DARE TO DIFFER

RESPONSIBLE AND SUSTAINABLE LIVING

IMAGES AND OBJECTS
ACTIVE LEARNING TOOLKIT 8

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Active Learning Toolkit 8

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Content

INTRODUCTION

Images and Objects Active Learning Methodology

PERL – the Partnership for Education and Research about Responsible Living – has developed a series of "Images and Objects" toolkits that promote student-centred activities and active teaching and learning methodologies which encourage students to question the way they think, the values they hold and the decisions they make in the context of responsible and sustainable living. The toolkits all use images and objects to help teach responsible and sustainable ways of living in an active, experiential, interactive, practical and holistic way.

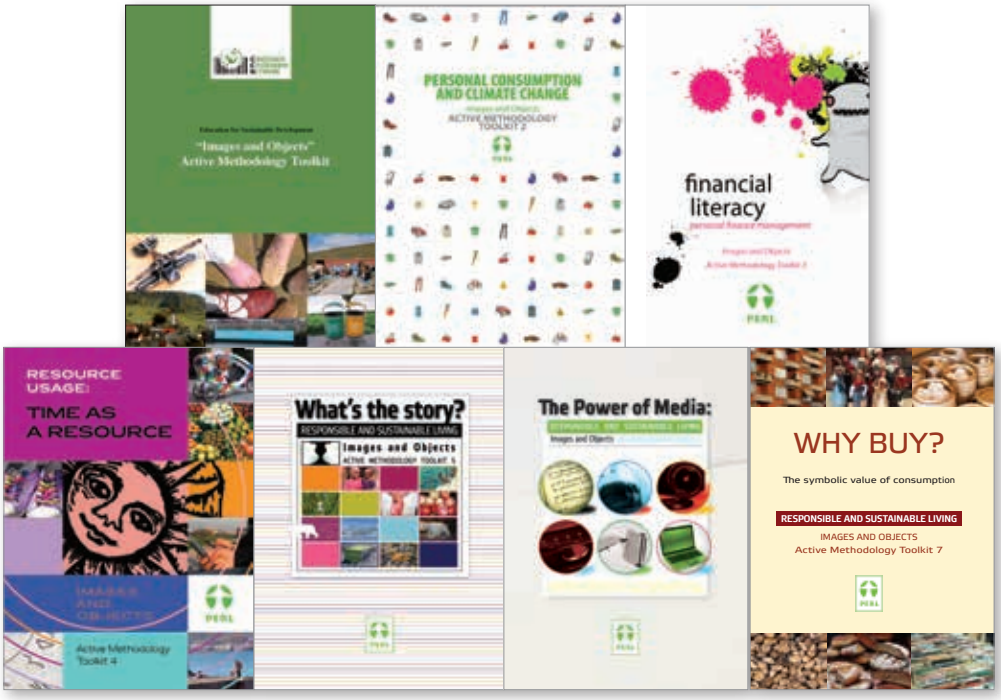


Figure 1: Overview of the previously published PERL active methodology toolkits.

The Centre for Collaborative Learning for Sustainable Development

The Centre for Collaborative Learning for Sustainable Development (CCL) is based at the Inland Norway University of Applied Sciences (INN University). The primary focus of the centre is to further the work of PERL and to fulfill the obligations related to the UNESCO Chair for Education for Sustainable Lifestyles.

The Partnership for Education and Research about Responsible Living (PERL) is a network of educators and researchers developing methods and materials to encourage people to contribute to constructive change through the way they choose to live. PERL partners research social innovation and responsibility; give visibility to creative communities that collaboratively invent new ways of living; promote education for sustainable development, in particular education for sustainable consumption, develop teaching methods/materials, provide reference/guidance, develop values-based indicators, and produce policy recommendations for education for sustainable lifestyles. PERL is a network of universities from around the world. PERL is a part of the UNESCO Chair for Education about Sustainable Lifestyles and its UNITWIN project both of which are coordinated by the centre.

Structure of this toolkit

This toolkit is structured in three main parts. The first part represents the introduction to the toolkit and it provides a background on education for responsible and sustainable living, as well as the learning methodology employed and the learning objectives targeted in this toolkit. The second part provides a brief introduction on how to use this learning toolkit and the activities contained within. The third part contains the primary teaching materials of this toolkit, and it covers five different learning themes that each include a series of recommended learning activities and resources. The five learning themes represent unique dimensions in which people around the world are innovating and finding positive alternatives for more sustainable living. These themes include: 1) collaborative consumption, 2) reuse, repair and upcycle, 3) sufficiency and food security, 4) maintaining biodiversity, and 5) holistic approaches to sustainable lifestyles. At the end of this toolkit, there is also a section that includes additional resources and an image bank to be used with suggested activities.

Age/Grade Relevance

This toolkit has been designed with the aim to be used in secondary schools (both lower and upper secondary schools), and the content and activities of this toolkit are targeted for students from around the age of 12 and up. Primary school teachers, as well as teachers in higher education, may be able to adapt some activities and content for use with their students.

Education for Sustainable Living and investigations into Alternative Lifestyles

The goal of Education for Sustainable Development (ESD) is to empower individuals and communities to actively participate in shaping an ecologically sustainable, economically efficient and socially just environment, while remaining mindful of the interconnectedness between the local and global dimensions. Learning about how our lifestyles relate to sustainable development and the impacts they have is a key dimension of ESD.

Sustainable ways of living are currently not the common lifestyle in most societies, while the most common practices are often not the sustainable choices. Teaching about alternative lifestyles is a good way to stimulate a reflective process and make people think in alternative ways that go beyond their regular frame of reference, an essential process for the development and implementation of sustainable solutions (Thoresen, 2010). Our lifestyles are shaped by many different factors, which can be social, cultural, economical, political, institutional, technical and geographical, and our behavioral practices can be heavily influenced by social norms and group influence (Backhaus et al., 2012; Akenji & Chen, 2016). For use in this work, alternative lifestyles are defined as: *Alternative lifestyles are lifestyles that are deviating from the norm in a specific place or context in a positive and more sustainable way.*

The concept of responsible living involves the readjustments of present priorities (material and non-material), the redefining of human relationships, the transformation of how societies deal with existing economic, social and ecological challenges and the intensification of dialogue between the scientific community and society. Here the emphasis is not only on using and applying knowledge conscientiously to achieve better personal quality of life without jeopardizing that of others (present and future), but also on actually being proactive in improving the quality of life of others directly or indirectly.

Lifestyles are not static, and citizens and stakeholders from all over the world are already beginning to take more action towards sustainable ways of living (Backhaus et al., 2012). In seeking to achieve more sustainable and responsible ways of living, an appreciation of diverse viewpoints and ways of life, an awareness of the needs of others (and of all lifeforms), and a critical analysis of the best use of resources are all fundamental elements for success. This toolkit provides suggestions for active, inquiry-based learning that can shed light on alternative practices for more sustainable lifestyles and stimulate reflection and empowerment towards more sustainable practices in everyday life, thus challenging each learner to *dare to differ.*

INQUIRY-BASED LEARNING

Inquiry-based learning actively engages students by focussing learning on their own questions and interests, and it is an effective method for developing the natural curiosity of students.

There are many models of inquiry-based learning that are regularly used in education and teaching around world, thus one can say that inquiry-based learning is one of the most readily applied active learning approaches currently available. The inquiry-based learning process facilitates students' engagement in an investigative process of asking questions, collecting information, drawing conclusions, presenting their findings, and discussing their newly gained knowledge and insights with other students. With inquiry-based learning, the students have to actively search for the answers, rather than passively receiving them (Edelson, Gordin, & Pea, 1999). This gives the students responsibility over their own learning process and supports an increased sense of self-ownership over the new knowledge they have gained which in turn contributes to deeper learning outcomes (Furtak, 2006). In addition to the content that they learn, inquiry-based learning also helps students to develop the skills to find and process information from multiple sources (Kuhlthau, Maniotes, & Caspari, 2015). Inquiry-based learning stimulates students to discover how things work and contributes to the development of an investigative attitude, which is essential for students to become life-long learners.

Inquiry-based learning may be understood as a broad, general approach that evolved from early constructivist learning theories (including the works of Piaget, Dewey and Vygotsky). At the same time, many specific models for inquiry-based instruction and teaching have been developed and applied in formal education, especially in the natural science disciplines. The process of inquiry-based learning contains several similarities with the experimental process of the scientific method, but the rigor and exactness of hypothesis testing in the scientific method dramatically contrasts the flexible nature of investigation and creativity in inquiry-based learning. With this toolkit's focus on alternative lifestyles and daring to differ, the flexible exploration promoted in inquiry-based learning is a valuable approach for active, student-centred engagement with real-world problems.

5Es Model of the Inquiry-based Learning Cycle

This toolkit draws on the 5Es Model (originally developed as the 5E Instructional Model by the Biological Sciences Curriculum Study (BSCS) center in 1987) as a specific inquiry-based learning model that has received wide application and recognised achievement. This model adapts the generic inquiry-based learning cycle (i.e. ask – investigate – create – discuss – reflect) into a more defined set of five phases, each with a distinct purpose and learning approach. The phases of the 5Es Model include:

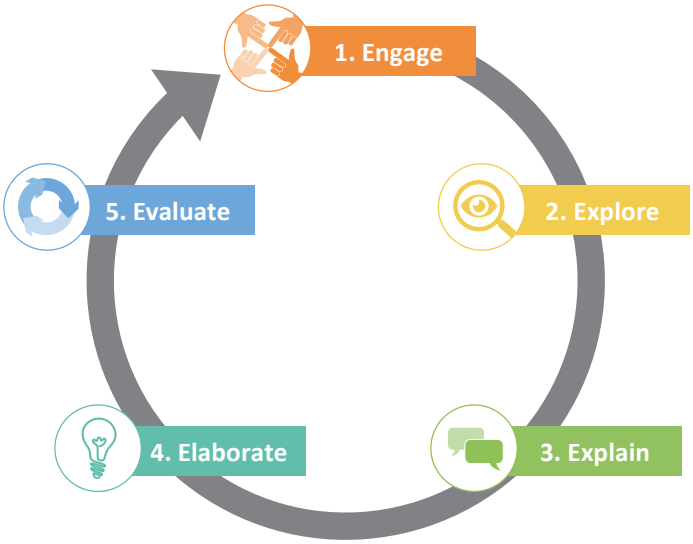
Engagement – This initial phase aims to capture students' interests through an activity or question, and it provides an opportunity for the students to reveal what they already know about the topic or theme and to make connections between past and present learning experiences.

