas.

Opportunities for Linking to Climate Justice

This challenge provides a great opportunity for students to contribute to the letters using all the linguistic and cultural richness that they possess. For example, the Agua for A is water in Spanish and for O for Ozean is German.

Deliberative Encounter

Can you place yourself in the position of others?

1. Watch this video about kelp:

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://openpress.sussex.ac.uk/creatingwithuncertainty/?p=125#oembed-1

https://www.youtube.com/watch?v=V-RL8Ol9_KQ&t=5s

2. Explore how you would you feel if you were part of the:

- Sussex kelp population
- A fisherperson on the Sussex coast
- The scientist community helping the kelp population to recover

You might want to draw, write, act, sing or use body sculpture to show your feelings.

3. Now role-play a short discussion between these three groups and what they might say to each other.

4. What do you think plants and animals might teach us?

Opportunities for Embracing Uncertainty

Philosophy is a vehicle for promoting the value of embracing uncertainty where nobody is required to know the answer and all responses are valued. The role of the teacher is to *ask questions* that require children

to account for, and probe more deeply, the logic of their thinking. It is not that 'anything goes' in these discussions, rather that anything can be discussed and probed.

There are many links that can be made to kelp and other sea plant species, that raise the prospect of as-yet-unknown possibilities. Here are some suggestions:

The invention/creation of food wraps made from marine waste by a University of Sussex student: https://www.sussex.ac.uk/broadcast/read/50275

and MarinaTex – a bioplastic made from fish waste – YouTube

> One or more interactive elements has been excluded from this version of the text. You can view them online here: https://openpress.sussex.ac.uk/creatingwithuncertainty/?p=125#oembed-2

The use of seaweed to create food wraps: https://www.newscientist.com/article/2366978-plastic-wrap-made-from-seaweed-withstands-heat-and-is-compostable/

The use of seaweed/kelp to support the impacts of climate change for carbon sequestration: https://caseagrant.ucsd.edu/news/heather-kramp-seaweed-about-blow-your-climate-change-mind#:~:text=Seaweed%2C%20like%20land%20plants%2C%20use,2%20at%20a%20phenomenal%20rate

Opportunities for All Students

Some students may need some pre-teaching on key ideas (e.g. DNA) or to be shown only an excerpt of the film. Some may benefit from watching a longer film about the research on kelp: https://youtu.be/Tt00eZ2jqBQ

> One or more interactive elements has been excluded from this version of the text. You can view them online here: https://openpress.sussex.ac.uk/creatingwithuncertainty/?p=125#oembed-3

Philosophical discussions can be facilitated by teachers with students of all ages. Some examples of questions that could be used to prompt discussion are below, but many students will respond to the invitation to come up with their own:

- Should fishing be banned?
- Do fish feel pain?

- Do plants have feelings?
- Do the oceans belong to anyone or anything?
- Are humans part of nature?

Opportunities for Creative Thinking

The discussions promote a deep listening to others, and the requirement to stay with difficult topics, and to encounter their own or others' strong feelings, and to respond with consideration. For older students, it could be used within different subjects to probe specific response from within the discipline.

Opportunities for Linking to Climate Justice

These philosophical discussions encourage students to share their knowledge from their own life experiences and cultures. The example questions ask students to consider how humans are connected to other animals and plants.

The longer film (link above) highlights how kelp spore dispersal is dependent on the turbulence and currents of the sea. This illustrates how unpredictability and chance ensure the spread and diversification of different types of kelp emerging in the forest. This is what helps to nourish and sustain the complexity and richness of the kelp forest. This might be discussed as a metaphor for human thriving.

Visual Encounter

Thinking visually

An underwater shot of a kelp forest

1. Look at the image of kelp. You might also want to think about what you saw in the film (or watch a bit of it again). Think about these questions:

   ◦ What words would you use to describe the kelp? Why?
   ◦ What would it feel like to touch? To smell? To listen to in the sea?

○ Imagine swimming through a kelp forest as:

    1) A human

    2) A seal

What might the experience be like for you as a human and for the seal?

2. Use your imagination to create a sensory model that shows something that interests you about kelp. You might focus on its texture, movement, colour, or connection with other kelp plants and other species.

3. Have a look at other students' models. What do the models capture for you about kelp?

Perhaps the models show something of kelp's beauty, a feeling of fear or disgust, some environmental benefit or an uncertainty about what is known.

Uncertainty as a driver of new knowledge

Opportunities for Embracing Uncertainty

This activity encourages students to explore their knowledge of kelp, drawing on what they have seen but also their own experiences and memories of being beside or in the sea. This includes encountering seaweeds and kelp, perhaps when walking on the beach or through rockpools or when swimming. It might evoke competing feelings in which kelp is both understood as valuable to the environment but also slimy, smelly and possibly scary to touch when in the water, not least because it might hide other creatures or sharp rocks, for example. The activity therefore enables students to explore the tensions between what they think and feel.

Opportunities for All Students

This activity is suitable for all students. For early years students the modelling can encourage story telling, with new formations of kelp added over time with new found materials. It can take part with an adult who helps to narrate the story of what they are creating. Other students may want to bring together science and arts, by researching what kelp feels / sounds / smells like and identifying materials to replicate its texture, habitats, etc.

Opportunities for Creative Thinking

Early years students may have a curiosity and excitement in making creatures that hide in the kelp, evoking an imagination of hopes and fears, as well as enabling them to tell a story about their relationship to the kelp (who or what is it hiding from; what noise does the kelp forest make; what happens next?). Where students research the properties of kelp to inform their model, this can be developed into a design project. This could be used, for example, to teach each other (based on what they have researched), or else younger students, about the properties of kelp. Audiences can be invited to engage with the models in the multisensory way.

Opportunities for Linking to Climate Justice

The study of kelp forests draws attention to the importance of diversity in habitats, as well as the costs of depleting such diversity through human behaviour (in this example, fishing). What students emphasise in their models will demonstrate the diversity of the group in terms of their feelings, experiences, knowledge and imaginings.

Beyond the Classroom Encounter

Writing to your MP

Write a letter to your MP to ask them about their position on 'Kelp

Policy' for the next five years.

In the letter, state what you think or feel is important, and any action that you want them to take. You may not want kelp restored (it is slimy stuff!), or you may do.

Your MP may have no knowledge about what kelp is and its role in sustaining sea life and the environment. Think about what you might need to tell them to make your case.

Student citizenship beyond the classroom

Opportunities for Embracing Uncertainty

This activity supports students' citizenship, which is an important role for schools within a democracy. It supports students to come to their own position, without any expectation that they take up a strong sustainability position. It emphasises only that they can *all* come to a position of their own, but one that follows serious consideration of different perspectives through the other activities. The role of the teacher is to ensure that students' voices are heard and treated with seriousness, both within and beyond the classroom.

Opportunities for All Students

This activity can be used with students of any age although the scaffolding would be greater for younger groups. It offers an opportunity to involve families and create models out of paper, Lego or plasticine, for example, as an alternative to writing. For others, the remit might also include a strong focus on how to present information to different audiences in ways that are persuasive.

Opportunities for Creative Thinking

This activity requires students to create a persuasive narrative for a particular audience. They will need to think about how best to do this, drawing on a range of possible media, in a way that allows them to bring the arts and science together. Some media might particularly lend themselves to some groups.

Opportunities for Linking to Climate Justice

Students could explore the issues of kelp in different country contexts, including who is responsible for its management. They might choose to present their work to a different audience, such as Greta or a team

at UNESCO. This activity gives students the opportunity to make links with the UNESCO Sustainable Development Goals: https://sdgs.un.org/goals

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TOPIC 8: WIND ENERGY

Brief Encounter

The wind and us

Scout Moor Wind Farm, Rochdale, UK

Windy days – how do they make us feel?

1. Spend time outside on a windy day. Think about:

- What do you hear?
- What do you see?
- Where in your body do you feel it?
- What does it feel like?
- Can you taste it?
- How do you feel emotionally?
- How does your body respond?
- What does it make you want to do?
- What memories does it evoke?

2. Use charcoal, body sculpture or percussion to express and illustrate how the wind makes you think or feel.

3. With a partner, now combine your artworks to create one new work of art.

Multisensory experiences of the wind

Opportunities for Embracing Uncertainty

This activity enables students to attend closely to sensations and how they respond to them. It engages with the topic of wind in ways that extend beyond 'facts' and the intellectual. This can tie in with reading an AA Milne story (see below) which presents an additional opportunity for students to think how they might support each other as they express worries: how do we listen attentively to each other; what do we do to respond kindly and supportively, without dismissing feelings of uncertainty or ambivalence? How do we feel or think about other things that exists, but we cannot see, or vice versa (e.g. reflections in a mirror)?

Opportunities for All Students

This activity is appropriate for all students. Students of any age can also enjoy returning to the story from *The House at Pooh Corner* by A A Milne and EH Shephard (p.132) in which, faced with a strong autumnal wind, Piglet's ears 'streamed behind him like banners as he fought his way along'. Piglet worries and says, 'supposing a tree fell down, Pooh, when we were underneath it?' 'Supposing it didn't', said Pooh after careful thought. In this example, Pooh's careful listening connects with and acknowledges Piglet's fear, felt

in another time and place. He does not respond with blind optimism that dismisses Piglet but proffers a different way for Piglet to think.

Opportunities for Creative Thinking

This activity encourages students to use different media to explore their responses to wind. The questions posed in this encounter lend themselves to a wealth of creative thinking and of using all senses to embrace the multitude of aspects that are associated with wind and our world. How does wind happen? Why does it happen? Are there advantages and disadvantages to wind? Why do they have different strengths? How does nature use wind (e.g. to distribute seeds for example)?

Opportunities for Linking to Climate Justice

There are opportunities with this encounter to explore the global aspect of wind, which emphasises how we are all connected. It brings with it seeds, sand, ash and pollutants from other areas; activities that increase carbon in one part of the world create life-threatening weather patterns (e.g. tornadoes; cyclones) in other regions. This might lead to a discussion of our responsibility to others globally. Students might also explore how extreme wind conditions might be experienced, drawing on their own reflections of a windy day. They might share stories of extreme weather told by extended family members. (This links well to the issues raised for young people living India, in Vinita's film, Topic 1).

