Activity Handbook

Module 2

CIRCULAR CITY

TUDEC – Through Upcycling to the Design of Eco Cities

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TUDEC Website

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2.1 Overripe is Super Tasty

1. Type of activity

Classroom activity (with access to school kitchen), also possible as project

2. Topic

Re-use – Safe it from the dump

3. Learning objectives

The learners

- increase their awareness of food waste
- learn about the possibilities of using overripe fruit
- are familiarised with the use of cooking and baking recipes
- are familiarised with cooking/baking techniques, processes and equipment
- experience self-efficacy in cooking/baking
- experience the conscious enjoyment of home-made food
- learn to appreciate home-made food

4. Target group

6–14 year-old learners

5. Necessary materials

- Teaching kitchen/school kitchen with equipment
- Ingredients (see recipes)
- Possibly cleaned jam or preserving jars, cleaned bottles for bottling (reused!)

6. Duration

45-90 min

7. Main activities

Fruit that is overripe or has been stored for (too) long often no longer looks attractive and therefore ends up in the bin. However, some can be "revitalised" using very simple methods and others are delicious ingredients for cooking and baking recipes, as they contain a lot of aroma and sweetness due to their long ripening time. This not only avoids unnecessary food waste, it also tastes delicious.

At the beginning, the topic of "old fruit" can be addressed with the children, either through pictures or through fruit they bring with them. How do you make shrivelled carrots or radishes crunchy again? What is a brown banana perfect for?

Here are some tricks and recipes that you can try out with your learners. In preparation for the actual work in the teaching kitchen, you can talk through the recipes step by step with

the children and work out together what is meant by certain "technical terms", what you need to do and what you should look out for.

Important for every cooking or baking experience: tasting and enjoying together. Make sure you plan enough time for this! Think about other ingredients that will be needed, e.g. bread for tasting jam or chutneys.

Revitalised vegetables
If vegetables have been stored for too long, they often become shrivelled and wilted. No need to throw them away, as they can often be given back their liquid and thus their vigour.
Carrots, radishes, cucumber, courgette: place in a glass or bowl, cover with cold water and leave to stand for at least an hour, preferably in the fridge.
Kohlrabi: First place the kohlrabi in lukewarm water for 5-10 minutes and then in ice-cold water for 5-10 minutes.
Lamb's lettuce: Place the lettuce leaves in a bowl of warm water for 20 to 30 minutes and then process immediately.
Lettuce: Place the lettuce leaves in a bowl of cold sugar water (1 tablespoon of sugar to 1 litre of water) for 15 to 20 minutes

Crumble made from leftover fruit
(Particularly suitable if learners have brought very different types of overripe fruit).

Ingredients for 2 portions  225g (overripe) fruit 30g butter 30g sugar 60g flour 1 pinch of salt	 *Materials*: Ovenproof moulds, cups or bowls  *Preparation time*: 35 minutes

- Preheat the oven to 180 °C fan oven (200 °C top/bottom heat).
- Clean the fruit, peel and dice as required depending on the variety and divide between 2 ovenproof cups or bowls.
- Melt 30 g butter in a small pan on a low heat. Remove from the heat.
- Mix 30 g sugar, 60 g flour and 1 pinch of salt. Add the mixture to the melted butter and stir in with a fork to form crumbles.
- Spread the crumble over the fruit in the 2 cups and bake the crumble in the centre of the oven for 25 minutes.

Fruit smoothies ... and ice-cream sweets
(Particularly suitable if learners have brought very different types of overripe fruit).

Ingredients **various (overripe) fruits for the smoothies** **(Greek yoghurt for the ice cream sweets)**	 ***Materials***: **Blender** **(Ice cube tray** **Freezer)** ***Preparation time***: **15 minutes for smoothies** **(+ freezing time for sweets)**

This recipe is great for experimenting with flavours. Which fruits taste best together? It is advisable not to mix too many fruits in one smoothie, but rather to try many different combinations of 2-3 fruits.

- Prepare the fruit (wash, peel if necessary, dice)
- First place the firmer fruit in the blender
- Then add the softer fruit
- blend to a consistent liquid
- Add a little water to liquefy if necessary

For the ice cream sweets, mix the blended fruit with Greek yoghurt and pour into ice cube trays. A fruity, cool refreshment!

8. Final activities – drawing a conclusion

After enjoying the food/drinks together, reflect with learners on the result. All learners should be able to express, what they like about the reparation process as well as the final products. Also, make the learners reflect on the following questions:

- What was your favourite food/drink?
- What did you particularly enjoy preparing?
- What did you find a little difficult?
- Which food/drink would you like to try at home with your family?
- What other fruits could be used for these recipes?