Exploration – In the exploration phase, practical and hands-on experiences allow students to grapple with the problem, concepts or skills being investigated and provide common experiences for students' collaboration.

Explanation – In the explanation phase, students describe or demonstrate what they have learned, while the teacher may introduce additional concepts, terms or skills to help develop students' explanations for the phenomenon they have experienced.

Elaboration – In the elaboration phase, students have opportunities to apply what they have learned to new situations and experiences, and so extend the application of new understandings and skills to wider contexts.

Evaluation – This final phase challenges students to review and reflect on their own learning and its deeper influence on their cognitive awareness. In addition, this phase provides a valuable opportunity for teachers to conduct assessment of the entire learning process and its outcomes.



Learning Objectives and the 5Es

The transition towards a more sustainable lifestyle is a learning process that requires active investigation and inquiry, rather than following a pre-determined set of behaviors. This type of learning aims to be transformative in nature, thus challenging individuals to question their own understandings, reinterpret their perceptions and manage their emotions. This type of transformative learning process thus elaborates a complex set of learning objectives that require the development of cognitive, emotional and practical competencies.

The publication *Here and Now!* (Thoresen, 2010) highlights five basic learning outcomes promoted in education for sustainable living: critical awareness, ecological responsibility, social responsibility, action and involvement, and global solidarity. The same publication also identifies specific competencies that include different levels of cognitive learning, as well as important attitudes and skills. Education for sustainable living also necessitates values-based learning that supports the development of positive attitudes and responsibility towards sustainable behaviors and practices (Dahl et al., 2014). Gaining critical thinking skills, by judging information provided by experts, exploring contradictions related to sustainable living and developing one's own sustainability ideas are also seen as important learning objectives (Vare & William, 2007).

The 5Es Model of the inquiry-based learning cycle is used as the general framework for structuring the learning activities in this toolkit, therefore the learning objectives of these activities are also based on the five stages of this learning cycle as follows (and are applied in general across the activities for each theme):

1. **Engage** – Stimulate interest and curiosity in the subject; Activate prior knowledge and opinions about the given topic; Develop questions for inquiry.
2. **Explore** – Encourage active investigation; Test current concepts and ideas; Work-through and solve problems; Develop skills for practical application of knowledge.
3. **Explain** – Construct multi-modal explanations; Provide evidence to validate one's claims; Discuss and deliberate on explanations developed by different students; Develop critical reflection between theory (or concept) and practice (or experience).
4. **Elaborate** – Apply knowledge to understand or interpret new situations; Draw linkages and connections between elements to create original work; Extend explanations through different modes of description; Deepen understanding and skills through practical implementation.
5. **Evaluate** – Assess one's own learning and identify new knowledge; Reflect on changes in perceptions and understanding; Consider wider application to one's beliefs and opinions; Justify and defend decisions and actions.

Table 1. Aspects and Approaches of 5Es Model of the Inquiry-based Learning Cycle [1]

Phases	Aspects	Approaches
	**ASK**: Students begin to think about and create mental connections with an activity, problem or question.	Short activities to promote curiosity of students and to have them clarify their prior knowledge on the specific topic may be used. The activities should aim to draw connections between past and present learning and experiences. This allows students to clarify prior conceptions and organize thinking toward the current subject(s)/topic(s).
	INVESTIGATE: Students actively explore both concepts and skills through hands-on activities or research.	Hands-on and practical experiences for students to explore specific subject(s) and topic(s) may be used. This stage develops a common base of experience for the students to discuss concepts and identify misconceptions. Through exploration experiences, students may generate new ideas, explore questions and possibilities, and design and conduct preliminary investigation. This practical approach develops both skills and direct application of knowledge to real-world situations.
	**CREATE**: Students explain their experience and build on their emerging understandings.	In this phase, students have opportunities to demonstrate their conceptual understanding, process skills, or behaviors. Teachers may also introduce specific concepts, terms and skills that help to deepen the learning process. This instruction though follows on from and remains connected to the students' direct experiences.
	**DISCUSS**: Students apply their learning to new situations and discuss and compare ideas with each other.	Students are challenged to extend their conceptual understanding and skills in this phase by applying learning to new situations and contexts. Through additional activities and experiences, students broaden their understandings, gain more information, and strengthen skills. It is also important for students to discuss and compare their ideas with each other during this phase.
	**REFLECT**: Students review and reflect on their own learning, new understanding and skills.	Students are encouraged to review their new understanding and abilities, as well as consider the learning process they went through during the previous phases. Students are also challenged to internalize and reflect on how these new practices influence their interpretations of the world. Finally, this phase also provides opportunities for teachers to evaluate student progress toward achieving the educational objectives.

1 The 5Es model presented in this text is an adapted version of the Biological Sciences Curriculum Study's (BSCS) 5E Instructional Model (BSCS, 1987) and the Australian Academy of Science's PrimaryConnection program 5Es Teaching and Learning Model (AAS, 2008). The information in the above table is adapted from the following two sources: Bybee, et al. (2006) and PrimaryConnections (2017).

HOW TO USE THIS TOOLKIT?

Personal Stories

The toolkit provides short introductions to each theme as well as examples in the form of personal stories. Each story includes a picture of the person who shared it, and a photo bank image related to the example is provided at the end of the toolkit. The personal stories come from people all over the world and may be used as inspiring examples while teaching about these different themes. You may decide to use these for an activity related to one of the phases of inquiry-based learning, or they may be used as case studies from which students can conduct more in-depth investigations. It is, however, important to realize that this selection represents only a small proportion of all the examples of positive alternative lifestyles that exist and could be further explored. In addition to the provided examples, we encourage educators to add themselves or have students identify local examples they are interested in related to the different themes.

By using the personal stories as a starting point for inquiry-based learning, the students are challenged to think about how different lifestyles relate to social, economic and environmental systems and also how these lifestyles have an impact on personal, local, national and global levels. By placing attention on these positive examples, this toolkit is focusing on possibilities, which in turn aims to motivate and empower positive action on the part of the students. This positive approach helps students to see that more sustainable ways of living are not only within their reach, but that they may also support a better quality-of-life, healthier lifestyles, and greater focus on what is valued and what makes them truly happy.

Selecting the Activities

For each theme, separate activities are suggested in relation to each of the five phases of the 5Es inquiry-based learning cycle. The set of activities for one theme thus supports a complete cycle of inquiry about this theme. The learning objectives are matched to each phase of the learning cycle, and in order to gain full learning outcomes, we recommend to complete all five phases per theme. However, some activities are inter-exchangeable between the themes. The activities are designed in a flexible manner so more or less time could be spent on individual activities to meet the needs and interests of the students and the lesson. As a teacher, you can choose to adapt the use of suggested activities to different themes. Teachers and facilitators are encouraged to use the activities that suit their students best, stimulate their interests and relate to local contexts.

Teacher Tips

If you see a text box with this icon, it means that a teacher tip is provided. These tips aim to help teachers and facilitators use the toolkit and adapt the content to their own group of students.

Mapping Themes, Activities and the 5Es

On the next page, a table is provided that maps the relationship between the five themes and their learning activities with the learning objectives of the steps of the 5Es Model of Inquiry-based Learning. This also provides an overview/outline of all 25 learning activities contained within this toolkit.

TEACHER TIP

If students use any images or clips from external sources in their presentations, make sure that they take into account copyright-related issues. This is a good opportunity to teach them about how to refer to these sources in the correct way.

Table 2

		Phases of the 5Es Model of Inquiry-based Learning				
		ENGAGE	**EXPLORE**	**EXPLAIN**	**ELABORATE**	**EVALUATE**
	Educational Step	Students think about and create mental connections with an activity, problem or question.	Students actively explore both concepts and skills through hands-on activities or research.	Students explain their experience and build on their emerging understandings	Students apply their learning to new situations and discuss/ compare ideas with each other.	Students review and reflect on their own learning, new understanding and skills.
	Learning Objectives	Stimulate interest and curiosity in the subject; Activate prior knowledge and opinions about the given topic; Develop questions for inquiry.	Encourage active investigation; Test current concepts and ideas; Work-through and solve problems; Develop skills for practical application of knowledge.	Construct multi-modal explanations; Provide evidence to validate claims; Discuss explanations developed by different students; Develop critical reflection between theory and practice (i.e., concept and experience).	Apply knowledge to understand/interpret new situations; Draw linkages and connections between elements to create original work; Explain through different modes of description; Deepen skills through practical application.	Assess one's own learning and identify new knowledge; Reflect on changes in perceptions/ understanding; Consider wider application to beliefs and opinions; Justify/ defend decisions and actions.
SUSTAINABILITY LEARNING THEMES	**Collaborative Consumption**	**It's in the News:** Read and discuss newspaper article; Examine why it is "news worthy" and identify relevant personal experiences.	**Looking Closer at a Positive Alternative:** Investigate a personal story about an alternative practice and identify its key aspects.	**Plus, Minus and Interesting:** Reflect on and discuss how these alternative practices would apply (positively and negatively) to their own lives.	**What do you Want to Share?:** Extend theme to other aspects of their life by identifying other things they would like to share.	**Stage Performance:** Make a creative presentation about what has been learned and new knowledge gained from this theme.
	Reuse, Repair and Upcycle	**The Story behind a Pile of Waste:** Present personal stories on theme and discuss how students can find alternative uses for waste.	**What is it Made of?:** Sort a pile of waste into different materials and categories. Consider how best to deal with each material type.	**Discover a Second Life for Waste:** Create innovative ideas for reusing and upcycling waste items to give them a new purpose.	**Mind-Map:** Relate recent knowledge of waste, reuse and upcycling to one's overall material use and waste flows to find positive interventions.	**1-Minute Pitch:** Make a 1 minute pitch of the group's upcycled product and the benefits it provides.
	Sufficiency and Food Security	**What do the Lyrics Say?:** Listen to and read song lyrics, and discuss the social, cultural and environmental importance of food.	**Food Diary:** Track food consumed for 1 day, and consider where the ingredients came from.	**Discover the Root of our Food**: Examine a "shopping basket" of food ideas and find out from where they come.	**A Local Food Diet:** Prepare a menu for all meals for one day based solely on locally grown produce and available food items.	**Poster Presentation:** Prepare a poster about a locally-relevant issue related to food and give recommendations to address it.
	Maintain Biodiversity	**What's so Funny about it?:** Read a set of cartoons and discuss the messages they convey about biodiversity (e.g. explaining how human activities threat biodiversity).	**Species in My Backyard:** Investigate a vulnerable or endangered local species, and research its relationships within the ecosystem.	**Saving a Species:** Develop a local conservation strategy for a species that identifies actions to conserve and protect it.	**Stakeholder Discussion:** Role play as various stakeholders debating a conservation initiative and address differing opinions/ concerns.	**Make a Promotional Video:** Develop a video to promote local conservation strategy, raise awareness and motivate action.
	Holistic Approaches to sustainable lifestyles	**Watch a Video:** Watch a short video about an imagined Utopia to inspire futures thinking about ideal aspects of society.	**Envision your own Sustainable Scenario:** Imagine a vision of a sustainable utopia and examine future scenarios.	**Systems Mapping:** Examine how different needs may realistically be met in future scenarios.	**The Talking Stick:** Share personal stories about visions for a sustainable utopia, and reflect on practical ways to achieve these scenarios.	**Interactive Creation:** Design a collective plan for a sustainable community and argue for its creation.