Deliberative Encounter

Thinking about a wind turbine near me

Imagine that your Local Authority is consulting the community about installing a turbine in your school grounds.

1. What do you picture?

- What is it you imagine?

- How big would it be?
- Was is it made of?
- What sound would it make?
- Where would it be placed?

2. How do you think these groups would respond to the turbine?

- Local farmer
- Headteacher
- Royal Society for the Protection of Birds (RSPB)
- Local resident
- National energy provider
- Local colonies of bats

3. What questions would you want to ask the Local Authority to help you decide whether you are in favour of or against the proposal?

Thinking deeply before coming to a position

Opportunities for Embracing Uncertainty

This activity is designed to make the concept of a wind energy more real for students and it could be incorporated after input (using images/film/visit) on wind turbines as a source of sustainable energy. Scientists have identified wind energy as an important mitigator for climate change (see: https://www.ipcc.ch/report/ar6/wg3/figures/summary-for-policymakers/ IPCC_AR6_WGIII_FigureSPM7.png), but there remain public debates about whether and where to place turbines. The activity gives students the opportunity to reflect before coming to their own position. Students might be invited to consider how to overcome resistance to onshore wind turbines (e.g. Do they need to be so big? Could they be miniaturised? Camouflaged? Embedded within household structures or somewhere else? Something else?)

Opportunities for All Students

All students, even the youngest, can consider different positions on wind as a source of energy. Some will engage in more depth than others with the views that different groups might have. Students could

also engage in *Mantel of the Expert* or *De Bono's Hats* type activities to investigate the concepts from the perspectives of others.

Opportunities for Creative Thinking

In reflecting on different factors that need to be considered when placing new turbines in the local environment, students are encouraged to consider implications from a number of perspectives, including aesthetics, noise, land versus sea-based options, carbon footprint of the production of different parts of the turbine (i.e. steel tower and plastic blades), and the possibilities of harming or enhancing habitats. Students can be invited to make models of wind turbines and to decorate them with feelings, thoughts and questions. Together, the class turbines can create a wind farm as an exhibition. The audience can be asked to consider:

What is this to me?

- What do I see?
- What does it mean to me? (What do I think or feel?)
- What am I being taught?

What am I to this?

- Where am I in this story?
- What do I know that I could share with the young people or teachers?
- What does the exhibition demand of me as an . . . Parent/carer? Young person? Charity? Citizen?

Opportunities for Linking to Climate Justice

Thinking about wind turbines raises questions about who has the power to decide where they are situated and who might be most immediately impacted. Students might contemplate the example where Greta Thunberg was involved in protesting against the siting of a windfarm (see: https://www.reuters.com/business/environment/thunberg-other-protesters-block-norway-energy-ministry-over-wind-farms-2023-02-27/). It was argued that the farm would disrupt cultural practices of grazing reindeer that have been central to the Sámi indigenous community in Norway.

Visual Encounter

Creating a turbine movement piece

Watch this Uncertainty Movement film, a coastal sequence performed by students.

Whilst watching the film, pay attention to what you notice, think and feel.

https://youtu.be/0GHhT-wB_Is

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://openpress.sussex.ac.uk/creatingwithuncertainty/?p=128#oembed-1

2. In groups, work out how to create a turbine movement similar to that seen in the film.

How you do this will depend on the size of your group.

3. Identify other 'things' that would interact with a wind turbine in your local landscape – you will need to decide if your turbine is on land or out at sea.

This might be people, other species (e.g. birds, fish, trees) or other things (e.g. electrical cables, rain, stones, waves). Think about how your chosen thing might interact with the turbine to create sounds, movements, shapes, different uses or shared habitats.

4. Choose one (or more) of these things and create your own group movement for it.

You might want to look at the film again to get some inspiration.

5. Think about whether you might perform, teach or involve others in your movement piece.

This could be people in your school or the wider community.

Embodied engagement with the possibilities of wind

Opportunities for Embracing Uncertainty

This activity fosters an embodied emotional engagement with wind turbines. It requires students to work alongside others in close physical proximity. This encourages trust and communication other than through words. The compositions involve touch, rhythm, co-ordination, control, focus, and a close listening. Uncertainty exists in students' act of interpretation, how the coordination will work, and that the piece changes each time it is performed.

Opportunities for All Students

This activity can be used with all ages. Some may need more support with creating a movement piece and it may be easier to do this alone rather than as a coordinated group: this could include the use of toys and other props to support their movements.

Opportunities for Creative Thinking

As well as movement, students might also generate accompanying soundscapes. They could also use or create props (such as windchimes) or use varied wind instruments to accompany the piece: some might make their own instruments from reused plastics or natural items such as bamboo and reeds, to integrate into their performance. Equally, they might want to script a message or an interaction that is integral to the piece. The activity offers the opportunity for performance to others and finding ways to involve the audience in engaging with the piece and its themes.

Opportunities for Linking to Climate Justice

There are a myriad of different gods and goddesses of winds (see: https://en.wikipedia.org/wiki/List_of_wind_deities) within different cultures that embody different elements, directionality, intensity and connection to other weather features (e.g. thunder and lightning). Students can be invited to consider why wind features so prominently among different cultural deities. For students who speak other languages and know of different deities, they can be invited to show what they know. Students might integrate the names, sounds, stories of these deities into their performances.

Beyond the Classroom Encounter

Carbon, the world, and us

Richer countries consume a disproportionate amount of energy compared with poorer countries, and in all countries those with more money consume more energy than others. For the foreseeable future, the world cannot produce enough sustainably sourced energy, such as wind power, for all people globally to have the energy to consume items that people expect or desire to have in the UK.

Over one weekend, notice the things that your household (you and others that you live with) use or do that produce carbon. With your household, discuss and agree together:

- 3 things that you feel you could change to use less carbon (e.g. walk to school)
- 3 things that use carbon that you would like to have or to do (e.g. more flights abroad)
- 3 things that you would definitely not change to reduce carbon (e.g. keep your fridge)

You might not all agree. Your discussions will involve listening, negotiating and possibly compromising.

Negotiating carbon reduction

Opportunities for Embracing Uncertainty

Drawing attention to climate justice issues requires students to consider whether and how they might change aspects of their own behaviour. Making such choices is challenging, particularly where it requires negotiation with others who might see things differently.

Opportunities for All Students

Younger students can be supported to think which activities and practices use more or less energy. Some students can use online calculators to work out their carbon footprint: https://www.carbonfootprint.com/calculator.aspx and https://footprint.wwf.org.uk/. They can be encouraged to consider whether anything surprises them, as well as what the figures make them think or feel. Students might have a mix of emotional responses, including guilt, anger or enthusiasm for the possibility to make a difference.

Opportunities for Creative Thinking

Once the students have decided how they might lower their carbon footprint they can be encouraged to think creatively, by addressing deeper questions: Can you commit to three ways in which you will use less energy that produces carbon? How does this feel? Does this challenge the kind of life you wish to live? Are there any benefits beyond using less carbon? Students might create a response to the idea of changing their behaviours or lifestyle. A poem or drawing, for example, could tap into the complexity of their feelings. Or else they might choose different colours (e.g. using paint colour charts) and create a montage to show and speak about the mix of feelings using these colours (they might also draw on the names of the colours given by paint companies).

Opportunities for Linking to Climate Justice

These charts might be useful to use as an initial input on the challenges of climate justice: https://theconversation.com/climate-change-is-a-justice-issue-these-6-charts-show-why-170072. These could be used to provoke a discussion on the responsibilities to others, both within and between communities in different countries across the world. This could lead into further deliberation on the requirement to renumerate countries in the Global South for their loss and damage due to climate change (see: https://unfccc.int/news/cop27-reaches-breakthrough-agreement-on-new-loss-and-damage-fund-for-vulnerable-countries).

Augusto Corrieri, Perpetua Kirby, Andy Lowe, Alexandra Pearson, Lisa Peck,
Marcelo Staricoff, Rebecca Webb