A follow-up exercise for the learners could be to copy (the younger ones) or write down (the older ones) their favourite recipe to take home and prepare together as a family. As the educator, you should ensure that the recipes are correct and complete to make it easier to transfer them to everyday family life. For the younger ones, this could be a copying exercise, possibly supported by pictures/symbols for words that they cannot yet write. For

older learners, it could be a process description exercise focussing on the correct, logical sequence of steps.

9. Reflection, review of the objectives

As the educator, you should reflect on the above objectives and how well your learners reached those. Based on the reflection questions, but also your observations of the project, consider mainly how well they understand the concept of sharing and how well they worked together to make it happen.

10. Inspiration

THE EXTRAORDINARY LIFE AND TIMES OF STRAWBERRY (youtube.com)

This youtube video shows how much effort, energy and time is required for strawberries to be available in our supermarkets all year-old learners around. If this is understood and considered it is much harder to waste food.

11. Explanation for children with disabilities

This activity can be accomplished with every kind of ability. If some learners need support, pair them with other learners and distribute tasks, so that everyone can contribute.

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2.2 Wax Food Wraps

Photo by Jack Cole auf Unsplash

1. Type of Activity

Crafting activity

2. Topic

Circular City – Reduce

3. Learning objectives

The learners are able to …

- increase their awareness of sustainable packaging
- learn about the possibilities of reusing material
- learn how to reduce waste
- experience self-efficacy in producing valuable instantly useable household items

4. Target group

6–14 year-old learners

5. Necessary materials

20cm x 20cm pieces of 100% washed cotton (can be reused, e.g. old button-down shirt or bed sheets), beeswax for cosmetic production (can be ordered online or you ask a local beekeeper), jojoba oil or sunflower oil, pipette, parchment paper, spoons, bowls, pot, hotplate, paint brush, flat iron

6. Duration

45 min.

7. Main Activities1.

1. Everyone places a cotton sheet on parchment paper.
2. Take one or two spoons per sheet of beeswax and melt it in a waterbath.
3. Meanwhile with the pipette distribute small amounts of oil on the cotton sheet, which will mix later with the wax and will make it smoother.
4. When the wax is melted with a broad paint brush spread the wax on the cotton sheet. At this point it is impossible to distribute the wax evenly. Don't worry about that, that's what the flat iron is for in the next step.
5. To spread the wax evenly put another piece of parchment paper on the cotton sheet and iron over it.

8. Final activities – drawing a conclusion

Reflect with your learners on the value of the beeswraps for reducing waste at home. Ask the learners what they want to use it for. You could also brainstorm from there what other solutions they can think of to reduce waste at home and in school.

9. Reflection, review of the objectives

As the educator, you should reflect on the above objectives and how well your learners reached those. Based on the reflection questions, but also your observations of the project, consider mainly how well they understand the importance of reducing waste in our everyday's lives.

10. Inspiration

For the German version: Mache mit! Bienenwachstücher - selbst herstellen - YouTube

11. Explanation for children with disabilities

This activity can be accomplished with every kind of ability. If some learners need support, pair them with other learners and distribute tasks, so that everyone can contribute.

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2.3 Making Paper from Paper Scraps

Images by Freepik

1. Type of Activity

Crafting activity

2. Topic

Circular City – Recycle

3. Learning objectives

The learners are able

- increase their awareness of the importance of reuse
- learn about the possibilities of reusing material
- learn how to produce paper
- experience self-efficacy in producing valuable instantly useable goods
- learn to appreciate handmade qualities vs. Industrial production

4. Target group

6–14 year-old learners

5. Necessary materials

a lot of paper scraps (in light colours or in similar tones), warm water, bowl, mould + deckle in the size of the paper you want to produce (2 identical frames, one with fine metal mesh attached to it – for diy instruction see inspiration), large container (at least double the paper size), a lot of cotton sheets (bigger than the paper size), sponge, mixer or hand mixer, flat iron

Be sure, you do the activity in a place that can get wet (outside!). It will get a little messy!

6. Duration

120 – 180 min.

7. Main Activities

Have you ever noticed how much paper scraps are left after crafting activities in the classroom? If learners put them into the paper bin, they are doing just right, but guess what, they could do better and produce their own NEW paper with those scraps. This way you are establishing your very own circular classroom where you produce your own resources. Another option would be to ask in the school secretary (Check that there is no sensitive data on the paper) or even ask around in offices in the neighbourhood if they have waste paper. Your learners will produce paper that is truly unique and an artwork for itself. They can also add natural elements like pieces of dried leaves, herbs or flower petals to make it more individual.

1. Tear your paper scraps into small pieces (max. 2cm x 2cm). Be careful to sort out paper that is in some way coated or laminated (like very shiny wrapping paper, which does not soften when soaked and also can't be mixed properly.
2. Put the paper scraps into a bowl with warm water and let it rest for at least half an hour. The ratio is about 3 handfuls of paper scraps with 1.5l.
3. Put the paper pulp into the mixer with some extra water and mix until you receive a very fine pulp.
4. Fill the large container with water and put some of the pulp inside. The thinner the mixture is, the finer the paper will be. Start with 3 or 4 hands full of pulp for the whole container and add more water or more pulp, depending on how happy you are with the result.