Sustainability Learning Themes and Activities

Theme 1 – Collaborative Consumption

Collaborative consumption refers to the idea of people sharing items and services with other individuals, instead of owning them individually. You can share, swap, rent or borrow personal goods, as well as transportation, physical spaces, time, knowledge or expertise. When systems are developed to support collaborative consumption, this is called the "sharing economy", based on the idea that sharing instead of owning reduces the total level of consumption (Backhaus et al., 2012). According to Botsman and Rogers (2010), the sharing economy is on the rise. The shift from product ownership to product accessibility includes a change in social values. Participants in the sharing economy note the value of web technologies and online interaction in the development of long-term sharing communities (Botsman and Rogers, 2010), and online technology platforms are enabling better matching between supply and demand and an easier ability to share our products or services (Backhaus et al., 2012).

Personal story: Library for things @ The Netherlands

- By Michiel van Wickeren (DeDeelkelder)

A few years ago, I started DeDeelkelder in my own city of Utrecht in the Netherlands. DeDeelkelder is a Library of Things – a place in the neighborhood where you can borrow stuff you use only once in a while, meet new people and repair broken items. DeDeelkelder (literally translates to the sharing basement), originated from the moment I moved in with my girlfriend. We had a lot of sports-gear and tools but didn't have the money to rent a bigger apartment to fit all of our possessions. And why would we? We don't need these things every day! Along with the shortage of space, we also wanted to reduce our impact on the environment. So when we discovered that the production of tools and sports-gear can have a large environmental impact while only being used a few times a year, we knew we needed to do something about the idea of having to own these items. That's when we discovered the worldwide Tool Library and Library of Things movement. We wanted this for our own city and decided to set up DeDeelkelder. You can join the movement and set up a Library of Things for your own community!

Personal story: Sharing labor @ Ghana

- By Felix Kegblorlu (*Nnoboa* farm)

In Ghana, farmers have traditionally worked on each other's farms under the Nnoboa system. This form of sharing labor is based on cooperative commitment rather than financial exchange, and still plays a prominent role in rural and agricultural development in Ghana today. I am a 36-year-old married farmer of the small town Kwaekese. I am mainly involved in maize farming, where I use the Nnoboa approach. Our Nnoboa group consists of six members, and since the formation of the group is based on mutual trust, most of them are my friends. As members, we take turns to assist each other cultivate their farms throughout the farming cycle. Last year, they visited my farm five times before the land was ready for sowing. Without Nnoboa, I would only be able to cultivate half as much land since generating money to pay off labor would be a challenge. Nnoboa increases the food security for my family, and it helps to minimize the rush of the youth from the rural to the urban areas in search for work. It also strengthens the bonds between the members and makes us treat the farms of other members as our own, creating some form of environmental responsibility. In addition to farming, new forms and extensions of Nnoboa have developed based on the needs of the members in modern times. For example, constructing local amenities, building houses and engagement in micro-savings to supplement members' businesses.

1. Engage — *It´s in the News*

Students read and discuss a newspaper article. They can examine why this is a "news worthy" item, and they can identify personal experiences they have already had with the topic.

Activity step by step:

1. Hand out a news article to students and allow them to read it.
2. Have a discussion about the article with the following questions:
   - What is the content of the article?
   - How does the article relate to the themes of *collaborative consumption* and *sharing economy*?
   - Does the article present a specific message? If yes, do you agree with this message? Why (not)?
   - Who has read news articles related to this topic before? Did they have a similar content/message?
   - What personal experiences have you had with *collaborative consumption?*

Materials:

- Copies of relevant news article *(see Teacher Tip)*

TEACHER TIP

A short news article on "Collaborative Consumption" or "Sharing Economy" may be used for this activity. Some examples are:
http://www.eco-business.com/news/why-singapore-needs-the-sharing-economy/

http://www.straitstimes.com/lifestyle/my-life-in-the-sharing-economy

https://www.theguardian.com/technology/2013/aug/04/internet-technology-fon-taskrabbit-blablacar

2. Explore — *Looking Closer to a Positive Alternative*

Groups investigate a personal story (or case) about an alternative practice and identify key aspects of this practice with consideration about how this alternative differs from standard practice.

Activity step by step:

1. Divide students into groups of 3 to 5 members each.
2. Present groups with the personal story they will be investigating.
3. Provide research questions to group. Possible questions include:
   - How does this alternative function?
   - What are the differences between the alternative presented in this case and the more standard forms of practice?
   - What do individuals need to implement this alternative in their own life?
   - What are the environmental benefits or drawbacks of this alternative?
   - What are the financial benefits or drawbacks of this alternative?
   - What are the social benefits or drawbacks of this alternative?
4. Groups should discuss and respond to the questions.
5. In a plenary session, groups should share the key points of their cases and discussions with each other.

TEACHER TIP

The two personal stories on the previous page may be used as cases for this activity. Alternatively, students could be given a homework assignment prior to this activity to identify examples (from their own life or from their community). If so, students may be asked to bring a related picture and/or prepare a paragraph of text to explain this example.

Materials:

- Copies of personal stories (or cases) to be used for group investigations *(see Teacher Tip)*

3. Explain — *Plus, Minus and Interesting*

In groups, students reflect on and discuss how these alternative practices would apply to their own lives. They consider what benefits and drawbacks this type of practice would have for them.

Activity step by step:

1. Divide students into groups of 3 to 5 members each.
2. Hand out a big sheet of paper and three markers (different colors) per each group.
3. Groups use the personal story or case worked with in the previous activity (or they can select a new case if desired).
4. Using the "Plus, Minus, Interesting" categories, students discuss how the presented alternative practice would relate to their own lives. They should code responses into three categories – using three different colors - related to the following questions:
    - What positive benefits would this type of practice bring to your life (e.g., green)?
    - What would be negative aspects related to this type of practice in your own life (e.g., red)?
    - What aspects of this example would you like to know more about, especially if you are to practice it in your own life (e.g., blue)?
5. In a plenary session, groups can present the points on their sheet, and other students can ask follow up questions.
   Teachers may also want to ask students questions about how they might find more information about those items they identified as "interesting".

TEACHER TIP

Students should ideally recognize that there are many "alternative" stories available, and the ones included here are presented as inspirational examples.

It can be valuable if students have to also identify relevant examples from their own experiences. If time allows, you may also want students to complete this activity with both an example from this toolkit and one identified from their own community.

Materials:

- Personal stories or cases used in previous activity.
- Big sheets of paper with a photo related to the cases in the middle (*see image bank at end of toolkit* for pictures related to the personal stories).
- Markers in three different colors (e.g., green, red and blue).
- If available, a local example of an alternative lifestyle within this theme *(to be found by the teacher)* may also be introduced to the class.

4. Elaborate — *What do you Want to Share?*

Students brainstorm and extend theme of collaborative consumption (i.e., sharing) to other aspects of their life by identifying other items, services or expertise that they would like to share.

Activity step by step:

1. Ask students to reflect on what they consume in their daily lives (whether it be perishables, durable goods, services, knowledge or expertise), and to consider what other types of things would they like to share or apply collaborative consumption to?
2. Ask students to identify 2 or 3 different items they would like to exchange through collaborative consumption. On the school board or on separate pieces of paper, students should write down the items they identify (and they may also draw a corresponding picture or icon).
3. All items should be displayed as the class's Library of Things.
4. Student ranking: Students are each given 5 points (e.g., stickers can be used or check marks). They then allocate their points to the items that they would be most willing to share – they should use all 5 points, but give no more than 3 points to any one item.
5. Once the items are ranked, students can identify and discuss those items that gained the highest rankings. The teacher may want to ask follow-up questions, such as:
   - What external systems are needed to share this item?
   - Are these currently in place?
   - What else do we need to find out before we can implement this in our own life?

TEACHER TIP

The teacher may stimulate the brainstorming by providing a list of possible areas of consumption to consider:

- Things and possessions (tools, clothes, books, kitchen items)
- Transport (public transport, car or bike sharing, carpooling, hitchhiking)
- Space (houses, rooms, garden, public spaces)
- Time (work, help, labor)
- Knowledge (information, ideas, expertise)
- Connections (colleagues, friends, network)

Materials:

- School board and markers/chalks (or individual sheets of blank paper).
- Stickers (not essential).

5. Evaluate — *Stage Performance*

Students creatively present what they have learned and the new knowledge they have gained from this theme.

Activity step by step:

1. In groups of 3 to 5 members, students should prepare short creative presentations to highlight the new ideas they have about this theme, why it is valuable and how it relates to their lives.
   - Presentations should be given a set amount of time, such as a 2 or 3 minute skit.
   - Presentations could be in various forms, for example a puppet show, a role play, a piece of art, a song or a dance.
2. Performances are presented in front of the class.