TOPIC 9: FORESTS

Brief Encounter

What is a forest?
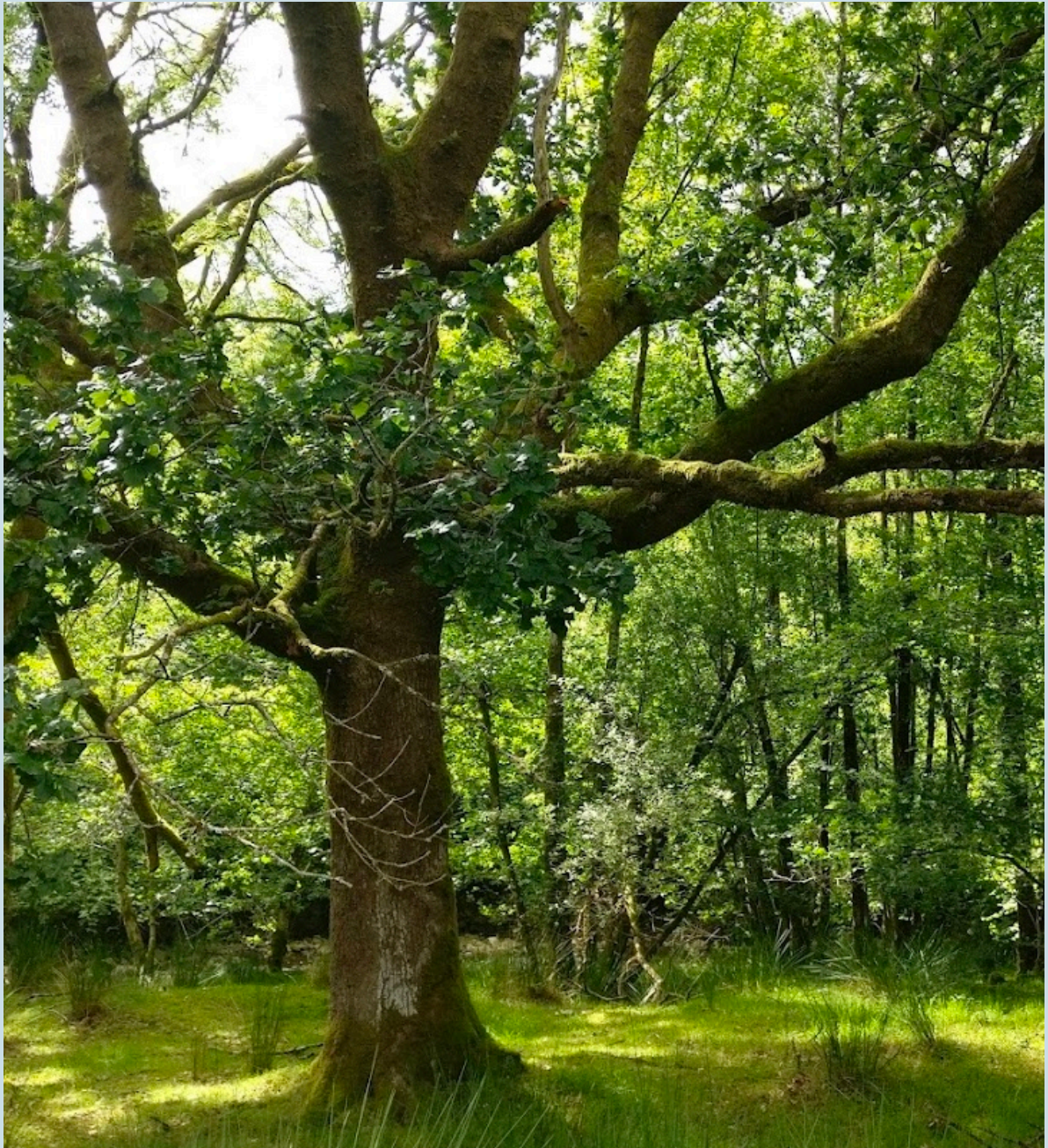
Oak tree, British woodland

Ceunant Llennyrch, Wales

Make a list of words and ideas that come to mind from these questions:

- What is a forest?
- What do you value about forests?
- Who or what else might use the forest?
- Why do forests matter?

Conceptualising forests

Opportunities for Embracing Uncertainty

This is an open-ended activity and will encourage students to share reflections on the varied ways forests can be understood and conceptualised. It also opens up questions of uncertainty inherent to forests in many cultures and children's stories, where it often holds an 'other', unknown or spooky dimension.

Opportunities for All Students

This example is suitable for students of all ages as it can be adapted to different levels of complexity.

Questions can be edited to be more specific (for example to push for different value-systems such as financial, spiritual, ecosystemic) or more reflexive. The task could also be conducted as a whole group activity, with greater guidance from the teacher, or with more autonomy for students

Opportunities for Creative Thinking

The activity encourages students to think expansively about forests, sharing ideas, connections, creative responses, and perhaps even drawings to unpack what forests are or could be beyond scientific classifications. The image should help students to think beyond the standard understandings of what a forest is and to consider broader ways we do, or could, live with forests.

Opportunities for Linking to Climate Justice

Forests are perceived and valued differently across languages, geographies, cultures and generations. This activity provides an opportunity for students to engage with how they see forests and discuss this with others. The order of the questions will help to steer this conversation from general responses, through personal reflections to engaging with how others (including other species) might use and value forests.

Deliberative Encounter

What is a forest for?

Both of these photos are of 'forests' in the Peruvian Amazon.

The top photo is a plantation. These trees have been planted to sequester (suck up) carbon to help combat climate change. The other is a small trail through the rainforest nearby, where plants are naturally recovering.

- How do each of these photos make you feel?
- In what ways are the forests the same or different?
- What value might these forests hold for local people; people across the world; and other species?

Valuing forests

Opportunities for Embracing Uncertainty

This activity explores the difference between forests that have been planned and managed, and more natural forests. This encourages a reflection on the inherent uncertainty in engaging with the natural world, and the difference between where humans have or have not intervened. Students can be prompted to think

more deeply about how nature is being managed intensively as a solution to climate change or left alone. And what this might mean for humans and other species.

Opportunities for All Students

This activity is suitable for students of all ages but can be increased in complexity by connecting these landscapes to the politics of climate change. The plantation on the left is a reforestation project designed to optimise carbon sequestration and paid for by carbon credits. The photo on the right is in the same valley but a forest that has recovered naturally. Students can reflect on what our choices in responding to climate change mean for forests across the world. Some students may be invited to draw or model a forest instead (perhaps from outside found human and nonhuman made objects), and asked to reflect on what they have created, including what is valued about forests.

Opportunities for Creative Thinking

Discussions on what is valuable about a forest is highly subjective, yet often reflects deeply held beliefs. Exploring this as a group allows students to see the contextual nature of both forests and concepts of value. While it could be interpreted in a very narrow conception of 'value' it will allow students to engage creatively with what else this term might mean. What is valued might include ecosystem services (carbon capture, climate change mitigation, water regulation); biodiversity including potential for new medicines; local livelihoods; non-timber forest products; and eco-tourism. If a forest is cut down then the value includes timber; land for livestock and agricultural production; rivers for hydroelectricity; drilling and mining (oil, gas, and metal ores, gold, aluminium).

Opportunities for Linking to Climate Justice

As with forests in general, how we value forests varies widely between cultures and languages, and is often tied to memories and sensations of being in particular forest spaces. This activity is an opportunity to engage with these sensations – and the words and language that often comes with them – while discussing differences and similarities.

Visual Encounter

How do other people see the forest?

1. Watch this film on one family's return to the forest to escape Covid-19:

https://www.youtube.com/watch?v=SmsWKuYuHOM&ab_channel=TheGuardian

> *One or more interactive elements has been excluded from this version of the text. You can view them online here: https://openpress.sussex.ac.uk/creatingwithuncertainty/?p=135#oembed-1*

2. Note down the different things that the forest provides Yutzu and his family:

- Why do you think that they moved further into the forest during Covid-19?
- Would you like to live in the forest and what challenges might it bring?

Exploring values associated with sustainability

Opportunities for Embracing Uncertainty

The film reflects on a time of extreme global uncertainty during the coronavirus pandemic. Combining this with the understandings of uncertainty in ecosystems from the first two activities will help students to make connections between these areas outside of our control and where people find comfort in embracing uncertainty.

Opportunities for All Students

The video can be reduced in length to account for differing attention spans. While it contains subtitles that add depth to the content, the activity can be conducted without the dialogue. Students are also able to

reflect on the content as they see fit; they might see themselves through the eyes of different people featured in the documentary.

Opportunities for Creative Thinking

The questions encourage students to move between seeing the forest through the eyes of others and reflecting on their own experiences, including through the pandemic. The final question can be used as a springboard to think creatively about how life could be different in diverse ecological settings, as well as to consider how we all might change the way that we live in the face of crises.

Opportunities for Linking to Climate Justice

The exercise encourages multicultural thinking through engagement with Kichwa conceptions of the forest and relations with the natural world. These can be discussed in connection to students' own life experiences and cultures. It is also translated from an Ecuadorian Kichwa dialect, very different in form and structure to Latin script languages.

Beyond the Classroom Encounter

If you go down to the woods today...
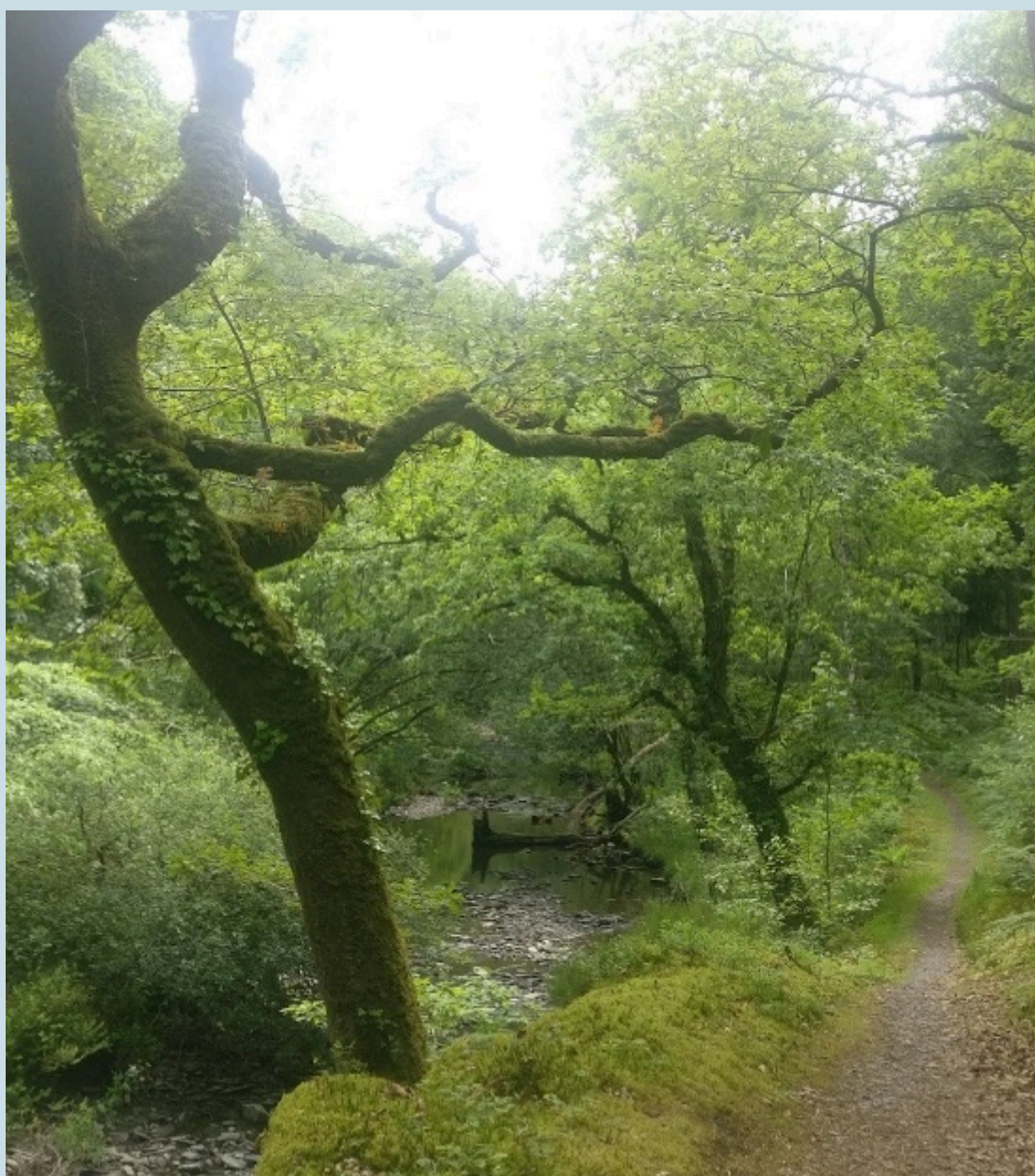
Outside of class, plan a walk to a local forest. It can be in your neighbourhood, a local park or a nearby woods (or forest).