Free Photo | Free photo woman putting grinded paper pulp in water over wooden desk (freepik.com) Images by Freepik.com

5. Next, mix the water pulp-mixture in the container thoroughly. Take the deckle frame with the mesh facing up. Put the mold on top, so that the frames align. Dive both frames vertically into the pulp. If you are underwater, turn them horizontally with the mold on top. The mesh will fill up with paper pulp. You can shake a little to have it distributed evenly. Lift the frames out of the water and while holding it horizontally, let some water drain off.

6. Now, take off the mold, so you are just holding the deckle with the paper pulp in a rectangular shape. Tip the deckle over onto a cotton sheet. With the deckle now lying on the cotton, you take the sponge and carefully soak up some of the extra water through the mesh. Carefully lift the deckle with the paper pulp staying on the cotton sheet.
7. Let it dry, and then carefully detach it from the cotton.
8. To flatten it out, you can put the dried sheet between two cotton cloths and iron over it.

9. Final activities – drawing a conclusion

First of all take time with all learners to celebrate your results! If the paper is still drying, you might have to do that in the next lesson. Admire the hand-made paper and also all the details that make every sheet of paper unique.

Reflect with your learners on the value of turning waste (paper scraps) into a new resource. Ask the learners what they want to use it for.

10. Reflection, review of the objectives

As the educator, you should reflect on the above objectives and how well your learners reached those. Based on the reflection questions, but also your observations of the project, consider mainly how well they understand the importance of reuse vs. disposal.

11. Inspiration

More instructions on the process of making paper can be found here:

Deutsches Video:

Papier schöpfen - ganz einfach | Papierschöpfen mit Resten | Tutorial deutsch - YouTube

Englische Resource:

https://www.youtube.com/watch?v=5xrWrKIVBgo

Make a Mould and Deckle for Handmade Paper - Cheap, Quick & Dirty — Paperslurry

12. Explanation for children with disabilities

This activity can be accomplished with every kind of ability. If some learners need support, pair them with other learners and distribute tasks, so that everyone can contribute.

2.4 Botanical Dyeing

Natural pigmented cloth. Picture by Freepik.com

1. Type of Activity

Crafting Activity

2.Topic

Circular City – Reuse

3. Learning objectives

The learners are able to

- increase their awareness of reusing textiles
- learn about the possibilities of reusing material
- experience self-efficacy in producing valuable instantly useable household items
- express their creativity through nature
- learn about the value of old traditional techniques for current challenges

4. Target group

6–14 year-old learners

5. Necessary materials

Used fabric (old table cloth, bed linen/cover, curtains, t-shirts etc.) from plant fibres (cotton, linen, hemp), in light colours, can be uni or patterned, cut in pieces of max. length of 2m., soy milk (mordant), large container, flowers, berries, roots (see below for suggestions), string, hot plate, large pot with steam strainer, iron.

6. Duration

1st session: preparation one day before activity (ca. 20min.)
2nd session: actual dyeing (ca. 180min.)
3rd session: unpacking and finalizing

7. Main Activities

Re-using clothing items or fabrics is a great way of saving resources. A great way to express love for nature at the same time is to take used fabric and try out botanical dyeing. Fabric dye often contains harmful chemicals, so this is a great opportunity to transform the used fabric by using natural dyes like roots, flowers and leaves, large tarp

1st session: The first step to prepare the fabric. This process is called mordanting. The mordanting process is crucial for many natural dyes. This pre-treatment makes it possible for the dyes to adhere to the fiber and form a long-lasting bond with it. A super natural substance to use as mordant is soy milk. Put the fabric into a container and cover it with soy milk. The fabric should soak in the soy milk 1 – 24 hours. The longer you leave it in, the easier it is with the dye to bond with the fabric. After mordanting, rinse the fabric out thoroughly.

2nd session: The next step is to choose plants that you will use for dying. Here are some species that work well:

a. Marigold → yellow, green
b. Coriopses → yellow, orange
c. Weld → lemon yellow
d. Dandelions → light yellow
e. Tansy* → bright yellow
f. Hollyhocks → various colours depending on the blossoms
g. Birch leaves → yellow, green
h. Onion skins → gold

2. Cut your fabric into the size you want to work with. The fabric should be damp but not super wet. Spread it on the tarp and place the parts of the plants that you use for dyeing on half of the fabric (devide down the middle or diagonally). You can place the plant parts in a chaotic way and leave the result to coincidence or you can place it in a strategic way, e.g. in the pattern of a mandala. When you covered the fabric fold it in half and roll it up. Then secure the roll with string, so it sticks together.
3. Place the fabric rolls onto a steam strainer into the large pot and put it on a hot top. The fabric should be steamed for an hour. Afterwards place the rolls on the tarp and let them sit for another 24 hours.