TEACHER TIP

You can create a bigger audience as well. What about inviting the parents, or repeat their performances for the entire school during a week opening?

Materials:

- Different costumes, stuffed animals and other props or items to dress up with and/or use on stage.

Theme 2 – Reuse, Repair and Upcycle

Reusing, repairing and upcycling is about limiting the amount of waste we generate, finding value from materials beyond the original intended use, and creating something new to reuse these same materials again. Around the world, over half of all waste ends up in landfills and dumps (World Bank, 2012). When materials are disposed without using them again, valuable resources are lost while potential chemical components can breakdown causing environmental damage and health problems. The total amount of waste can be reduced by recycling – i.e., collecting, sorting and processing waste in order to extract and use the primary resources again (Asmatulu & Asmatulu, 2011). However, recycling in itself will not reach the goal of zero waste as reprocessing of waste materials requires significant energy and reduces the quality of the primary resources. Reusing, repairing and upcycling are ways to get additional value out of materials without needing to extract the primary resource. Upcycling aims to adapt an item or material to a new use, and in doing so it reassesses potential waste and transforms it into something valuable (Wegener & Aakjær, 2016). Both creative product design and consumer behavior can help to identify new and multiple uses for individual items, while repair and upcycling can renew the life of items that may otherwise be discarded.

Personal story: Games from trash @ Spain
– By Joan Rovira (Guixo 8)

I was born in 1954, and I never imagined that I would dedicate myself to the invention of games. But many years ago some friends and myself decided to organize a party to celebrate Saint Joan, where we played traditional games. The result was spectacular, and we decided to organize this party every year for the children of our town Tona in Catalonia. Since then, I started to invent my own games, made from trash and old things that seem to be useless. I discovered that items and materials can have a longer life than what they are originally created for, and I realized that it is not intelligence, but imagination that is unique for humanity. Now I know that our imagination is like a muscle, the more you exercise it the stronger it gets. I learned to discover games by talking with materials and turning everything that I imagine into a game that is neither too easy nor too difficult. By using our imagination, we can create games from all kinds of materials, no matter where you live or how much money you have. I think that the most important things in life we learn are learned through play and that we can learn many more things if we continue to play.

Personal story: Toy Doctor @ Japan
– By Magnus Bengtsson

Have you ever experienced that a toy breaks soon after you bought it … your regret over money wasted or a child's tears when the exciting new plaything doesn't work? As a father of two boys, I know all too well that toys are not built to last, and since I'm not the handiest man in the world, I often don't know how to fix them when they do break. For this reason, I was happy to discover the Toy Clinic – a network of volunteers who repair toys for free – here in Japan where my family lives. The network has over 1,400 members, or Toy Doctors as they are called, and local repair clubs in a large number of places all over the country. The repair clubs often organize their events in collaboration with the municipalities, either in public play centres for children or at local festivals where many people gather. These events tend to be very popular so one has get to the venue early and the number of toys allowed per child can be limited. My family has used these repair services a number of times and always been very satisfied. Although the services are provided for free, we have sometimes brought a small gift to thank the "Doctor". Besides organizing repair events, the Toy Clinic Association also produces educational material on how to repair toys, and provides lectures, two-day training seminars and internship opportunities for aspiring Toy Doctors.

1. Engage — *The Story behind a Pile of Waste*

Students engage with two personal stories where alternative uses are found for items that would otherwise have been considered waste. They are then presented their own pile of "waste" and must consider what alternative uses they can find for it.

Activity step by step:

1. Read two personal stories on this theme to the students, and start a discussion on what is "waste", recycling, reuse, repair and upcycling?
2. Present the class with a pile of unsorted waste and have them identify different items within the pile.
3. Have a guided discussion about alternative uses for "waste":
   - What kind of materials do you see?
   - What materials might still be valuable or worth something?
   - What materials can be reused, repaired or upcycled?
   - What materials cannot be reused or recycled, and what are the best ways to dispose of these materials?

TEACHER TIP

Students may be given a homework assignment to find and bring in items from their home or neighborhood that were to be thrown away, but that still may have valuable alternative uses.

Materials:

- Personal stories from previous page of toolkit.
- An unsorted pile of mixed waste:
  - Make sure that the waste is generally clean, does not include items that will rot or are dangerous to handle (e.g., broken glass), and does not smell bad.
  - These items may be collected from the school or in the neighborhood, including all kinds of materials like metal, paper, plastic, organic waste, electronic devices and chemical substances like old paint. The school's janitor may be able to help with this.

2. Explore — *What is it Made of?*

Sort a pile of waste into different categories and material types. Consider the best ways to potentially reuse, repair, upcycle, recycle or dispose of these items.

Activity step by step:

1. Students are divided into groups of 2-3 members each, and they are each given a small pile of waste (i.e., a portion/sample of larger pile used in the previous activity).
2. Groups separate the waste into as many different categories as possible by material type. They make separate piles and place names on each (e.g., metal, paper, plastic, organic waste, electronic devices, chemical substances, miscellaneous).
3. Ask groups to investigate ways to reuse or upcycle each material type, or how might they best recycle or dispose of these materials.
4. Ask groups to discuss if there are items that they cannot separate into different material types, and how to deal with these items?

TEACHER TIP

Students should be encouraged to contact the local recycling or waste centre (or review their website) to identify existing rules for handling various waste materials.

Materials:

- Separate piles of unsorted, mixed waste per group.
- Computer to seek information online about materials and/or to contact the recycling centre.
- *Optional:* tools to take apart some of the objects.

3. Explain — *Discover a Second Life for Waste*

Groups create innovative ideas for reusing and upcycling "waste" items to find new life and value for these materials.

Activity step by step:

1. Groups of 2-3 members each are asked to think about and create innovative ideas for reusing and upcycling the items/materials in a small pile of waste (note: groups can continue using same pile of waste from the previous activity).
2. Ask groups to consider if there are *needs* or *problems* in their local area that are in part due to the lack of necessary resources or materials (at an affordable cost). Next, ask groups to think about the possibility of creating alternative items to meet these needs or problems from upcycled materials.
3. Groups can be allowed to trade or barter with each other for different items from their waste piles to collect the items they need for the project.
4. Groups then take time to build examples or models of their upcycled products. For large-scale products or design, students may also draw or prepare diagrams to express their ideas.

TEACHER TIP

Students should be encouraged to reflect on the idea of "local needs" in a very broad manner if they are having trouble coming up with a project idea. The teacher may highlight that the personal story about Games for Trash can still be seen as addressing a need for entertainment and fun, while also finding a way to do so at a minimal cost.

Materials:

- A pile of waste per group (can be the same from the previous activity)
- Tools for constructing and assembling sample products.
- *Optional:* glue, tape, string, nails, screws, etc. – items for fastening things together.

4. Elaborate — *Mind-Map*

Students relate recent knowledge about waste, reusing and upcycling to their wider material consumption and waste production to consider specific opportunities for reducing their personal environmental impact (i.e. ecological footprint).

Activity step by step:

1. Ask students to think about and write down all of the waste they (or their households) produce during one, two or three days.
2. Engage all students in preparing a mind-map of their waste production to identify opportunities for reducing the waste they create.
3. On the school board (or on a large piece of paper), create a central box labelled waste, and around this box create four other boxes labelled reduce, reuse, upcycle, and recycle. *See Mind-Map template in Additional Resources (pp. 34).*
4. In the middle box, students write down all waste items they produce.
5. They then discuss and map what actions they might take for different items to limit the total amount of waste that they throw away by reducing what they consume, reusing items, creative upcycling or recycling.

TEACHER TIP

Prior to this activity, you may ask students to keep track of everything they throw away (or all waste they produce) for 1, 2, or 3 days as a homework activity. Make sure that students also think about the waste produced from things they consume, but that they may not directly prepare, such as their food.

Materials:

- School board and markers/chalks

5. Evaluate | *1-Minute Pitch*

The groups each prepare and make a 1 minute pitch for their upcycled products and the benefits they provide.

Activity step by step:

1. Give the groups time to prepare a 1 minute pitch to present the upcycled products they created during the *Discover a Second Life for Waste* activity. The pitch should promote their product, the benefits it can provide, as well as how it can address the reduction of a "waste" issue.
2. Groups can choose to have only one member or more than one members of the group present the actual pitch, but they need to prepare the full pitch to be concise and completed in 60 seconds.
3. Each group presents their pitch to the class. A stopwatch is used to keep time, and students are not allowed to take more than 60 seconds.

Materials:

- Stopwatch

TEACHER TIP

As an additional part of this activity, after the pitches are complete, students could vote for the upcycled product idea that they believe offers the most promise.

If a highly innovative idea is developed by the students, you may consider an extra project for the class to actually develop and market the product idea as a form of social entrepreneurship learning.

Theme 3 – Sufficiency and Food Security

Sufficiency is a lifestyle goal that begins with challenging individuals to reflect on their needs and desires, and to consider how the consumption of goods and services contributes to their wellbeing and fulfillment. Furthermore, it challenges individuals to critically examine these points in relationship to mainstream market attempts to encourage luxury and high-consumption lifestyles. One way in which people pursue sufficiency is to meet more of their needs through their own labor and resources, and in doing so reduce their dependency on market systems to meet their basic needs. However, the global trend towards urbanization has greatly reduced the opportunities for many to pursue a lifestyle based on individual self-sufficiency. Thus, sufficiency may also be addressed at a regional level where food security, defined as a region's ability to sustain its own food requirements, is an important issue. Food security provides many social and economic benefits especially important for isolated populations, but has been decreasing around the world (Luan, Cui, & Ferrat, 2013).

Personal story: Balcony gardens @ India

- By Preethi Sridharan

In India, the population is growing incredibly fast. Rapid urbanization and a drastic influx of people into the cities is resulting in more concrete and the disappearance of green spaces. Despite the limited space for gardening, food sufficiency practices have been adopted by many households. In my city of Chennai for example, many people grow their own vegetables on their balconies. The balcony of my house includes a solar panel, a rainwater harvesting system and the garden itself. The solar panel generates electricity for domestic use all year round. This results in lower consumption of supplied electricity and reduced utility bills. Rainwater is collected from the roof during the rainy season and stored into a large well. The water is used for the garden as well as for other domestic purposes. This is extremely useful, since many regions of the city suffer from drought and water shortage. The garden is completely eco-friendly and organic. It includes vegetables, herbs, fruits, flowers and medicinal plants. It provides not only a self-sufficient lifestyle, but also ensures a healthy food intake. Additionally, the plants cool down the air temperature around the balconing before entering the house, creating a more pleasant atmosphere inside the house during the extreme summer heat. Furthermore, balcony gardens provide a habitat for small birds and mammals, thereby benefitting local biodiversity.