- Think about what trees are there. Why might they have been planted or have grown there?
- Who are you sharing this space with as you walk through the trees?
- Who or what might have used the forest in history, how and why?

You can use the internet to find out more, look for information in the woods or even tell your own story or legend of the woods.

Exploring values associated with sustainability

Opportunities for Embracing Uncertainty

This activity encourages students to engage with outside space, to reflect further on questions of uncertainty explored in the workshop. Uncertainty is embraced through the variety of spaces that could be considered forest and in thinking through how the space has been produced and who or what is using the space. This will not have clear or simple answers.

Opportunities for All Students

All students can participate in this activity with different levels of supervision. Suggestions could be provided for woods or forests to visit in the local area, some general history, or possible questions to explore to guide students. For some students, the activity could include some self-guided research on areas, a group project and feedback to the class.

Opportunities for Creative Thinking

This activity is structured to allow different means of engagement. Students can think creatively about the questions posed and, in the absence of definitive answers, speculate on the different possibilities. Students could also be encouraged to tell a story about the forest, perhaps even drawing, writing, or performing their own myths or legends about their local wood and the possible real or imagined life within it. Some students can build a den made from found objects to create a 'home' for a forest dwelling creature: they will need to consider what kind of home will meet their needs, and to contemplate what will help to this place feel like a home.

Opportunities for Linking to Climate Justice

In selecting and exploring a particular forest, students will be asked to engage with different ways that people use space and to think about why. Encouraging dialogue around these questions will uncover different value systems, words and ideas that we use to understand forests. They could be encouraged to engage with the ideas explored in the film of a different country context, and to share what they know of the possibilities and dangers of forests in different contexts.

Will Lock

TOPIC 10: STORYTELLING

Funcertain futures: building new worlds

Introduction

Funcertain Futures: Building New Worlds is a **worldbuilding and storytelling game**, to help us to envision the **future of the place you live**. It explores the theme of uncertainty.

The activity is designed for a group of about 5-25 students. It would work best either with a smaller group (e.g. an eco-council) or when there is more time to engage with a larger group (e.g. during an enrichment week or holiday club). You'll need at least 90 minutes (and it can be longer): the game can be played in one big go or split over multiple sessions. In its current form, it is designed for older children and young people, but it could be adapted for others by having fewer prompts for the story to unfold.

Familiarise yourself with the rules beforehand. Make sure you have the appropriate materials (a standard deck of playing cards and some drawing materials).

More detailed tips and variations are available in the [Appendix](#) , including on timing, maps, prompts, and storytelling. These can help to simply or add a bit more complexity, adding some fun and interesting dimensions to the game.

Some students working at a higher level (e.g. A level, Undergraduates, PGCE Geographers) could try to identify the ideological perspectives on sustainability embedded in the game or that emerge from the players' unfolding story. These might include ecofeminism, green consumerism, neoliberal economics, anarchism, anti-capitalism, eco-facism, etc.

Quick reference

- If this is your very first time reading this, you might want to start by skimming the 'Prompts' section below — that will give you a real sense of what the activity is like.
- To prepare, you'll need a whiteboard or a large sheet of paper to draw a 'map' (which will really be a messy collection of doodles). See 'Map Tips' for more ideas.
- You'll also need a standard deck of playing cards. Remove the Jokers. We won't need these cards. Remove the Diamonds. We won't need these cards.
- If playing in one session: shuffle all the cards. Distribute the cards among the students as equally as possible. It doesn't matter if some students have more cards than others.
- If splitting the game over multiple sessions: Shuffle the cards you will be using in this session, and distribute them to students. (More details on 'Timings Tips' available online).
- Read the Prologue.

- Call out the first card from the recommended order (see 'Card Order'). 'Who has the 8 of Spades?'
- Look up the card (see 'Prompts'), and ask the student the question.
- The questions give students opportunities to build the world and tell a story in it. The student can answer the question themselves, or they can ask the group to decide.
- When they are done answering, move to the next card. Sketch and doodle to illustrate the story: Interpret 'map' loosely. Use quick sketches, doodles, labels, speech bubbles, etc. (More details available online: see 'Map Tips').
- Try to spend an average of about two minutes per card.
- After a card is played, it should be discarded. (The student passes the card to you, who puts it on a discard pile).
- Spades will be played first, then Clubs, then Hearts.
- There are several Clubs cards that may end the game (go to the Final Scene). Alternatively, when all the Clubs are played, go to the Final Scene.

Before play, the teacher should familiarise themselves with the rules.

Storytelling tips

It is okay to make up your own rules and conventions to make the game run more smoothly. Encourage students to listen generously to each other. Remind students to listen to one another's ideas. Even if they don't like an idea at first, they can ask themselves, 'How could we fit this into the story?

Getting started

Beforehand, the teacher will:

- Learn the rules
- Think about ways to localise the prompts
- Get some playing materials (a deck of cards, and whatever you're using for the map)
- Prepare a map (mostly blank, to be filled in during the game)

During play, the teacher will:

- Distribute cards to the students
- Read out questions (see 'The Questions' below)
- Help the student whose turn it is to collect suggestions from the group, when appropriate
- Help shape the students' answers into a cohesive story
- Draw on the map (or coordinate students to do so)
- Keep track of time and keep things moving

- Oversee the Final Scene at the end

Prologue

Read the Prologue out loud to your students. Replace the _____ with the name of the town, village or local area where the game is being played. You may want to alter other details to localise further.

This is a game about a question: "What could life be like in _____ in the year 2070?"
   Let's imagine the future together.
   How big or small is _____? Has biodiversity increased or decreased? Are there plants and animals we've never seen before? panels everywhere? Have old buildings been put to new uses? What is in the sky, on the water and on land? Are there communal k gardens? Amphibious houseboats? Diagonal farms? Domes woven from living branches? Towering skyscrapers? Underground tu and more?
   In a moment, we'll start to imagine _____ in the year 2070.
   What about the future inhabitants of _____?
   How do they dress, talk, and act?
   What do people love to do?
   What are their hopes, cares, and fears?
   What adventures do they have?
   Together, we will tell a story set in _____'s future. Let us play to find out ....

Prompts

Distribute the cards among the students. The left column is to be read out loud. You may want to read the choices out loud twice. The right column gives you (the teacher) explanatory notes and ideas. Use the right-hand column in any way you want (or ignore it).

Tip. If the question just does not fit the story or the situation, use one of these generic prompts instead.

- Add a detail to something already on the map.
- What is this character doing right now?
- What's happening over here right now?
- What does the Main Character do next?

The 'plot' will probably dot around a bit. It's OK to leave threads hanging. But be on the look-out for opportunities to tie things together!

Act 1: Spades

You may want to get the student to choose one, and then open it up to the whole group to discuss what it means.

Let's imagine that the school we're in now is no longer a school. What has it become instead?

♠
K

(1) Community debate hall
(2) Mutual aid hub
(3) Bioengineering research lab
(4) Vegetable polytunnel
(5) Public baths
(6) Ancient ruins from the year 2023
(7) Make up your own location

Some suggested definitions that may be useful.

'Mutual aid is when a group of people take responsibility for caring for one another. You don't necessarily get anything in return, except to be part of a group of people who look after one another.'

'A polytunnel is kind of like a long greenhouse that gets warmed by the sun. You grow plants in it.'

You may want to get the student to choose the locations, and then open it up to the whole class to discuss what they mean.

Let's add two more locations.

(1) Robot zoo
(2) Repair cafe
(3) Space elevator (under construction)
(4) Algae fuel station
♠
7
(5) Drone library
(6) A mushroom farm
(7) Make up your own location

What's the first one? What's the second one?

Some background: **Mushrooms** can be used to create sustainable alternatives to plastics. Back in the 2020s, we still used plastics. But plastics were made using fossil fuels, contributing to climate change.[1] In the future, **algae** might be a sustainable alternative to petrol, although back in the 2020s this was still controversial, and hadn't yet been scientifically proven. A **space elevator** is a proposed technology

Here are even more suggestions: A wildlife monitoring station, a seed bank, an animal shelter, an animal crossing, a theatre where actors perform historic internet memes, a treehouse with free housing, a bank where you can go to legally paint your own money, an arena for a new future sport, a low carbon Virtual Reality arena, a place called 'Naps, Maps and Apps', a treehouse social housing project, a Citizen's Really Bad Advice Bureau, a Ghost Tour featuring hologram ghosts, a mystery object swap hub, a place called Castle Kindness.

1. See for example The Center for Environmental Law, 'Fueling Plastics' report. https://www.ciel.org/wp-content/uploads/2017/09/Fueling-Plastics-Petrochemical-Feddstocks.pdf

In the future, climate change has finally been stopped. However, because we left it so late, some effects have already happened. One effect is more storms and floods.