4. 3rd session: The next day, cut the strings and roll out the fabric. Beware that the plant parts will be falling out of the roll, so do that over a container. The used plant parts can go straight to the compost. Rinse out the fabric let it dry and iron it.

8. Final activities – drawing a conclusion

First take time to admire the beautiful work. Ask your learners what they want to use the fabric for. Reflect with your learners on the value of using natural dye vs. chemical one.

9. Reflection, review of the objectives

As the educator, you should reflect on the above objectives and how well your learners reached those. Based on the reflection questions, but also your observations of the project, consider mainly how well they understand the importance of reusing textiles and using nature for inspiration and as resource.

10. Inspiration

Comprehensive video tutorial on how to do botanical dyeing:
How to Bundle Dye for Eco Printing @WildcraftDyeing - YouTube

11. Explanation for children with disabilities

This activity can be accomplished with every kind of ability. If some learners need support, pair them with other learners and distribute tasks, so that everyone can contribute.

2.5 Wrapping for presents from cloth (Furoshiki)

Image by Freepik.com

1. Type of Activity

Crafting Activity

2. Topic

Circular City – Reuse

3. Learning objectives

The learners are able to:

- increase their awareness of sustainable packaging
- learn about the possibilities of reusing material
- learn how to reduce waste
- experience self-efficacy in producing valuable instantly useable household items
- learn about the value of old traditional techniques for current challenges

4. Target group

6–14 year-old learners

5. Necessary materials

Large pieces of pre-used fabric (could be old curtains, bed sheets, table cloth), pinking shears (one for each pair of learners), boxes or objects of all different shapes for testing

6. Duration

45min – 135min.

7. Main Activities

For young people presents play a huge role (may it be for their birthday or christmas or other occasions). Unfortunately presents often come with a unneccessary amount of wrapping paper, which is often only used once. How could we establish a more sustainable way of giving presents? Japan actually has a practice for that that has been tested for a long time and it's calld Furoshiki. It's not only a sustainable way of wrapping, but it is also beautiful and can be easily learned.

1. Generally it is advised to plan this activity shortly before present season like christmas, so that the learners can take these ideas home and inspire their family to transition to that sustainable practice.
2. The educator needs to prepare this activity by asking all learners ahead to bring large pieces of used fabric. All patterns and colours are welcome. Woven fabrics (like jersey) work better than knitted ones. Cotton is perfect, but other fabrics are fine, too. It is crucial though that no-one buys new fabric just for this activity.
3. If learners bring a lot of white or single-coloured fabric and you have more time, you can think about pigmenting the fabric before use (see Activity 2.4 Botanical Dyeing).
4. Next let learners cut square-shaped pieces from the fabric. They should at least be 45cm x 45 cm, which would work to wrap a small box or object. 55cm x 55cm works well for a shoe box and larger boxes require 80cm x 80cm or more.
5. Let learners think about what sizes they need and also what are good sizes to cut out of their large piece of fabric to not produce a lot of waste fabric. Once they have figured out the sizes, let them cut them out with pinking shears to prevent fraying out.

There you have the furoshiki square. It is that simple!

6. Every learner should go home with 3-4 furoshiki squares to be prepared for the next occasion.
7. Now let's practice the wrapping. The Japanese Ministery for the Environment provides a great instruction PDF (to be found in the inspiration box), but there is also plenty of instructions online for all kind of shapes (bottles, books, etc.). Practice with the empty boxes. Ideally everyone got a wrapped box that they can take home to show their family.

8. Final activities – drawing a conclusion

- First take time to admire the beautiful work. Ask your learners what they would like about receiving presents like that.
- Reflect with your learners on the value of Furoshiki for reducing waste.
- Additionally, think with your learners about how to share the idea, so that the people who get the present, know that it is made for reuse. Maybe write a little note with each present or even write an instruction on the Furoshiki?

9. Reflection, review of the objectives

As the educator, you should reflect on the above objectives and how well your learners reached those. Based on the reflection questions, but also your observations of the project, consider mainly how well they understand the importance of reducing waste in our everyday lives.

10. Inspiration

Instructions on the website of the Japan Ministery for the Environment:

https://www.env.go.jp/content/900451420.pdf

How to Bundle Dye for Eco Printing @WildcraftDyeing - YouTube

11. Explanation for children with disabilities

This activity can be accomplished with every kind of ability. If some learners need support, pair them with other learners and distribute tasks, so that everyone can contribute.