Personal story: Community garden @ USA

- By Rafael Bergstrom (Surfblitz Hawaii)

In Hawaii, the rain hits hard surfaces around the islands. Therefore, pollutants are transported into storm drains and flow directly to the ocean. Simultaneously, the residents of this tropical paradise rely on a food supply that is over 90% imported. These two issues are the main concerns of the Surfrider Foundation Oahu Chapter's Surfblitz Ocean Friendly Garden program, a partnership with Permablitz Hawaii in which volunteers transform plots of land into food producing and storm-water retention gardens. At each event, we teach homeowners and up to 75 volunteers about the concepts of permaculture, a sustainable design principle in food production. Volunteers are trained by permaculture technicians in workshops about composting, rain barrel installation, soil amending, cooking using greens from the garden, construction of raised garden beds, and sheet mulching. The program selects sites and forms a community around each project. The newly established garden also fosters connection between its participants, who come from all over the island. They return to their widespread communities to transfer the knowledge that they have gained about transforming a landscape into a functioning and sustainable garden. Surfblitz is one of the most successful programs operated by the Surfrider Oahu Chapter. It is not only training citizens in ocean protection measures, but also increases their self-sufficiency by decreasing their reliance on imported food sources.

1. Engage — *What do the Lyrics Say?*

Listen to and read the lyrics of a song, and discuss the social, cultural and environmental importance of food.

Activity step by step:

1. Hand out the song lyrics and watch/listen to the song together.
2. Allow students a chance to carefully read the lyrics (and then maybe listen to the song a second time).
3. Discuss the lyrics and the theme of food with the following questions:
   - What is the song about? What message is it trying to deliver?
   - Do you agree or disagree with the message in the song? Why?
   - Do you see this as a personal, social or political issue that is being discussed?
   - How would you react if the only food avaiable in your community was only junk food and fast food?
4. Present one or two of the personal stories *(see teacher tip)* as examples of other cases of practices for achieving sufficiency and food security.
5. Additionally, this can also be used as an opportunity to discuss the historical role songs and music has played in social movements and influence music has had in achieving social change.

TEACHER TIP

If the provided song is not matching the age or interest of your students, feel free to select a different song

TEACHER TIP

The community group, Appetite for Change, who created the suggested song also have a video What Change Are You Hungry For? about their work and use of food projects for social change. This may be used in addition to the personal stories in this toolkit.

Materials:

- Video clip: *Grow Food* by Appetite for Change (https://goo.gl/RdxtgJ)
- Copies of song lyrics *(see Additional Resources, pp. 35)*
- Sound system and/or projector (you may choose to show the video or play only the audio)

2. Explore — *Food Diary*

Students prepare a diary of what they ate for one day, and they then consider the origins of the ingredients in the food.

Activity step by step:

1. Ask the students to take a piece of paper and fold it into thirds so that there are three columns.
2. Ask the students to write down in first column everything they ate during the previous day.
3. Ask the students to think about the ingredients of each item they ate and to write these down in the second column.
4. Ask the students to then think about the origin of the different ingredients (Where did they come from and how did they get to you?) and write their answers in the third column.
5. Have a class discussion about this activity, guided by the following questions:
   - Where do the different ingredients come from?
   - How much of your food comes from your own country? And how much is imported?
   - Why is food imported from other countries? What are the benefits and disadvantages of this?
   - Do you think it would be possible to grow the same food in your own country? Why (not)?
   - Would you prefer to eat more local food or not? Why (not)?

Materials:

- Pen and paper

3. Explain — *Discover the Root of our Food*

Groups examine a "shopping basket" of food items and find out from where they come.

Activity step by step:

1. Divide students in groups of 3-5 members each.
2. Ask groups to agree on a list of 10 to 15 food items *(teachers can choose more or less depending on time limit)* that would be part of a normal weekly "shopping basket" in their homes.
3. Challenge groups with a project to find out the answers to the following questions:
   - Where would you normally buy these food items from?
   - Where were they grown? Are they local, imported or from an unknown destination?
   - What percentage of the food is fresh and what percentage is processed? How do you distinguish between fresh and processed?
   - Do the items in your "shopping basket" or in your local store change (in availability or cost) with the seasons?
   - Is it easy to buy locally grown food in your area? Is this important to you?
4. Groups prepare a short essay or research report based on their findings.

TEACHER TIP

As an extra challenge, students may also be asked to look at the historical origins of individual food items and specific recipes/dishes. This can support a discussion about global food trade and market globalization, as well as the socio-cultural importance of food and multicultural diversity.

4. Elaborate — *A local food diet*

Prepare a menu for one day's meals that are based entirely on locally grown produce and available food items.

Activity step by step:

1. Divide students in groups of 3-5 members each (or same groups from previous activity).
2. Groups are challenged to prepare a menu for all meals and snacks for one day based solely on locally grown produce and available food items.
3. In developing their local food menu, groups should consider and respond to the following questions:
   - When creating a diet, what are important factors to consider (e.g., taste, variety, nutrition and health, availability, price, social value, environmental impact, etc.)?
   - What was the traditional diet in this region 50 years ago, 100 years ago, or 300 years ago? Were these healthy diets, and are the same products available today?
   - What are the things I can eat locally? How does this change with the seasons?
   - What products are missing? Are they essential to add to my diet and why? If yes, from where should they be imported and how?
   - Is it possible to live in my local environment and have a healthy, complete diet without food imported from another country?

TEACHER TIP

The 1-day menu from each group may be combined to form a longer, multi-day menu. This can lead to further discussions about food variety, nutrition and seasonality.

For a longer activity, groups can be asked to prepare a 3-day menu or alternatively a menu per season.

5. Evaluate

Poster Presentation

Groups identify one issue or challenge related to food systems in their local community that they would like to address, and they prepare a poster presentation to raise awareness about this issue and their recommendations for dealing with it.

Activity step by step:

1. Divide students in groups of 3-5 members each (or same groups from previous activity).
2. Groups reflect on new ideas and insights gained from this theme, and they then identify one issue or challenge related to food systems in their local community that they would like to address.
3. Groups then prepare a poster presentation with the aims to: a) raise awareness about this issue, and b) propose a set of recommendations for tackling this issue.
4. Groups present their posters to the class, and students discuss each presented issue and set of recommendations.

Materials:

- A2 paper sheets in different colors
- Markers in different colors
- Other materials to use on the posters

Theme 4 – Maintaining biodiversity

The theme of biodiversity conservation deals with the importance of protecting the health of ecosystems and the flora and fauna they support. Environmental conditions on earth are rapidly changing. This in turn is putting pressure on the earth's ecosystems and making them more vulnerable to shocks and collapse, causing forest to turn into deserts and coral reefs to turn into lifeless rocks (Preshoff, 2015). Biodiversity plays a crucial role in the resilience of ecosystems, which can be explained as the ability of an ecosystem to respond and adapt to shocks or stresses. A rich biodiversity strengthens the adaptive capacity of an ecosystem and its elasticity in the face of pressures from environmental change (Oliver et al., 2015). Biodiversity provides a safety net for ecosystem functions and services, which are crucial for life on earth, including humans.

Personal story: Snake conservation @ Nigeria

- By Gerard Okonkwo (Idemili clan)

In most parts of Nigeria, it is very common to kill snakes. This is resulting in declining populations and sometimes even extinction of certain species. However, I come from a clan (of about 1 million people with a common ancestry) named Idemili in Anambra state, Nigeria that forbids the killing of snakes. There is a myth that the snakes protected our ancestors against their enemies and this made them create a deity called Idemili (pillar of water) whose sacredness is enshrined in the pythons. The protection of these sacred animals is a responsibility of every member of the clan and through oral history this protection has continued from generation to generation. Even strangers are told about this sacred animal as soon as they enter the community and they are made to understand and respect the tradition of the land. We thus live in harmony with the snakes and because of our spiritual attachment to them, the snakes have thriving populations in our communities. By doing this, our land is a very important refuge area for snakes in Nigeria and the only place where the large python "Eke-Idemili" can still be found.

Personal story: Bee conservation @ Canada

- By Hugh Simpson (Osprey Bluffs Honey Company)

My bee story begins in 2008, with the end of a long career in a corporate environment. At this moment, I decided to move to my farm. While renovating the old farm house, I thought about how to re-invent myself and adopt a lifestyle that would allow me to move there permanently. I became intrigued with bee-keeping, and signed up for a full season with a commercial beekeeper to work, watch, listen and learn. Within one year, I was keeping over 50 beehives and the next year acquired 300 from a retiring local beekeeper. Now, I am making a living from keeping bees and marketing the product. Connected to the commercial activity is the social responsibility to communicate about bee health. Bees are very important pollinators for food crops (especially fruits, nuts, and vegetables), and a large part of our food production depends on them. Bee health is a matter of concern because science tells us that bees are at risk because of various environmental and anthropogenic factors, including pests and disease, habitat loss and exposure to pesticides. It is thus important for people to learn about the biology of bees, what it takes to keep them healthy and why they are so important to conserve. I communicate on this subject via speaking engagements, attending conferences, social media, and reaching out to farmers, teachers, students and other individuals.

1. Engage — *What´s so funny about it?*

Students read a set of cartoons and discuss what makes them funny and what messages they convey.

Activity step by step:

1. Ask students to read the two personal stories related to this theme.
2. Pass out cartoons and give students time to read them.
3. Have a discussion with the class about the cartoons and the theme of biodiversity. You can take the cartoons one by one and ask the following questions:
    - What is the cartoon about?
    - What makes it funny? What is the humorous aspect?
    - What type of message is this cartoon making? Does it challenge the reader to think more critically about an issue?
    - Do you agree with the message? Why or why not?