What is ONE way that future _____ is prepared to deal with floods?

♠
6
(1) Life jacket stations on every street corner
(2) A system of water turbines, pumps and sluices
(3) Some houses have adjustable 'legs'
(4) Giant sponges
(5) A giant living seawall, made of mangrove trees
(6) Something else

Choose one of these locations, and decide how it has changed in the year 2070:

(1) Stanmer Park
♠
9
(2) Devil's Dyke
(3) The University of Sussex
(4) North Laine
(5) Palace Pier
(6) Lewes
(7) Choose somewhere else

This could be a good one to probe for more detail. How does the chosen adaptation work in practice?

If the student (or the whole class) is torn between these options, you could let them pick two or three. Emphasise that there isn't just one solution.
Skip option (5) if you don't think it fits your local area.
Some **background information**. The good news is that recent science suggests that once we get to global net zero (i.e. any remaining greenhouse gas emissions are balanced by removals), then the planet will quickly stop heating. However, even in the best-case scenarios, where we manage to limit global warming to 1.5 degrees above pre-industrial levels, we will still need to contend with increased risks. These include higher sea levels and more volatile weather.
The main greenhouse gas is carbon. Methane is also important, and there are some other greenhouse gases too.
Back in the 2020s, greenhouse gases were emitted into the atmosphere when we burned fossil fuels (oil, coal, gas) or biomass (trees) to create energy. There were other sources too, for example industrial processes (manufacturing cement and plastics) and agricultural expansion (cows' farts and burps).
But greenhouse gases are also constantly leaving the atmosphere. Carbon is absorbed by trees, plants, soil, and the ocean. Back in the 2020s, there were also some experimental technologies that could absorb carbon. (It is a simplification to describe all such technologies as experimental, since some of them definitely worked in a technical sense and were already being used on a small scale. However, there was controversy around whether they could grow quickly and efficiently enough to really help stop climate change, so they were 'experimental' in a looser sense).

Modify this list to give the student a choice of local locations they may be familiar with.

Once the student has nominated a location, you can open it up to the group to suggest how it might have changed in the future.
Let the student holding the card choose the suggestion(s) they like the most.

What is the Main Character's name? Listen to these options, and choose one you like, or make up your own name.

Make a note on the map.

Some more name ideas: Brad Plant, Carly Carbonsink, Jessica Algae, Józef Jones, Kamala Nanda, Katarina Clockwork, Korneliusz Kubacki, Kool Keith, Luna Lustrous, Lotus McPotus, Voluble Vonneglut, Xia Meifen.

♠
3
    (1) Efe
    (2) Dr Sprout
    (3) Esmerelda
    (4) Ziggy
    (5) Make up your own name
    (6) Ask the whole class for suggestions

What are the Main Character's pronouns?

♠
4
    (1) He / him
    (2) She / her
    (3) They / them
    (4) Something else
    You can choose one, or you can ask everybody to vote.

Make a note on the map.

('They' is used as a default in the prompts).

How old is the Main Character?

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10
    (1) About twelve?
    (2) About sixteen?
    (3) About thirty?
    (4) About fifty?
    (5) About ninety?
    (6) Or choose a different age

Let's add another character who lives in future _____.
First, what is their name?

♠
8

(1) Zafi Krebite
(2) Mr Moonshine
(3) Ms Epic
(4) Hrada Honeybadgers
(5) Make up your own name for them

Second, what is their relationship to the Main Character?
(1) They're friends
(2) They work together
(3) They are family
(4) They have never met the Main Character, but they're trying to find them (we'll think of a reason later)
(5) They once were best friends, but now they are bitter enemies
(6) Make up a different relationship

Draw them on the map.

Some more name ideas: Cladin Spam, Natalya Tarasivna Melnyk, Miley Recyclerus, Nicky Nikelord, Norbert Jakubik, Noriko Splinterwaif, Opal McOmelas, Patricia Woklid, Pendrassil Hanglantern, Posie Rider, Salma Hydroyek, Toggy Fumes, Valentyna Stepanova, Vin Biodiesel.

In the future, there are multiple modes of transport. Which one does our Main Character use the most?

♠
5

(1) Bicycle
(2) Mono-rail solar train
(3) Cable car
(4) Solar-powered micro-car
(5) Canal boat
(6) Hang glider
(7) Underground shuttle
(8) Something else

Use the students' suggestions to add to the map.

Let's add another character who lives in future _____.
What is their name?

(1) Danky Strunks
    (2) Gavin Marble
    (3) Nuggets Harrison
    (4) Isabella Strangle
    (5) Make up your own name for them
    What is their role?

♠
J

    (1) A future version of a mayor
    (2) A future version of a teacher
    (3) A future version of a chef
    (4) A future version of a journalist
    (5) A future version of a fashion designer
    (6) A future version of a care worker
    (7) Something else

Some more name ideas: Admiral Inks, Anah Andra, Anala Shroff, Apurva Ram, Ben Brown, Cecilia Clouds, Countessa Indicenta Von Spangle-Strangles, Dai Jian, Dorcas Crebharrow, Feechi Kolashk, Floréal Swarm, Hipolit Gogola, Ice Sliv, Jonathan Stevenson, Jory Barrowe.

You can look for suggestions about how this future vocation may be different. But also, try to leave it a bit open. Maybe you can fill in more details as you go. It's very tricky to imagine transformations in the division of labour, since jobs imply so much about society at large. Would a medieval chandler or barber-surgeon have been able to dream up the roles of bus driver, mental health nurse, SEO copywriter?

♠
Q

To make a really good story, we'll need some things to be connected. Choose two things or people that are already on the map. Then as a group, we'll decide how they are connected.

This one may be a bit tricky. Get the student to choose two things that have already been mentioned, then immediately open it up to the group to explore possible connections.

A 'connection' could be anything. Do they interact with each other? Does the Main Character interact with them both? How are they similar and different? Maybe you can invent a third thing that
    You may have to play storyteller yourself. Guide the group to come up with some options, and then get approval from the student whose turn it is. Add something to the map.

Choose one of these to add to the map.

♠
A

    (1) A robot
    (2) A ghost
    (3) A pet
    (4) A wild animal
    (5) A bird drone
    (6) A tree spirit
    (7) A monster

You could probe further, or come back to this later.

Some later prompts will ask students to choose things on the map to add more detail to.

	In the future, jobs have changed a lot. What is the Main Character's job?	You may want to follow up this one by asking the student, and/or the group, to suggest ways that the job might be different.

♠ 2	(1) They don't have a job
	(2) A future version of a farmer
	(3) A future version of a police officer
	(4) A future version of an artist
	(5) A future version of an engineer
	(6) Something else
		Try probing the suggestions too, gently challenging the presupposition.
		    Ask, 'OK, but will they have x in our future?'
		    You can guide the group to give the futuristic vocation a more specific name. For example: pollination operator, meat cultivator, violence interrupter, mystery troubleshooter, drone dancer, dream artist, AI therapist, wind farm engineer.
		    Draw or make a note on the map. You might also want to draw some of the wider implications. E.g. if they are an artist, you could add a public artwork somewhere on the map.

The table below is the recommended order for selecting cards (although you can experiment with your own order).

Act 2: Clubs

Quickly summarise the world the students have imagined. Think especially about connections between the different parts. These could be trivial, everyday connections, or they could be more ingenious, strange, secret. Now in this world, our Main Character is about to have an adventure . . .

> Design note: You'll notice that the prompts now begin to become a bit more open-ended. The idea is to build up some story ingredients in Act 1 (and perhaps to build the students' confidence as storytellers).

The recommended order of cards is in the table below.

You could follow up with a few more questions, to create a planned route across th[e]

♣ 6

What is the Main Character's plan for today?

(1) The same thing they do every day
(2) Cook a dish for a community feast this evening
(3) Deliver a package
(4) Build a birdhouse
(5) Go to the repair cafe
(6) Something else

(1) What *do* they do every day? OK, so where do they go first? And where do they g[o]
(2) First they will need to gather some ingredients from three different places. Wh[ere]
go? Also, they're not using just any recipe. They are using a secret recipe. Who will [take]
from?
(3) First they'll have to go to another part of town to pick up the package. Where [?]
they'll have to deliver it. Where are they headed?
(4) Where will they get their materials and tools from? Where are they building t[he]
(5) Why are they going to the repair cafe? Do they have something they need fixe[d?]
help somebody fix something? Or both?
If this card comes up while the Main Character is already in the midst of an adve[nture]
to frame it differently. E.g. What was the Main Character's plan for today, before all [this]
happening? Is there somebody who is wondering why the Main Character hasn't sh[own up?]
Main Character fulfil their original plans *and* deal with the new incidents?

♣ 4

Things don't always go according to plan. Something that was supposed to improve the situation better has only made it worse! How does the situation get worse?

This will probably relate to the Main Character.

You might want to help the student explore unintended side-effects.

♣ 3

What does the Main Character decide to do next?

You probably want to steer the student to come up with an action, but don't deter[mine]
Leave that for the next card (or a future card).

If you like, you can narrate back-and-forth a bit until you come to what feels like a g[ood point to]
move to the next card.

♣ A

Let's give our story a **villain**. Please choose one of the characters on the map, or make up a new one.

Now think of two different rumours about the bad guy's motives.

You may want to remind the student of the available cast.

You could also use locations as inspiration. E.g. if students have invented a Library f[or...]
Library for Birds Librarian? Is there a Library for Cats across town?
Note the rumours on the map using keywords. Later in the story, one or both ru[mours could turn out]
to be true. Or neither. Or they could both contain a grain of truth.

The Main Character stumbles across something interesting! First, where are they?

(1) Out on the water on their solar-powered boat?
    (2) On a rooftop garden?
    (3) Exploring an old abandoned oil rig?
    (4) At the Repair Cafe?
    (5) Salvaging material from the old landfill site?

♣ 2
    (6) Somewhere else?
Second, what does the Main Character find?
    (1) Treasure?
    (2) A relic from long ago?
    (3) Garbage that can be made into something new?
    (4) A species thought to be extinct?
    (5) An invitation to join an elite training programme?
    (6) A message intended for someone else?
    (7) Something else?