2.6 Denim Feather Decoration

1. Type of Activity

Crafting activity

2. Topic

Circular City – Reuse, Upcycling

3. Learning objectives

The learners are able to:

- increase their awareness of the importance of reuse
- learn about the possibilities of upcycling by reusing material
- learn how to produce decoration
- learn to appreciate handmade qualities vs. Industrial production

4. Target group

6 – 14-year-old learners

5. Necessary materials

the side seams of 1 old pair of jeans for 2 learners, fabric scissors, chalk or pen, thread and needle in blue or contrast colour, optional beads and ribbons

6. Duration

45 min.

7. Main Activities

Any type of textile crafting is ideal for testing the principle of reuse. What has served well as a table cloth, curtain, shirt or pair of pants can easily receive a second life. A damaged clothing item that does not function anymore or a piece of decorative fabric that fell out of fashion can have a surprising comeback, when transformed. Jeans are an excellent resource for a lot of upcycling activities as the fabric is made to last by design. Cotton denim has been invented to endure as a uniform for agricultural farmers. Still they are often tossed away, when they have a little hole. Instead of considering it to be a malfunction, we can repair it and finally, if this is not an option can appreciate the denim as a resource for something new. Denim fabric is perfect for anything that should last long like patches for other pants, (laptop) bags, baskets, wallets, and even upholstery, but a lot of those activities require at least basic sewing skills. Making feather decoration is an easy activity, that can be accomplished quickly and even makes use of the seams of an old pair of jeans.

1. Ask your learners well ahead of this lesson to look out for an old pair of jeans and bring them. The more variety there is in the classroom regarding colours and textures, the better! In the end, it will be totally sufficient if there is one pair per two learners. If your learners have a pair that they would like to keep using as shorts this is perfect and just the right reuse-mindset. Then it is perfectly fine to only work with the trouser legs from the knee down. Every learner should start the lesson with one trouser leg of at least 20 cm.

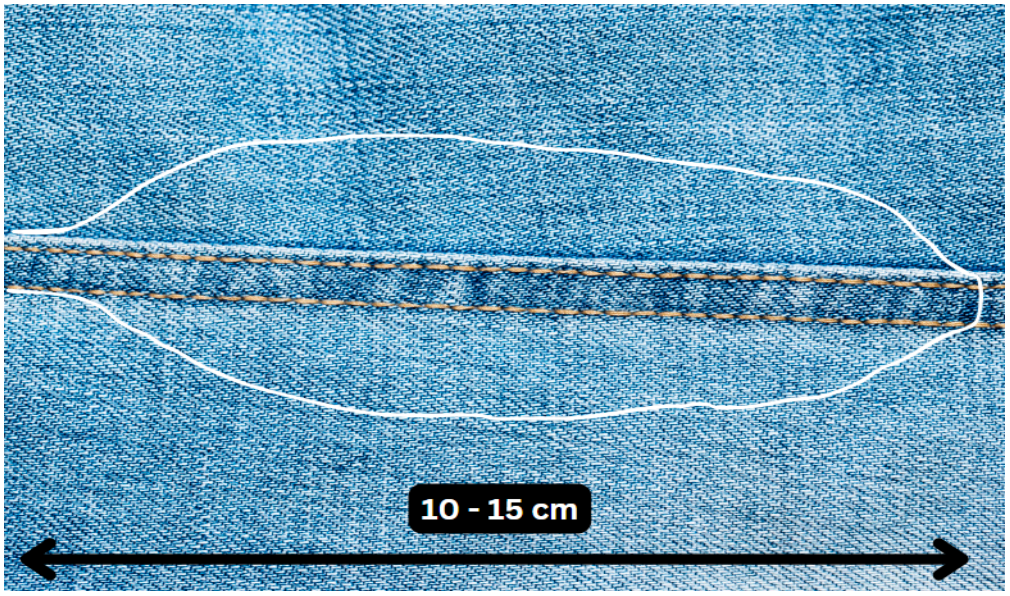


Image by Racool_studio on Freepik

2. First thing is to look for the double seam that is typical for the construction of a pair of jeans. Ask your learners to think ahead how much feathers they want to produce and let them sketch the outline with chalk or a pen. Then cut them out.
3. With the feather-shaped pieces of denim, start fraying out the sides by pulling out the threads going parallel to the seams, so you only have the threads left that are secured by the double seam. A needle can help to get in between the single threads.
4. learners can then hand sow ribbons to the feathers to hang them up. They can use them as key pendants or put a lot of them together in a garland or a wallhanging.

8. Final activities – drawing a conclusion

First give time to the learners to admire each other's beautiful work. Point out how different all the feathers are and that this is due to the varied denim material they got to work with. Ask them if they can think of other ways of reusing old fabric that would otherwise land in the dump.

9. Reflection, review of the objectives

As the educator, you should reflect on the above objectives and how well your learners reached those. Based on the reflection questions, but also your observations of the project, consider mainly how well they understand the importance of reusing material instead of disposing of it.