Materials:

- Copies of personal stories.
- Copies of biodiversity cartoons.

TEACHER TIP

You might select several cartoons to use related to the biodiversity theme, and you can either project them on a screen or share them as printouts with the students. Good examples of cartoons may be found at: http://www.seppo.net/cartoons/index.php?cat=3 and https://conservationbytes.com/cartoons/

2. Explore — *Species in My Backyard*

Students investigate a local species that is categorized as vulnerable or endangered. They research about habits and ecological links of this species, as well as the risks and vulnerabilities the species encounters.

Activity step by step:

1. Divide students into small groups of 2-3 members each.
2. Groups select a local species that they are interested in studying.
    - This may include flora or fauna (i.e., plant or animal species).
    - This activity and the next activity will work best if the selected species is categorized as vulnerable or endangered (or if it is known that in the local area the species is facing a high risk/vulnerability).
    - The teacher may alternatively create a short list of appropriate species, have students draw options from a hat, or assign specific species to speed up the identification and selection process.
3. Groups should then carry out research about their species to learn more about them. They can be prompted with the following questions:
    - What are the traits, preferences, habits, etc. of your species?
    - What are the essential elements for its survival and its thriving?
    - What role does it play in the ecosystem, and how is it linked to other species?
    - What pressures and risks are the species facing that are making it vulnerable?
4. Groups prepare a research report presenting their findings.

Materials:

- Internet connection and one laptop per group *(not essential).*
- Informative books and journals about local flora and fauna.

TEACHER TIP

The IUCN Red List (www.iucnredlist.org) is the definitive source on the vulnerability of animal species. Earth's Endangered Species (earthsendangered.com) has an advanced search that allows you to browse by region or country.

TEACHER TIP

If internet access is limited, it is important to provide physical resources about local species. This can be books, newspapers and other materials. You can even invite a presentation from a local biodiversity expert.

3. Explain — *Saving a Species*

Groups develop a local conservation strategy for a species identifying actions that could be taken within their local area to help conserve and protect the species.

Activity step by step:

1. Groups continue to work in small groups of 2-3 members each *(ideally keeping the same groups as in the previous activity).*
2. Groups are challenged with developing a local conservation strategy for a species that is categorized as vulnerable or endangered (or if it is known that in the local area the species is facing a high risk/vulnerability).
    - Groups should ideally work with the same species they investigated during the previous activity so that they can build off the previous knowledge.
3. Outline the dimensions that their conservation strategies should address, for example they may include:
    - Present the importance of the species within the ecosystem.
    - Identify the key pressures or risks that are causing the vulnerability of the species.
    - Identify existing conservation measures for this species.
    - Develop a proposal of clear actions that could be taken in your local area to better protect and conserve this species.
    - Clarify the roles that different actors and stakeholders will need to play.
    - Explain links between your conservation strategy and key social dimensions, (i.e., economic, cultural, legal, political, etc.)
    - Set targets and indicators that would demonstrate successful implementation of your conservation strategy.
4. Groups prepare written strategy.
5. Groups present and discuss their strategies with each other.

Materials:

- Internet connection and one laptop per group *(not essential).*
- Informative books and journals about local flora and fauna.
- Information about conservation activities.

TEACHER TIP

If you would like to upscale this activity, an alternative approach is to have the entire class work on the local conservation strategy for a single species. In this approach, each group would be assigned a different research question, topic, or risk/vulnerability to investigate. This approach provides the opportunity to extend the project and to have the students engage in real-world research that may include environmental, social and legal/political research, as well as stakeholder engagement in considering the relevance and practicalities of their conservation strategy. The final presentation may be made at a public event.

4. Elaborate — *Stakeholder Discussion*

Students role play as different stakeholders debating a case about a specific conservation initiative in order to appreciate the complex diversity of opinions, perspectives and concerns that individuals may have around the same issue.

Activity step by step:

1. The teacher should introduce the activity to the students and explain that they will be role playing a debate/ dialogue around a proposed conservation initiative.
    - Two cases (one on bee conservation and the other on snake conservation) are provided in the Additional Resources section *(see pp. 37-38)* to serve as examples. This includes an introductory text about each case, and six character cards per case to give students specific roles.
    - Students should be encouraged to develop their own role play and stakeholder discussions in relation to the conservation strategies they developed in the previous activity.
    - You may duplicate character cards so more than six students can participate in one stakeholder discussion, and blank cards are also provided to make up your own character roles.
    - Not all students have to participate in one case. Some can observe the interactions between stakeholders. But then it is best to use more than one case so all students get the chance to role play and observe
2. Assign students the character cards and introduce the case to them. Give them time to consider their character cards.
3. Initiate the role play and allow a debate about the case conservation initiative to unfold. However, if needed during the role play, the teacher may intervene to encourage the students to see if they can move towards a successful outcome or compromise between stakeholders – this may also be done by suggesting to the person playing the role of the local government officer that they should encourage stakeholders to work towards an agreeable solution.
4. Following the conclusion of the role play, discuss with students the outcomes of this activity:
    - Is the solution/outcome reached one that will be effective for the conservation of the species?
5. What compromises were made, and by who, to achieve this solution?
    - What other insights were revealed about the dynamics between stakeholders within this case?

Materials:

- An introduction of the case to be discussed and the stakeholders involved
- Stakeholder cards with different roles and points of interest and concern *(see pp. 37-38 for both items).*

TEACHER TIP

Depending on the group you can decide to be the discussion leader yourself, or help the appointed discussion leader where needed.

5. Evaluate

Make a Promotional Video

Groups develop a short video to promote their local conservation strategy for a species that aims to raise awareness of relevant stakeholders and motivate them to take action.

Activity step by step:

1. Divide students into groups of 2-3 members each *(ideally keeping the same groups as in the Saving a Species activity).*
2. Groups are to prepare a short video (2-3 minutes) to promote the local conservation strategy to protect a vulnerable or endangered species.
3. Groups should first think about what content to include in their video, and it is useful to explain to the students that they will only be able to fit 3-5 key points into a video of this size, so they should think carefully about what those points need to be and how to present them in both a clear and impactful manner.
4. Groups can then develop a script for the video and indicate the types of imagery or shots they would like to capture. They should also assign roles for their members.
5. Groups record their video footage and then edit their final video.
6. A screening of all videos is held for the class (or for a larger group, e.g. during a school assembly).

TEACHER TIP

It is possible to do more with the videos after the initial screening. They can be uploaded on YouTube, submitted to a competition, or shown at local events.

TEACHER TIP

If no editing software is available, the groups can tape their video in one single shot to make editing unnecessary.

Materials:

- Pocket cameras or mobile phones.
- Simple video editing program (that can be used on computer or on phone).

Theme 5 – Holistic approaches to sustainable lifestyles

The theme of holistic approaches deals with alternatives that work to integrate multiple aspects of a sustainable lifestyle into one overall approach. While the focus of sustainability campaigns is often on singular lifestyle domains, it is important students appreciate that sustainable lifestyles are inherently holistic. This requires an understanding of the systemic and interconnected nature of these issues, rather than viewing them merely as isolated problems (UNEP, 2016). Communities with holistic solutions can be found all over the world. For example, some indigenous tribes have a very strong and respectful relationship with nature and their sustainable way of living is based on traditional practices (UNESCO, 2015). There are also modern communities pursuing sustainable lifestyles through technological innovations or through alternative social interactions, which is the case for most eco-villages (Clark, 2010).

The activities in this theme challenges students to think of their own holistic solutions for a sustainable future and to consider their interaction at the community level. Envisioning sustainable solutions and designing possible future scenarios is an important act in empowering a path of sustainability development. Lifestyle transitions require the ability to "put on stage" possible futures, discuss them, and democratically decide on the most desirable ones (Manzini & Jegou, 2003). Creating a scenario of their own sustainable utopia will help students to generate clear, reasoned visions about different potential lifestyles and make them think about how various actors are involved in making these lifestyles possible.

Personal story: Eco-village @ Norway

- By Nicoline Nørgaard

The last couple of years, I have lived in an eco-village in Hurdal, a rural municipality with the goal of being CO2-neutral by 2025. The village is part of the Global Ecovillage Network that consists of more than 10.000 communities. Eco-villages are a combination of high-tech innovation, living environmentally friendly and social interaction within the community. Our modern wooden house was one of the first 70 sustainably built houses in Hurdal that created the eco- village. Half of our electricity is generated by solar panels, and heating throughout the freezing winter comes from a pollution-free soapstone oven and infrared panels. The exterior SuperWood boards are locally produced and treated with a weather-resistant membrane, requiring no maintenance and extracting solar heat for energy-efficiency. The house is relatively small, and our Danish design furniture is durable and timeless. Before settling in Hurdal, my husband and I were trying to live environmentally friendly in Copenhagen and Oslo. We recycled our rubbish, shopped organic food, used bikes or public transport and didn't have a car. We are driven by nature, being outdoors, doing multiple sports and caring for the environment. We were attracted by the endless surrounding forest, the big lake and the prospect of launching Norway's first eco-village. Living sustainably improves our wellbeing and adds a social dimension rarely seen in a suburban neighborhood. Everyone knows each other, helps each other and has the possibility to participate in endless activities. However, each family owns their own house and garden, which maintains a sense of privacy. An online network provides shared transport solutions and a gardener is engaged on the adjoined organic farm, supplying all members of the community-based agriculture (CSA) with fresh and local produce. Having all kinds of people that share similar values living close by generates a safe and sustainable community.

Personal story: Indigenous communities @ Ecuador

By Ikuko Matsumoto *(Policy Researcher, Institute for Global Environmental Strategies)*[2]

The community of Agua Blanca live in the dry forests near Ecuador's coastline, and they are guardians of their ancestral landscape and cultural heritage. The community has developed a diverse and productive landscape, including community's orchards and vegetable gardens, and they are able to gain many benefits people obtain from the local environments. The locals of Agua Blanca engage in small scale agriculture, collect wild honey, and raise goats as part of their livelihoods.

The community is located fully within the boundaries of the Machalilla National Park, and this is the reason why the community aims for all their activities to be of low impact and in harmony with the natural environment. But this was not always the situation, as the creation of the Machalilla National Park in 1979, brought a big problem and almost meant the social collapse of the community. Originally, the strict conservation laws forbade people from living within the park boundaries.