Add to the map as necessary.

You might want to linger on this one. Weave it into the story so far. It could be a tur
    You could ask some follow-ups to bring the scene to life. And/or invite one or tw
making the discovery.

Of course, in this town, many things are happening at once. Let's cut to another scene. First, choose a

♣ 7
character from the story. It could be the Main Character or somebody else. Then decide what this character is going to do next.

Leave this hanging, and resolve it whenever makes sense for the story (there won't b
refers back to it specifically).

Let's add some more detail to the map. Here, the community is coming together to convert something into

♣ 5
something else. For example, refurbishing an old building for a new purpose. What did it used to be? What are people turning it into?

Choose a location that you think the Main Character could feasibly visit now (or so

If the student isn't sure, support them to choose or invent a derelict building. Then
suggestions about what it's being turned into.
    If you like, potential follow-ups:
- How will this new creation serve the needs of the community?

The Main Character is passing by or through the busy work site. What do they se

♣ K

Things don't always go according to plan. Something that's already on the map has a bad effect that endangers somebody.

First, what is it?
    Second, who does it endanger? The Main Character, and/or somebody else?

Ask the student whose card it is to nominate something on the map.

Then open it up to the whole group to make suggestions.
    The student whose card it is can pick their favourite, or invent one of their own.
    Help the group to seek out less obvious options. Focus on something that has be
explore unexpected side-effects. And/or explore unexpected interactions between tv

♣ Q

Pick somebody on the map. This could be the Main Character, or somebody else.

What do they do next?

As usual, add something to the map.

As usual, leave the action somewhat unresolved. The results should still be mysteric
next card.

♣ 9

Eureka! A technological breakthrough has occurred. What prototype has just been created?

(1) Solar tree
    (2) Emotional hologram hat
    (3) A temporal disruptor toaster
    (4) Flavour transfer tube
    (5) Carbon sequestration crystal
    (6) Dream synchroniser

(1) Solar trees are new bioengineered trees that convert sunshine directly into electri

(2) An emotional hologram hat projects an image above your head, to show the wo:
feeling.
    (3) This toaster exploits irregularities in the fabric of timespace so that your toast
before you put in the bread.
    (4) Connect two different food items with the flavour transfer tube, and they wil
    (5) This crystal can suck carbon directly out of the atmosphere. Does this mean v
burning fossil fuels?
    (6) This device turns dreaming into a kind of social media site.

You may want to give the student a choice of three or four elements that are underd

You could get the student to choose somebody or something, and then open it up t
details. The student picks their favourite suggestions.

You could also try steering the students to things that might be relevant to the M
predicament and/or motives.

If probe questions feel helpful, you could try these:
- What is it like?
- What can it do?
- Where did it come from?
- How has it changed over the years?
- How is this person's job different from fifty years ago?
- What do they wish for more than anything?
- What are they doing right now?
- What is their favourite part of the day? How about least favourite?

Once the details are in place, you could use them to advance the story in some wa
leave them and move onto the next card.

♣ J

Let's add even more details to something that is already on the map. What would we like to develop further for our story?

You could follow up with a few more questions, to create a planned route across the

(1) What *do* they do every day? OK, so where do they go first? And where do they g

(2) First they will need to gather some ingredients from three different places. Wh
go? Also, they're not using just any recipe. They are using a secret recipe. Who will t
from?

(3) First they'll have to go to another part of town to pick up the package. Where
they'll have to deliver it. Where are they headed?

(4) Where will they get their materials and tools from? Where are they building t

(5) Why are they going to the repair cafe? Do they have something they need fixe
help somebody fix something? Or both?

If this card comes up while the Main Character is already in the midst of an adve
to frame it differently. E.g. What was the Main Character's plan for today, before al
happening? Is there somebody who is wondering why the Main Character hasn't sh
Main Character fulfil their original plans *and* deal with the new incidents?

♣ 6

What is the Main Character's plan for today?

(1) The same thing they do every day
(2) Cook a dish for a community feast this evening
(3) Deliver a package
(4) Build a birdhouse
(5) Go to the repair cafe
(6) Something else

♣
10

Let's return to our Main Character. Unfortunately, something has gone wrong! First, is it:

(1) Some kind of ambush
   (2) Some kind of accident
   (3) A malfunction
   (4) A misunderstanding
   (5) Something's gone missing
   (6) Something else
   Second, what are the details?

Get the details of the mishap, but don't resolve it. Leave that for another card.

♣ 8

There's more to all this than meets the eye. Do we know what greenwashing is? Greenwashing is when a company says that it is acting in environmentally sustainable ways, when in fact it is doing harm to people and the environment.

If greenwashing really doesn't fit the story here, you could ask a more generic questi... lies.

Either way, mark something on the map as usual.

Take a look at the whole map. Now, few people in future _____ know this yet, but there is some greenwashing going on here. Who do you think it is?

Act 3: Hearts

Design note: There are fewer prompts here about the Main Character's actions and results. The hope is that the motives and challenges are now quite clear. These cards layer on further drama, and also opportunities and alliances that might help lead to a happy ending (or an uncertain one?).

Follow the recommended order below:

Someone in the city is **not all they seem.** First, add a new person, or choose someone who is already there.

Second, what is their secret?

♥
5
    (1) Corruption
    (2) They are a spy
    (3) They are a witch
    (4) They are a hologram
    (5) They are a selkie
    (6) They are a whistleblower
    (7) Something else

Today gets even more chaotic. Why?

♥
J
(1) Riots
    (2) Pandemic
    (3) Escaped science experiment
    (4) Toxic spillage
    (5) Land eviction
    (6) Heatwave
    (7) Something from earlier we've all forgotten about
    (8) Something else

You'll probably want to use this prompt to create even more problems for the Main Character.

You might want to follow up by asking what the Main Character does in response.

In this next scene, the Main Character will get a **sidekick**. Who or what should the sidekick be?

♥
4
(1) Somebody or something already on the map?
    (2) Or somebody or something new?
    How do they meet? Is the Main Character pleased to have a sidekick, or are they reluctant at first?

You may need to remind everybody who the villain character is supposed to be.

♥
2
  What is the **villain** doing right now? Why?

You'll probably want to use this prompt to create even more problems for the Main Character.
    This might also be a good card to reveal the villain's true plan (you can always reveal their *true* true plan later).

Maybe our **villain** isn't as bad as they seem?

♥
9
(1) Twist — they were on our side all along!
    (2) They do bad things for good reasons.
    (3) They do good things and bad things.
    (4) They want to change!
    (5) They're just evil, but you kind of have to love them anyway.
    (6) Something else.

There was a breakthrough earlier, so it could definitely be that!

Uh-oh. A **new technology** has a **dangerous side effect**.

♥
3
First, let's choose a new technology. It could be something that is already on the map, or we could create something new.
    Second, what is the side effect?

But there are probably plenty of other options too.
    You'll probably want to use this prompt to create even more problems for the Main Character.

♥
6
The Main Character makes a plan. What is the plan?

Today _____ is struck by a **major natural disaster.** What is it?

♥
A
   (1) Storm surges overtopping the flood barriers?
      (2) Wildfires?
      (3) A landslide?
      (4) A meteorite?
      (5) Something else?
   Decide what the disaster is.

You may want to ask the student to decide on the disaster, and then get suggestions from the whole group about its effects.

You'll probably want to use it to create even more problems for the Main Character.

The Main Character gets some much-needed help. From whom?

♥
Q
   (1) Somebody on the map
      (2) An old friend
      (3) A group of activists
      (4) Somebody who has been in disguise or undercover
      (5) The last person they would expect
      (6) Someone else
   After this card has been played, the class takes a vote. Does the story end (go to the Final Scene), or continue a little longer?

♥
10
A **container ship carrying hazardous waste** has arrived. A generation ago, a local company shipped the waste to a storage site in the Global South. The current inhabitants are returning it now. What was it — nuclear waste, nanowaste, medical waste, or something else? Mark it on the map.

With everything else that is going on, it might turn out to be tricky to resolve this subplot by the end.

Maybe you will, or maybe you can allude to it in the Final Scene as a teaser for a sequel.

The Main Character and the villain will now encounter each other. First, choose where this will happen on the map.

♥
8
Second, decide how they get there.
   Third, decide what happens.
   After this card has been played, the class takes a vote. Does the story end (go to the Final Scene), or continue a little longer?

The Main Character has received something.

♥
7
Is it:
   (1) A message
   (2) A gift
   (3) A tool they need
   (4) A warning
   (5) An offer
   (6) An impossible choice
What is it?
Who could it be from? Look at the map for ideas.

Create some context to weave this into the story. What is the Main Character doing? How is it going? How does this lead them to the situation where they receive whatever-it-is?

♥
K
The Main Character has a major success. What is it? How do they achieve it?

After this card has been played, the class takes a vote. Does the story end (go to the Final Scene) or continue a little longer?

The Final Scene

Can you hear the music playing? The end is near.

There are three ways to trigger the end of the game.

1. When all the cards are used up, then it is time for the **Final Scene.**
2. Some **Hearts** cards give the students the option to trigger the **Final Scene**. When someone draws such a card, students should discuss whether to have the Final Scene now, or continue telling the story.
3. If you are running out of time and all agree, you can move to the **Final Scene.**

By now, you might have a story that is sprawling in many different directions. In the Final Scene, you do your best to create some closure. There are different approaches you could take:

1. A big finale, focusing on the 'how': how will our hero and their allies get out of this seemingly impossible situation, while protecting what really matters?
2. Create a dilemma. Will the story end this way, or that way? Create a conversation. Then maybe get the class to vote.
3. Sure, we've had a Main Character, but this has really been a story about a place. You could end with a closing montage. Ask the class to imagine the closing music (or choose a song … or really play it softly in the background). Give us one last final glimpse of each of the important characters or places.