10. Inspiration

In the DIY-Blog Instructables you can find further instructions on this including a jeans jacket and earrings with those kind of feathers.

11. Explanation for children with disabilities:

This activity can be accomplished with every kind of ability. If some learners need support, pair them with other learners and distribute tasks, so that everyone can contribute.

2.7 Rain Boot Garden

Picture by Ptra on Pixabay

1. Type of Activity

Crafting / gardening activity

2. Topic

Circular City – Reuse, Upcycling

3. Learning objectives

The learners are able to:

- increase their awareness of the importance of reuse
- learn about the possibilities of upcycling by reusing material
- learn how to plant

4. Target group

6–14 year-old learners

5. Necessary materials

old rubber boots (one per learner or one per two learners), drill or screwdriver, clay pellets, potting soil, plants (one for each boot)

6. Duration

45 min.

7. Main Activities

Rain boots are essential to keeping kids' feet dry. As they are sturdy and robust, they can endure the adventures of more than one kid and should be passed onto the next kid. If they start to leak though, it is time for a new mission in a rain boot's life. In this activity we will show you a simple upcycling activity that can be done in one single lesson and can make your school or classroom a much friendlier place in an instant.

1. You should plan this activity well ahead by announcing that the classroom families should collect single or leaky rain boots. It is important not to use functioning rain boots as they can still serve well as rain protection.
2. The first step is to drill holes into the sole of the boots. Depending on the abilities, this can be done with pushing through a screwdriver or a hand drill, but also an electric drill to allow for drainage.
3. For even more drainage you can put in a handful of clay pellets into each boot.
4. Fill the boot up with soil and stop a few centimeters below the edge. Form a whole in the middle and insert the plant. Press the plant gently down.
5. Water the plant.

8. Final activities – drawing a conclusion

First give time to the learners to admire the rain boot garden. Ask them what they like best about it, and if not done by the learners, point out that the boots were destined to be thrown away and now make something that can't be bought in their variety of shapes and colours. Point out that it also reflects the diversity of the school community. Ask them if they can think of other things that could be reused in the school garden as planters.

9. Reflection, review of the objectives

As the educator, you should reflect on the above objectives and how well your learners reached those. Based on the reflection questions, but also your observations of the project, consider mainly how well they understand the importance of reusing material instead of disposing of it.

10. Inspiration

Garden planters and raised beds of any shape or size are a great occasion for reuse. May it be tin cans, car tires, bottles or baking tins. Get your inspiration from what might not be needed anymore on the school premises and get creative from there.

11. Explanation for children with disabilities

This activity can be accomplished with every kind of ability. If some learners need support, pair them with other learners and distribute tasks, so that everyone can contribute.

2.8 Playground from Reuse Material

1. **Type of Activity**
   Landscape design activity for the schoolyard/neighbourhood – project

2. **Topic**

   Circular City – Reuse

3. **Learning objectives**

   The learners are able to
   - Inquire their own needs and demands in regard to play structures
   - increase their awareness of the importance of reuse
   - learn about the possibilities of upcycling by reusing material
   - learn how to create a play structure

4. **Target group**

   6–14 year-old learners

5. **Necessary materials**
   depending on the execution, see explanation below

6. **Duration**

   Half a school year-old learners – yes! It is a big project ☺. A Smaller project could be done in a project week.

7. **Main Activities**

   With all the requirements of curricula and educational standards it is easy to forget that children should have enough time to play. The importance of play for our cognitive development, our social skills and our wellbeing can't be underestimated and while being a learning place, schools should also be spaces for play. There are great resources (see inspiration) by the non-profit organisation Playground Ideas that can lead you through the process of building a place to play from reuse material. You will find the main steps in the description below, but please check out the detailed descriptions in PLAYGROUND IDEAS' handbooks.
   Of course, this is a big project and depends greatly on what regulations allow you to do. But even with smaller ambitions, you can create a wonderful experience with the learners. It does not need to be a huge climbing frame. In the mentioned resources there are also small projects that can be implemented more easily.
   In the manual that can be downloaded for free on PLAYGROUND IDEAS' website (see Inspiration box), you find plenty of step-by-step explanations about how to start the process, among other things about the following:
   1. Involvement of the school community: While it is very common to have a playground on the school premises, it is rather uncommon to involve the school community in the design or construction of the structure. Remember that you have in-house experts on the

matter of play, so let the learners imagine how they would like to play. One of the valuable tips that are mentioned in PLAYGROUND IDEAS' manual is to not ask children to draw what they imagine the playground to look like. You would probably end up with a lot of drawings of swings and slides. A better way is to actually find out how they like to play. One method to do that would be to give them a map of the school premises and ask them to mark all the places they like to play and label why they like them. Ask them what's special about these places and what they like to play there. Maybe even let them demonstrate what the play looks like. You get a collection of their playing habits and can build with the design on that.