Paul Martínez and 70 families of the Agua Blanca community were threatened with eviction from their own lands. The community was able to prove that Agua Blanca is an ancestral community and they are the descendants of the Manta people who were located for thousands of years in the Chongon-Colonche mountains in the dry forests and humid forests of Ecuador. Paul Martínez explains, "This was a great accomplishment for us, as the Agua Blanca community was allowed to stay here. After that our community grew in strength."

The community of Agua Blanca continues to live with the boundaries of a protected area, and they have adapted their practices so they work with management policies for the national park. To develop a strong and resilient community, they developed many ingenious ways to derive a living and profit from managing their natural resources in a sustainable manner. A hot spring lagoon has become a spa where treatments are offered. Seeds, nuts and shells are the base of a lucrative trade in handicrafts. Trails and lookouts have been created for eco-tourism enthusiasts. Perhaps the main draw for tourists is the archeological sites. Visitors come to see the vestiges of the Manta people who lived here over 1,200 years ago.

2 Ikuko Matsumoto travels the world researching how communities work to maintain productive landscapes that maintain rich ecological biodiversity and support the socio-cultural and economic resilience of the community members. This story of Paul Martínez and the Agua Blanca indigenous community in Ecuador was originally presented in the documentary video The guardians of Ecuador's dry forest: A story of community resilience produced by the Institute for Global Environmental Strategies in 2017.

See: https://www.youtube.com/playlist?list=PLNNslwnSnPND5Jw1eQPIoP7ZVsDUQz5rH

1. Engage — *Watch a Video*

Watch a short video about an imagined Utopia to inspire thinking about the future and ideal scenarios.

Activity step by step:

1. Ask students if they know the word "utopia" and discuss their ideas about this concept.
2. Tell the students that they will watch a video about this topic, and ask them to take notes on what might be key elements or ingredients when imaging a perfect society.
3. Watch the video together
4. Discuss with students their reactions to the video.
    - It may be useful to also explain to them that each of them may have very different ideas about what an ideal future would contain, and that is completely fine because this activity is not about finding one right answer but rather engaging in the process of futures thinking and scenario thinking.

TEACHER TIP

There are many videos online that address the topic of "Utopia". The point of using such a video in this activity is not to endorse or promote a specific view of an ideal society, but rather to inspire thinking about future perspectives.
One possibility is The Perfect Country by The School of Life: (https://goo.gl/jPVsbX)

Materials:

- Video about the theme of "utopia".
- Laptop, projector and screen (or other necessary audio-visual equipment)

The definition of "utopia"

In modern times, "utopia" can be generally defined as:
"An imagined place or state of things in which everything is perfect."
- Oxford Dictionary

The person who first introduced the word "utopia" was Sir Thomas Moore (1477-1535). His definition was:
"A name for an ideal community or society possessing perfect socio-political-legal system."
- Sir Thomas Moore, 1516

The word "utopia" is derived from the Greek word *ou-topos*, which means "no place", indicating that no place is perfect. However, the similar Greek word *eu-topos*, means "good place". So at the very heart of the word exists a vital question: *Can a perfect world ever be realized?*

2. Explore

Envision your own Sustainable Scenario

Students imagine and design their vision of a future sustainable utopia and consider possible scenarios for future social, economic, political, and ecological systems.

Activity step by step:

1. Working individually, students are asked to envision their idea of a future sustainable utopia. They should consider possible scenarios for social, economic, political and ecological systems?
2. The teacher can ask several probing questions to guide the students to more holistically think about their future vision:
    - What kind of housing/accommodation do you/people live in?
    - What kind of food do you/people eat? Where does it come from? How do you get it?
    - What type of work do people do? Are there different jobs then in the present, and are there current jobs that no longer exist? What type of hours do people work?
    - How are governments structured in the future? How do political systems function.
    - Are there major changes to the environment and to ecological systems? What is human interaction with the natural environment like?
    - What do people do for fun? What kind of hobbies do people have?
    - How do you/people get around? What type of transport is used?
    - Has anything about social relationships changed in your vision?
    - What type of energy do people use?
3. Ask the students to prepare a creative expression of their vision (e.g. an essay, a "day-in-the-life-of" story, a comic strip, drawings, a collage, etc.). The teacher may ask all students to present in the same form, or students may be allowed to select the one they prefer.

TEACHER TIP

You can decide to give the group a time frame for their utopia design, i.e. when in the future this is supposed to exist (2030, 2050, etc.). This gives them guidance to what extent they can include futuristic (and fantastical) ideas into their vision.

Materials:

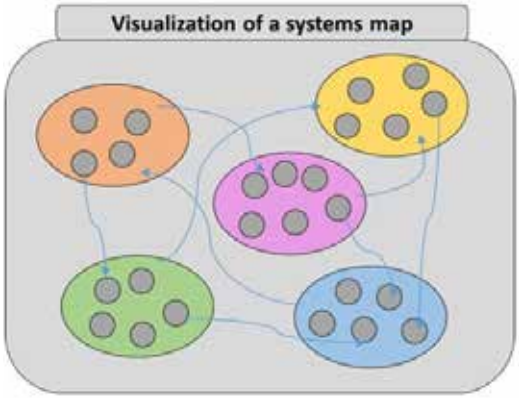
- Drawing and art items *(for possible creative expression)*

3. Explain — *System Mapping*

Groups consider and examine how different needs may be realistically met in future scenarios.

Activity step by step:

1. Divide students into groups of 4-5 members each.
2. Groups are asked to prepare systems maps of needs and how they are met in future scenarios. Each group should be given a large sheet of paper and markers to make their systems map.
3. Instruct groups to first identify the main needs of people. For example, food, water, housing, transportation, leisure, education, hygiene, healthcare, safety, etc. These needs define the major categories of their systems map (i.e. large colored circles in example to right).
4. Next, ask groups to discuss their ideas (drawing on their visions from the previous activity) about how these different needs may be met in future scenarios. Various ideas can be added to each category (i.e. small grey circles in example to right).
5. Finally, ask groups to examine how both needs and systems may interlink with each other. As they define connections, groups can add arrows to connect different aspects and label the types of interconnections. This may also stimulate groups to identify new synergies that can be created through better (i.e., more efficient or more effective) system interactions.



Materials:

- Large sheets of paper
- Markers

4. Elaborate — *The Talking Stick*

Students use a talking stick to encourage active listening and storytelling about their visions of a sustainable utopia. They also reflect on practical ways to achieve these future scenarios.

Activity step by step:

1. Sit in a circle on chairs or on the floor and ask for two minutes of silence and for self-reflection on your personal visions of utopia.
2. Introduce the talking stick: "The talking stick was a traditional instrument of democracy used by many indigenous tribes in North America. The stick is passed around from member to member, allowing only the person holding the stick to speak and enables everyone to be heard. Today, we will use the talking stick to share our personal stories with each other. So if you want to share your story, you can pick up the stick from the middle of the circle and then put it back after you have shared."
3. Ask students to share the main aspects of their visions of utopia. (If necessary, the teacher may go first to provide an example and break the ice).
4. When everyone has had a chance to share (or when the time for this round is over), the teacher should pick up the stick again and thank the group for sharing their personal stories.
5. As a second round of discussion, the teacher can then ask the students to reflect on and discuss what would be practical ways to achieve some of main aspects of these future scenarios? What would need to occur, what would need to change?

Materials:

- A wooden stick *(can be decorated with ribbons. feathers, etc.)*

5. Evaluate | *Interactive Creation*

Students design a collective plan for a sustainable community and argue for its creation.

Activity step by step:

1. Tell the students to pretend that the local government has just made an announcement that they would like to fund the development of a "new town" based on sustainable principles. They have opened a "design competition" to the public to submit their ideas and plans for this community.
2. The students are challenged to pull together their ideas and visions to create one collective plan for this sustainable "new town".
3. Specific criteria should be given to the students to which they must respond, for example:
    - This plan needs to be realistically achievable, so while incorporating as many aspects of their utopian visions as possible, they must prepare something that could be implemented (and potentially serve as a basis for achieving other future utopian ideals/scenarios).
    - Energy and resource efficiency are considered highly important.
    - Plans achieving a high level of food sufficiency/security is desirable.
    - The new town should aim for an inclusiveness of services, i.e. with the majority of people living, working, shopping, and enjoying their free time within the new town.
    - Population capacity and population density – these are very important criteria in influencing the nature of the plan, but can also significantly change students' visions, so the teacher may choose to include or not include these criteria. For example, a sustainable urban new town may be designed to house a population of 100,000 people and have a rather high density (i.e., 500 Pop. per km^2), while a primarily residential neighborhood or even an eco-village may only aim to accommodate 500 or 1,000 people and have a low density (i.e., 20 Pop. per km^2).
4. Students should develop a complete plan for presenting their ideas for this new sustainable town/community. This may include written information, maps, diagrams, a model, etc.
5. Students should respond to and describe how different needs will be met and services provided within this community

TEACHER TIP

This activity can be completed in one session, or it can be a longer term class project that they work on and develop. For a longer term project, the class may choose to form different teams that will work on and develop detailed ideas/ plans for specific aspects (e.g. housing, food, transport, energy, economic systems, governance and decision making, education, etc.).