Remember, not everything needs to be resolved. You could point out the loose threads, and then end with something like: _____ is a place of a hundred thousand stories, and there are many yet to be told. But for now, as music floats on the evening breeze, and stars begin to brighten the sky, we bid farewell to our friends in the year 2070, and we return to our own time, a time every bit as rich with possibilities, with stories, and with wonder. And that, everybody, is the end! Give yourselves a huge round of applause!

After the game

If there's time, you may wish to talk to students about how the story unfolded. What parts did they like best? What was realistic or unrealistic? Can storytelling and imagination help us to change our mind about what is realistic or unrealistic? How did the story make them feel? Did they learn anything new? Did it create new questions? How might the story have gone differently? Can they think of actions they could take now for climate justice?

Jo Walton

Funcertainty: further guidance

Map Tips

Interpret 'map' loosely. Use quick sketches, doodles, labels, speech bubbles, etc.

The very simplest way to play is to have the teacher do all the drawing, on a whiteboard or the biggest sheet of paper you can find.

However, it will be more fun and rewarding to involve more students in drawing. Choose an approach you think will work well with your group.

When you start the game, the map should be mostly blank. But you can prepare by adding just one or two landscape features. For example, a river or bit of coastline, and perhaps 1-2 local landmarks.

Variations

One big map

The student whose turn it is adds to the map. Alternatively, choose 1-2 'cartographers' to do all the drawing. You could swap them around occasionally to give more students a chance to draw.

Group maps

Seat students in groups of about 3-6. Each group has its own art supplies and draws its own version of the map. Having multiple illustrations of 'the same' future could be used in lots of exciting ways.

One big 'collage' map

Give each student their own small piece of paper. When it is their turn, they should draw something to represent their answer (or the answer that the group gives). Assemble these in a collage, e.g. using blu tack.

As many maps as students

Every student makes their own visual record of the story (on a single sheet or in a booklet). As

with the 'Group maps' option, this gives the group opportunities to explore multiplicity and uncertainty

Design note

The visual element helps with worldbuilding and storytelling in several ways.

- They help the group to remember what has happened.
- Some of the storytelling prompts may feel quite challenging. It is very natural to go blank when you're put on the spot and asked to imagine something. When you or your students get stumped, looking at the available 'ingredients' may give you ideas about how to answer them.
- During the activity, you may discuss lots of things that *could* go into the story. When something gets drawn, it makes it official.

Card Order

This is the recommended order for reading out the cards.

King of Spades, 7 of Spades, 6 of Spades, 9 of Spades, 3 of Spades, 4 of Spades, 10 of Spades, 8 of Spades, 5 of Spades, Jack of Spades, Queen of Spades, Ace of Spades, 2 of Spades.

3 of Clubs, 4 of Clubs, Ace of Clubs, 2 of Clubs, 5 of Clubs, 6 of Clubs, 7 of Clubs, King of Clubs, 9 of Clubs, Jack of Clubs, 10 of Clubs, 8 of Clubs, Queen of Clubs.

6 of Hearts, 9 of Hearts, King of Hearts, 7 of Hearts, 8 of Hearts, 5 of Hearts, 10 of Hearts, Jack of Hearts, 2 of Hearts, Queen of Hearts, 3 of Hearts, 4 of Hearts, Ace of Hearts.

Design note

Why not just play the cards in a normal order, 2, 3, 4 etc.? That will work too, if you prefer the simplicity. But we think the unpredictability (from the students' perspective) is a bonus. If you know when your turn is, then you're just waiting for it.

Variation: Instead of using the order given above, the teacher uses a second deck of cards to generate a random order. Shuffle each suit separately. First read out all the Spades, then Clubs, then Hearts.

Variation: See the Appendix for some different prompts (Diamonds). You could shuffle in a few of your favourites to lengthen play, or replace cards that you don't want to include.

Storytelling Tips

- It is okay to make up your own rules and conventions to make the game run more smoothly.
- Encourage students to listen generously to each other. Remind students to listen to one another's ideas. Even if they don't like an idea at first, they can ask themselves, 'How could we fit this into the story?
- **Safety tools** such as the "X-Card," "Lines And Veils," or "Roses and Thorns" can empower more responsible and sensitive storytelling. The "**X-Card**," for example, is a piece of paper with a big X written on it, placed somewhere where all students can easily get to it. If a student feels uncomfortable with what has just been suggested for the story, they tap the X-card, or hold up the X-Card, and the content is removed — they don't need to explain why. For more information about safety tools, look up "TTRPG safety tools" online and decide if they are right for your classroom.
- If you want to find more educators using storytelling games, Discord could be a good place to go looking. Search for the 'TTRPG in education' server.
- See below for more ideas, including alternative prompts (using Diamonds cards), and a different set of rules you could use to continue the story after the main game is concluded.

Prompts Variations

Variation

Depending on space and equipment, you might want to project the text of the questions. You can find slides for doing this at bit.ly/FuncertainSlides.

Timings Tips

One session: There are 39 cards. If you play a very brisk game (about two minutes per card) you might be done in 90 minutes. But with more time (2-3 hours), you can do things like:

- Spend more time pondering different options, till the perfect idea comes along.
- Explore the facts that underlie the fiction (e.g. climate and sustainability science).
- Draw at a more leisurely pace.
- Make more space for spontaneous fun.
- Be even more supportive of the shyer storytellers.
- Introduce related material before and/or after.
- Have break-out groups or pairs where students discuss ideas together then present to the group.
- Feedback on the experience afterward.
- Have breaks.

Three sessions: The game breaks quite naturally into three acts (Spades, Clubs, Hearts). You could play each one in a session of 45-60 minutes. Only deal the suit you will be using during that session.

Two sessions: You could play it over two sessions of 60-90 minutes each. For the first session, deal the student all the Spades cards, plus the Ace, 2, 3, 4, and 5 of Clubs. For the second session, deal the remaining Clubs, and all the Hearts.

Many sessions: What about playing slowly over a longer period of time, perhaps alongside other material, for example? That's certainly possible. You will have to adapt things a little.

Variation

Very longform play

If you want to play the game gradually over time (ten minutes per lesson, over the course of the whole term), you could forget about the playing cards, and use the following method instead.

Get two containers. Write each student's name on a slip of paper. Fill up one of the containers.

Each lesson, draw a student's name, and get them to play the next move from the tables below. Put the student's name in the second container.

When the container is empty of names, start again.

1. CUSTOMISING PLAY

1) First of all, you don't really have to stick to the questions here! They have been designed to more-or-less build a little story, if you're lucky. But if you think the story needs something different from the prompt listed, make one up on the spot.

2) Second, you can pre-prepare your own set of prompts, your own deck, and/or your own order for the cards. For example, remove cards you think you won't need, and choose some diamond cards (see below) for alternative prompts.

(3) Afterward, you can continue the story in smaller groups using *Funcertain Futures: The Tabletop Roleplaying Game* (see below).

Design note

You may notice something a little sneaky about this game. Similar oracle-based games (such as *Kampala Yénkya* or *The Quiet Year*) have the cards randomly shuffled. That offers more replayability. For this game, it is assumed that the teacher probably won't play the game more

than once with the same group of students. So a recommended order is given that will probably give the narrative a good shape. We've also checked to make sure that going lowest to highest works fairly well. However, you could also plan your own order, perhaps mixing the suits more fluidly, removing cards, and/or adding the diamonds below.

2. DIAMONDS

Diamond cards are not used in the standard version of the game. But if you want, you can customise the story by adding in some Diamond cards (perhaps to replace Spade, Club or Heart prompts you don't want).

Ace ♦	A friend of the Main Character is visiting for the **Big Festival** from somewhere else. It is their first time in town. What impresses them about what they see?	This is a worldbuilding-style prompt. You might want to include it early in the game, perhaps to replace a spades card.
2 ♦	Somebody supposedly spotted a **strange new creature.** Let's mark on the map where it was spotted. Then let's mark where it is hiding now.	This is a worldbuilding-style prompt. You might want to include it early in the game, perhaps to replace a spades card.
3 ♦	Does the **United Kingdom** still exist? If so, is it England, Scotland, Northern Ireland and Wales like in the 2020s, or has it changed? If it doesn't exist, what exists instead?	This is a worldbuilding-style prompt. You might want to include it early in the game, perhaps to replace a spades card. If you're playing outside of the UK, replace the country name.
4 ♦	What is a **danger** that _____ has faced in the past 30 years? How did the city overcome this? Add something to the map that is a reminder of these events.	This is a worldbuilding-style prompt. You might want to include it early in the game, perhaps to replace a spades card.
5 ♦	**Things are not perfect.** Add some kind of pollution, danger, or damage to the map.	This is a worldbuilding-style prompt. You might want to include it early in the game, perhaps to replace a spades card.
6 ♦	Is **food** different in the future? Draw something to do with food.	This is a worldbuilding-style prompt. You might want to include it early in the game, perhaps to replace a spades card.
7 ♦	Add **something mysterious** at the very edge of the map. Is it: (1) A high security camp (2) A place where something is buried (3) A machine of unknown purpose (4) Something else	This is a worldbuilding-style prompt. You might want to include it early in the game, perhaps to replace a spades card.
8 ♦	**Birthday party.** The Main Character's nan, Dana Milks, is 100 years old today, and she's trollied! Just about everyone on the map has come to her birthday party. She loves reminiscing about the old days. What do you all learn about _____, and how it has changed? After you have played this card, the class takes a vote. Does the story end (go to the Final Scene), or continue a little longer?	This is an adventure-style prompt. You might want to include it in Act 2 or Act 3.

9 ♦	**A big plot moment!** First, let's decide what it is.
	
	(1) A betrayal
	    (2) A big secret revealed
	    (3) An act of self-sacrifice
	    (4) A relationship revealed — two people (or things) we thought were unconnected are actually linked in some way
	    (5) Something else
	    Now let's talk together about what the details might be.
		This is an adventure-style prompt. You might want to include it in Act 2 or Act 3.