2. Now you could actually have the children visualise their playground ideas but encourage them to let their imagination run loose. Don't go with what you already know and get inspired by the previous collection of ideas.
3. Reuse material: As the school should be a model for their learners in regard to circularity, we would like to encourage you to think about what reuse material is available to your school community. According to PLAYGROUND IDEAS, it can be tires (car, truck, tractor, motorbike), timber (planks, trunks, strong branches), steel, barrels (clean of course), paint, cement, stones, boulders, small pebbles, bricks, corrugated iron, soil, sand, plants, trees, flowers, tiles, thatch, chain, rope, earthbags, pallets etc.
4. Get inspired by what's available to you (see also Activity 1.4). You get a donation of old car parts? You get plenty of pipes? The material will lead your way. Here, you will also need advice and help from local builders. What and how can elements be assembled?
5. For sourcing additional materials set up a list and distribute it to the school community.
6. Skilled labour: As for the skills you need, it is good to involve skilled labor like Carpenters, Welders, Masons, or Artists, but you will also need people to wash tires, dig holes, paint timber, etc., so there are tasks for everyone. You will find more things to consider in PLAYGROUND IDEAS' manual.
7. Actual design: PLAYGROUND IDEAS delivers resources like a design library with successful structures, but also a safety handbook, an inclusive design manual, a loose parts manual, and a drag & drop designer tool. Even cut & paste playground ideas, where you can benefit from former best practices.
8. Build and maintain the playground: The manual gives detailed instructions on how to work with the most common reuse materials. It also gives you tips on how to manage maintenance with a checklist for regular controls and suggestions for playground rules.

9. Final activities – drawing a conclusion

The opening of the playground should be a party for the whole school community and, of course, for all the helpers and experts who were part of the project. Let the learners who were involved in the design make a tour around the playground explaining the features.

10. Reflection, review of the objectives

As the educator, you should reflect on the above objectives and how well your learners reached those. Based on the impact and your observations of the project, consider mainly how well the concept of reuse was accepted and adopted and how well learners felt part of the placemaking activity.

11. Inspiration

You can download PLAYGROUND IDEAS' manuals on playground design for free from their website upon registration: www.playgroundideas.org

On their youtube channel you can find plenty of video tutorials for single playground elements: How To Make: DIY... - YouTube

A youtube video explaining why play is crucial for children's development:

Brains at play by NPR: https://www.youtube.com/watch?v=4Z_hMYGAQ6k

2.9 Inclusive Playground from Reuse Material

When building playgrounds with different abilities in mind, they create equality, but also gain in quality. For children with disabilities, an inclusive play space is crucial to participate in play and social interaction. Inclusive design, in this sense, should consider what the children's strengths are. This way your concept has the potential to bring together children despite their different abilities instead of solely catering to different needs. In their Inclusive Design Manual PLAYGROUND IDEAS makes a plead for creating "intersections" – thinking about the strength of children with disabilities and generate ideas that will bring benefit to all (e.g. sensual play for children with visual impairment, but also for all children). After all, abilities in the ages 6 – 14 are so different that a variety of play opportunities serve everyone. A great source for ideas for inclusive play is the parents with children with disabilities. They have year-old learners of experience in finding just the right level of comfort and challenge and could be great expert advisors when spinning ideas. This also applies to neurodivergent children, who can be quickly overwhelmed by the chaotic appearance of a playground. The intersectional approach also proves successful here: a relaxing space that radiates calmness can also serve other kids (e.g. chill area for teenagers).

Inspiration

You can download PLAYGROUND IDEAS' manual on inclusive playground design for free from their website upon registration: www.playgroundideas.org
Example of a playful urban space that is particularly designed to serve neurodivergent children and adults: Restorative Ground is an all-ages playground for neurodiversity (fastcompany.com)

2.10 Intercultural Playground from Reuse Material

If there are a lot of learners with migrant backgrounds in your classroom, this provides excellent resources for taking another angle at the playground. In the inquiry phase, this could be a special focus. What are typical games that are played in the countries of origin? What are narratives in fairy tales, common fantasy creatures, and visuals (e.g., patterns) that could be

incorporated into the design of the playground? How could different languages be represented on the playground?

2.11 Learners' Space from Reuse Material

For older learners (12 – 14 year-old learners) playing as such does not play such an important role, but still there are a lot of needs for movement, relaxing, studying, eating, conversation with friends etc. Instead of creating a playground, older learners could create a "learners' place" that fulfils all of their needs with reuse material.

2.12 Recycling Station

1. Type of Activity

Classroom / School project, placemaking activity

2. Topic

Circular City – Recycle

3. Learning objectives

The learners are able to

- increase their awareness of the importance of doing recycling right.
- learn about the recycling rules.
- educate their peers about the importance and the how-to of recycling.
- develop self-efficacy in climate action.