TEACHER TIP

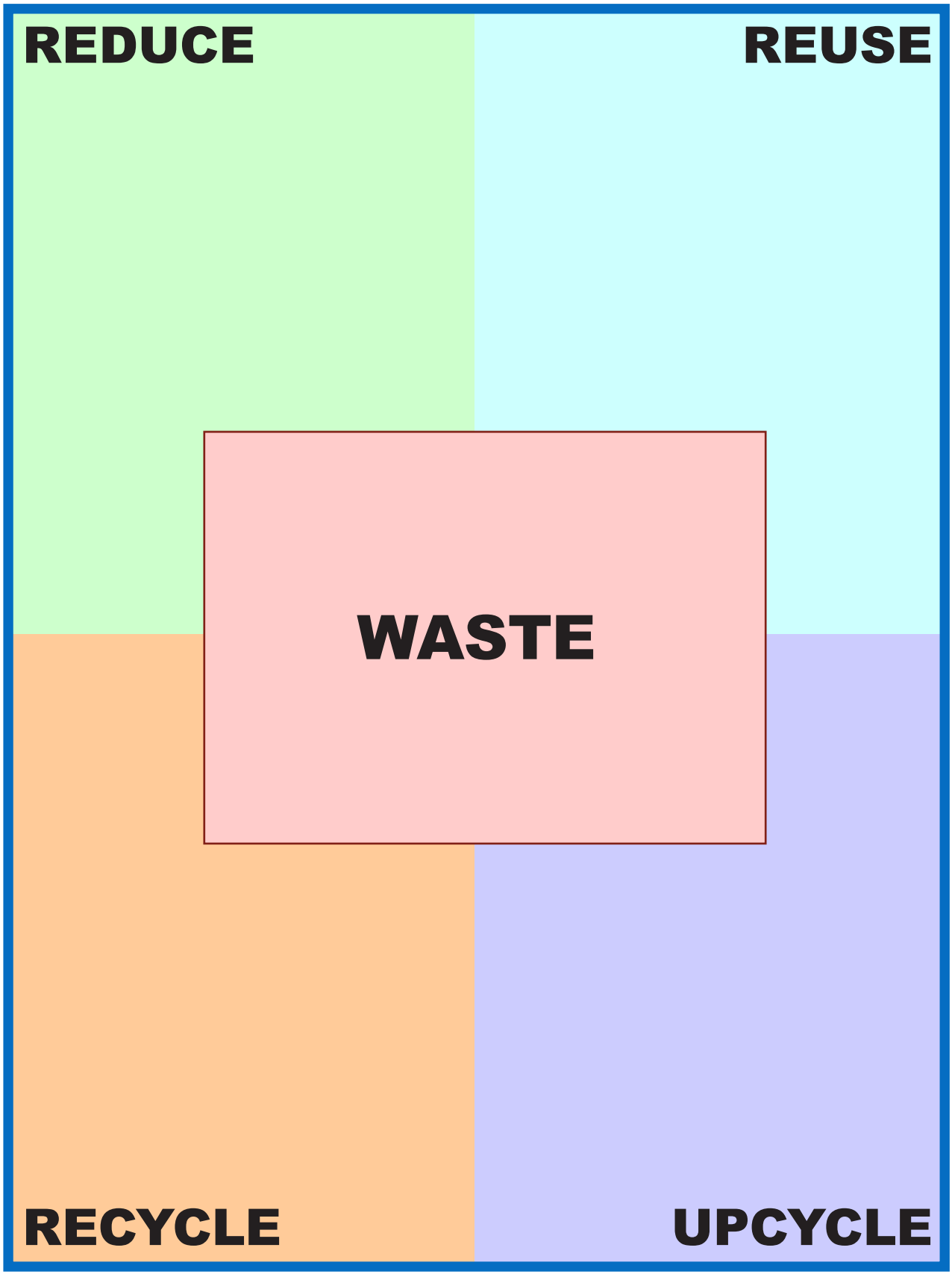
You can guide and frame this activity as much or as little as you want. For some groups it would be enough to just provide the task and the materials, and for others it might be good to also include rounds of discussion to consider different aspects. Feel free to adapt this to the needs of your students.

Materials:

- Large sheets of paper.
- Markers in different colors.
- Paper in different colors.
- Glue, tape, staplers and scissors.
- Other arts and craft materials.

Additional Resources

Mind-Map **– Template for "Reuse, Repair, and Upcycle – Activity 4"**



What do the Lyrics Say? – Lyrics for "Sufficiency – Activity 1"

Grow Food by Appetite for Change

[Chorus]
Grow food, grow food
A-F-C got produce, A-F-C 'bout to go cool, we gon' Grow food, grow food
A-F-C got produce, A-F-C 'bout to go cool (grow)
Whippin' in the kitchen, whippin' in the kitchen (grow)
I be whippin' in the kitchen, whippin' in the kitchen (woah)
Chop it up, chop it, chop it, chop it, chop it up
That slow food's got you sloppy bruh
So chop it, chop it, chop it, chop it up
Grow food (go go go go go)
Grow food (go go go go go)
Chop it up, chop it, chop it, chop it, chop it up
That slow food's got you sloppy bruh
So chop it, chop it, chop it, chop it up

[Verse 1]
See in my hood, there ain't really much to eat Popeye's on the corner,
McDonald's right across the street
All this talk about guns and the drugs pretty serious But look at what they feeding y'all,
that's what's really killin' us
Please change the food at my school, make it good Get that fake food up out of my hood
Hope the message not misunderstood
Grow and cook your own food, yes you could
Got the lil homies in the garden
Got the big homie sellin' collard greens
And the northside ain't starving
Since good Minny cooks been on the scene

[Chorus]

[Verse 2]
Screamin' 'Hot Cheetos and Takis'
but you better eat your broccoli
Fake food is kind of lame,
putting poison in your brain
Need more people at the club,
poppin' bottles of that water
Dabbin' on that fast food,
pullin' veggies out the garden
I go hard, I eat good
And I put that on my mama
Eatin' healthy school lunch
And that's word to Miss Obama
Drinking water, living longer
No processed drama
Call me John Deere shawty
I be growing like a farmer, dab

[Chorus]

[Verse 3]
I get the C from the oranges
I get the D from the broccoli
I get that A from the milk
I get my vitamins properly
My food be packed with the minerals
I hope you taking this literal
So when you 65 plus
You should be passing your physical
Tried tell 'em, tried tell 'em
But they did not believe me
Boy that sugar was sweet
'Til I got diabetes
You better rethink your drink
That stuff is not what you think
Get you some water or something
I get it free from the sink
Keep it healthy but still got that good taste
Got an appetite for flavor and an appetite for change If you need a couple pointers
I can get you some help
And then I see you on the Vine,
'cause you need some milk

[Chorus]

[Verse 4]
Eleven year old with some big dreams
About to make it big on the big screens
Don't pay attention that TV
Plus fake food ain't what you need
Come in the house, let us chop it up
That spring salad mix made it popular
But you thought that you plan on stopping us?
Did you thought that you plan on stopping us?
'bout that health wealth, social change
My fruits and veggies be off the chain
Want real food for real people
Good at breaking bread, yeah fame
New money, real money, that's all I need
Get the green, broccoli
Want to make a hundred mils,
we done cooked a hundred meals
Cause my people gotta eat!

[Chorus]

Stakeholder Discussion **– Resources for "Maintaining biodiversity – Activity 4"**

"Bee Conservation" Role Play Text

The local bee-keeper society has submitted a petition with 1000 signatures to the municipality to set a rule that every member from the community has to fill at least 5% of their garden with bee-friendly flowers in order to conserve this endangered species. The municipality recognizes the concern of the bee-keeping society and decided to organize a meeting to hear the voices of different community members and come to an agreement to implement (an adapted version of) the new rule.

"Bee Conservation" Stakeholder Character Cards

Officer of Local Government

- Wants to come to agreement
- Concerned about the costs
- Concerned about regulations regarding keeping beehives

Local Bee Keeper 1

- Concerned about market access for local bee/honey products
- Concerned over his/her bees
- Stresses the need for bee conservation

Local Community Member

- Has young children
- Allergic to bees
- Wants to eat outside in summer
- Believes there is already a problem with how many stingy insects there are

Local Bee Keeper 2

- Concerned about his/her bees
- Stresses the need for bee conservation
- Wants to increase local bee habitats and plant wild flowers

Farmer

- Concerned about the pollination of his/her crops
- Concerned about the costs for planting flowers on his/her land
- Is skeptical about information that he/she has received about pesticides leading to bee population decline

Head of Residents' Association

- Not sure why this measure is important
- Concerned with extra "rules and requirements" for home owners.
- Thinks the local government should plant the flowers in public spaces, not pass the burden on to individuals.

"Snake Conservation" Role Play Text

The head of the Idemili tribe has arranged a meeting with the neighboring tribe. There have been conflicts with this other tribe because members are sometimes hunting for snakes on the land of the Idemili. For the Idemili, the goal of this meeting is to convince their neighbors to stop killing the snakes and to expand a protected area where snakes can thrive. The neighboring tribe, however, has an ancient tradition to eat the snakes. They want to be able to hunt for the snakes wherever they want. The goal of the meeting is to solve the problem and come to an agreement.

"Snake Conservation" Stakeholder Character Cards

Officer of Local Government

- Wants to come to an agreement
- Concerned about the costs
- Concerned about public safety

Member of Idemili Clan

- Argues that snakes should not be killed
- Believes that humans can co-exist and live with snakes
- Wants an expanded conservation area made official by law

Member of Neighbouring Clan

- Wants to eat the snakes and use snake skin for products
- Bit by a snake once
- Concerned about his/her children
- Concerned about loss of livelihood from snake hunting

Nature Conservationist

- Concerned about the endangered snake species
- Wants the government to support costs for conservation activities
- Emphasizes the need for more research and information about local snake populations

Headmaster of Local School

- Concerned about safety of students
- Believes that more snakes could be dangerous for students playing in the school year
- Wants students to be aware of environmental issues

Local Farmer

- Happy that snakes keep down the rodent populations
- Concerned about how the proposed conservation area would impact his farming practices
- Wants to be compensated to participate in conservation activities

Sharing Economies – Library of Things

Image by Michiel van Wickeren

Sharing Economies – Sharing labor

Image by Joris Wabeke

Reuse, Repair and Upcycle – Games from Trash

Image by Linde Berg

Reuse, Repair and Upcycle – Toy Doctors

Image by Colourbox.com

Dare to Differ

Dare to Differ

Dare to Differ

Dare to Differ

Sufficiency – Balcony gardens

Image by Aditya Srinivasan

Sufficiency – Community Garden

Image by Rafael Bergstrom

Maintaining Biodiversity – Snake Conservation

Image from Tim Leerschool

Maintaining Biodiversity – Bee Conservation

from Colourbox.com

Dare to Differ

Dare to Differ

Dare to Differ

Dare to Differ

Holistic Approaches – Indigenous communities

Image by Luis Patrón (Patrón Productions) for IGES (2017) video The guardians of Ecuador's dry forest: A story of community resilience

Holistic Approaches – Eco-village

Image by Nadia Fransten

Dare
to
Differ

Dare
to
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