10 ♦	**"Patience cooks a stone."** After years of debate, the community have agreed on a comprehensive plan to completely transform, maybe to abolish and replace something — what is it? (1) The internet 　(2) Prison 　(3) Family 　(4) Money 　(5) Police 　(6) Borders 　(7) Schools 　(8) Farming? 　(9) Something else? Discuss and draw how this changes the local area.	This is an adventure-style prompt. You might want to include it in Act 2 or Act 3. You could also use it as more of a worldbuilding prompt in Act 1.
Jack ♦	There are rumours that a **glowing cube** has been spotted flying in the sky, several nights this week. Everybody is arguing about what it is and what should be done. What does the Main Character decide to do?	This is an adventure-style prompt. You might want to include it in Act 2 or Act 3.
Queen ♦	In two weeks there will be the **Big Race**. What is the Big Race? What are the stakes? How is the Main Character involved?	This is an adventure-style prompt. You might want to include it in Act 2 or Act 3.
King ♦	Most of the artworks that were stolen during Western colonialism have now been returned. However, there are a few that remain outstanding. A mysterious figure approaches the Main Character, asking them to **join a heist team** to steal back the artwork. Where is the artwork being kept? 　What is the plan to steal it back and return it to its rightful home?	This is an adventure-style prompt. You might want to include it in Act 2 or Act 3.

3. CONTINUING THE STORY AFTERWARDS

After students have played *Funcertain Futures: Building New Worlds*, they can continue to have adventures in the world they have imagined. Here are the rules for *Funcertain Futures: The Tabletop Roleplaying Game*[1].

You will need:

- Three to seven players.
- Paper and pen.
- Two dice.
- Your imagination!

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1. [1] Funcertain Futures: The Tabletop Roleplaying Game is a hack of Kampala Yénkya Multiverse, inspired by the fiction of Dilman Dila.

The story should will have two to six **playable characters.** Usually each student will create their own character and control their actions in the story. If you want to try it with a bigger group, see PLAYING WITH A BIGGER GROUP below.

CHARACTERS

One player is the **Storyteller**. The Storyteller is in overall control. The Storyteller describes what is happening, and decides when a player must roll dice. The Storyteller will usually be the teacher.

Each student should create a character. This could be one of the characters from the story you told earlier, or a completely new character. This character is now you. You will portray this role. Take a piece of paper and record these details:

1. What's your name? Write it down.
2. What do you look like? Write down some words, or draw a picture.
3. What is something you are good at? Write it down!
4. What are two things you often carry with you? Write them down!
5. What is an interesting fact about yourself? Write it down!

HEALTH POINTS

Your character begins with 15 Health. Write it on your character sheet!

If you sustain a minor injury, lose 1 Health. If you sustain a big injury, roll one die and lose that many Health. If your Health falls to zero or below, it could be game over! Or maybe you just get knocked out and wake up the next day. The Storyteller will decide.

You can heal Health through rest or medicine. The Storyteller decides how much you heal by.

Storyteller tip: If you are a teacher, you should probably should never *actually* kill a student's character! Health can be used to create a sense of danger, or a major setback (such as getting captured by the bad guys).

LUCK POINTS

Read to the students.

Now write 'Luck: 0' on your character sheet.

Every player starts with 0 Luck Points. When themes of nature and climate come up in the story, if a player demonstrates good knowledge, the Storyteller can reward them with a Luck Point. At any point in the game, you can spend a Luck Point to reroll one die roll. Keep the best of the two results.

Storyteller tip: Or if you like, you could use counters to represent Luck Points. This might make them feel more precious.

GAME PLAY

The Storyteller makes up a situation and describes it. Each player describes their own character's actions. The Storyteller describes the results. Players can also ask questions to clarify what is happening.

Storyteller: As you are running down the street, you see a strange sight coming toward you. A robot is pedalling a bicycle. There is an angry crowd chasing him.

Namazzi: What does the robot look like?

Storyteller: Appears to be an older model. His paint is peeling. There is black smoke coming from the top of his head. You have been distracted by the robot, and in the meanwhile, the museum guard has almost caught up with you! What are you doing?

Namazzi: As the robot rides past, I jump onto the bicycle seat behind him.

Storyteller: OK, please roll the dice! Let's see if you make it!

If there is disagreement about what is happening, the Storyteller has the final say.

CHALLENGES

When a character tries to accomplish something risky or uncertain, the Storyteller may ask the player to roll dice to determine the outcome.

1. Roll two dice and add them together.
2. Can the class think of some advantages that may help the character succeed? For each advantage, add +1 to your roll (maximum of +3).

Example advantages: You have prepared for this moment. A friend is helping you. You have a useful piece of equipment. This is something you are good at.

1. Are there some disadvantages too? For every disadvantage, the Storyteller takes -1 from the roll (maximum of -3).

If the total is 8 or higher, the character succeeds! Otherwise, they don't succeed. Either way, the Storyteller describes the consequences.

For example:

Namazzi: As the robot rides past, I jump onto the bicycle seat behind him.

Storyteller: OK, please roll the dice! Let's see if you make it!

Namazzi: Can I have a +1 bonus? I used to be a bike courier!

Storyteller: Hmm, I don't think so. Riding a bicycle is different from jumping onto one.

Namazzi: Me and my friends used to do this all the time!

Storyteller: OK, OK, I'll let you have +1.

Namazzi: I rolled a 3 and a 4, plus 1 is 8. I made it! I grab onto the robot and yell, "Pedal faster my big metal friend, they're after us!"

Storyteller: The robot makes a bleeping noise that sounds like a complaint. But seems to pedal faster. There's a roadblock ahead. OK, meanwhile, Felix, you are still on the roof. What are you doing?

Felix: I'm looking around across the city. Can I see Namazzi?

Storyteller: She's nowhere to be found. But you can hear a commotion in the distance. Could that be her?

Felix: I can't risk taking the stairs. Is there a drainpipe I could climb down?

Storyteller: No, but there are a lot of vines growing on the side of the building. They look pretty strong.

Felix: I'm going to climb down. Do I need to roll?

Storyteller: Yes, roll the dice!

Students who have previously earned Luck Points can spend them to increase their chances of success.

Storyteller tip: When a player fails a roll, think of a way that it can advance the story. Don't just block progress: create new obstacles and complications for the players to tackle.

THE WORLD IN 2070

TTRPGs usually work best if the Storyteller doesn't bring fixed ideas about what kind of story will be told. The story should emerge naturally from the players' actions (and the outcomes of key dice rolls).

However, it is a good idea to prepare the setting in advance, so that students feel that they are exploring a believable, cohesive world. What are some places the students might visit? What are some characters they might encounter?

You can use some or all of these approaches.

If you have already played *Funcertain Futures: Building New Worlds*, you are all set!

1. Think about the local area of the school, and how it might change by the year 2070. Try to imagine a future that is realistic (a world reshaped by climate change) but also optimistic (rapid action has prevented the worst effects of climate change, and we have found ways to adapt).

2. Take inspiration from science fiction, especially solarpunk, climate fiction, Afrofuturism, Africanfuturism, and Indigenous futurism. For example, ASU Center for Science and the Imagination have several great free fiction anthologies online. Explore writers like Vandana Singh, Ernest Callenbach, Starhawk, Andrew Dana Hudson, Cory Doctorow, Kim Stanley Robinson, Nisi Shawl, Janelle Monae, Ursula K. Le Guin, Alaya Dawn Johnson, Rem Wigmore, and Alia Gee.

3. You could spend a session getting the students to design the world they want to play in. For example, you could create groups and get each one to think about a different aspect, e.g. transport and the built environment, disaster preparation, democratic institutions, the future of work, the future of food.

4. Explore existing tabletop roleplaying games, adventures, and supplements. The website itch.io is a great place to start. Look up the Applied Hope Games Jam.

5. Try reddit.com/r/solarpunk/ for more inspiration.

STORY HOOKS

1. Something or someone on has gone missing. Why do the players' characters want to solve this mystery? Where do they begin? What clues do they find?

2. The players' characters all volunteer in a repair cafe, where people can bring broken things to get fixed. But it is developing a reputation as more than just a repair cafe, as people start to bring all sorts of problems that need solving …

3. Uh-oh. The nanotech experiment has got loose and got into some of the 3D printer ink. Now there is a blob of the stuff wandering around the neighbourhood getting bigger and bigger.

4. The early warning system says there's a big storm coming. Your little sister has wandered off. You've only got two hours to find her!

5. Nowadays most decisions are made via direct digital voting, with a little help from AI. But there have been some very strange choices made recently. What are some of these decisions? (Look at your map for inspiration). Could there be a glitch in the system? Or is there actually a good reason for decisions that seem strange at first? You have been recruited to get to the bottom of it.

6. There are rumours that a glowing cube has been spotted flying above the lake, several nights this week. Everybody is arguing about what it is and what should be done. The players' characters decide to investigate. How will they investigate? Will they try to find some eye-witnesses? Interview people with different theories about the cube? Find a good place to watch from? And/or something else?

7. A strange pestilence has started to spread in the mushroom farms which are used to make sustainable plastic. The players must deal with the consequences of the mushroom shortage, and at the same time investigate the source of the problem.

8. Forest fire! It is a good thing that your town is so well-prepared for this. How do the players' characters help to control the blaze?

PLAYING WITH A LARGER GROUP

What if you wanted to play *Funcertain Futures: The Tabletop Roleplaying Game* with a bigger group?

It is a little brave, but it can be done!

Teams. One approach is to divide the class into teams. Each team is responsible for one character. "Okay everybody, take five minutes in your groups, and discuss what your character is going to do next."

Referenda. Alternatively, create characters beforehand — maybe just one main character, or maybe two or three or four. If there are several characters, print out a picture of each one and pin them in front of the class. The entire class decides what characters do. Have a discussion, get some suggestions, then take a vote.

You can also experiment with incorporating more drawing. When there is a new scene, a significant turning point, a new character, etc., assign a student or a group of students to create an image. As they are completed, hang them on the walls to create a storyboard. This can be a good way of keeping lots of students feeling engaged, even if their suggestions aren't ending up in the official narrative. Be aware that some students may find the drawing distracts from the storytelling, so include plenty of reminders and summaries.