4. Target group

6–14 year-old learners

5. Necessary materials

trash items (bottles, cans, packaging, carton, paper, also organic waste like bag of potato skin etc.), extra trash bins, optional crafting material.

6. Duration

2 lessons à 45-90 min.

7. Main Activities

Recycling is a great topic as it translates in everyday actions that can be constantly trained by young people. Additionally, any expertise the learners develop will be carried into the families and increase their sensibility on that topic.

This activity helps learners to consolidate their knowledge on recycling with an action-oriented task. It also encourages peer-learning as the learners think about how they can support their peers with their recycling.

1. The first step is to activate learners and to find out what they already know about recycling and why it is important. A great way to activate the learners and start the discussion is a game like the Recycling Race. You divide the classroom into two groups. Every learner gets a trash item and they gather at one end of the classroom. At the other end, you set up trash bins (paper, recycling bin, compost, landfill). Mark all items from one group with tape in one colour and for the other team in another colour. Then the race starts, and one participant per group runs to the bins, puts the item in one of the bins, runs back, and the next one starts. When all items are in the bins, you look into the bins and sort out the items that landed in the wrong bin. Discuss with everyone, why this item should go into another bin. The learners will deduce the rules themselves. As the educator, you should give them hints, correct them if necessary, and bring structure into their findings.
2. The next step is to ask learners to think about where in the school this is implemented and where additional infrastructure is needed. You could do that by examining the school building and writing a list with necessary measures for the whole school building (e.g. additional trash bins, recycling team in every classroom that is responsible for emptying the classroom bins).
3. The third step is to think about how to support the whole school community in following the recycling rules. Think with the learners about what their peers need to know to apply the rules and what could motivate them to follow recycling rules.
   Solutions to this could be:
   - Developing a poster with the recycling rules, that goes with every set of trash bins.
   - Putting signposts up or footprints on the floor, that lead you to the bins.
   - Developing characters for every bin (paper, recycling, landfill) and decorate them accordingly (see inspiration)
4. Set up teams for implementing the ideas developed in 3.
5. A great way to celebrate the new recycling infrastructure is to prepare a little tour for the other classes with a demonstration of how to recycle and maybe even a Recycling Race for the other classes.

8. Final activities – drawing a conclusion

Reflect with the learners on what you have achieved and what still needs improvement. What are other challenges to doing recycling right and how could those be tackled?

9. Reflection, review of the objectives

As the educator, you should reflect on the above objectives and how well your learners reached those. Based on the reflection questions, but also your observations of the project, consider mainly how well they understand the importance of recycling and the degree of taking agency on it.

10. Inspiration

When the city of Edinburgh in Scotland decided to raise awareness on the importance of recycling, they asked school pupils to design posters:

Pupil poster designs to help boost school recycling rates across capital – The NEN – North Edinburgh News

Sorting guides made from collages or with actual objects help to make the rules of recycling more tangible, for example here: Sorting Guide - Sort at Home (recyclesmart.org)

This school in New Zealand initiated a competition between classrooms to design trash bins for recycling and the results are imaginative, fun and informative:

Recycling bin revamp at Bohally - Enviroschools Marlborough

2.13 Recycling Station for Groups with Learners with Impaired Mobility

For children with impaired mobility the Recycling Race should be done differently. The activity can be easily done without the race with a focus on sorting. For step 3 of the main activities, think particularly about how to design the recycling station so that children with mobility challenges have the same opportunities to use it.

2.14 Recycling Station for Groups with Learners with Impaired Mobility

If there are children with visual impairment the Recycling Race could be substituted with a sensual activity. Actually this can also help the other learners to examine the material and the object well. The task could be to sense what kind of object it is and how it should be sorted. For step 3 of the main activities, think particularly about how the recycling station could be designed for children with visual impairment.

2.15 Multi-Lingual Recycling Station

For children who are not native speakers or who cannot (yet) read well, it is important to prepare the rules (step 3) in such a way that they can understand them. One possibility is to work with pictures (photos, illustrations from advertising brochures, etc.) that show which packaging/which waste belongs in which bin. Here, learners can also consider where

misunderstandings can easily arise (e.g. soiled or coated paper in the paper bin) and depict this exclusion graphically. Multilingual explanations are an additional option.

2.16 Collection Spot for Hazardous Waste

1. Type of Activity

Classroom / School project, placemaking activity

2. Topic

Circular City – Recycle

3. Learning objectives

The learners are able to

- increase their awareness of the importance of doing recycling right.
- learn about the recycling rules and harm of disposing hazardeous waste in the recycling system.
- educate their peers about the importance and the how-to of recycling.
- develop self-efficacy in climate action.

4. Target group

6–14 year-old learners

5. Necessary materials

electronics, cans with paint etc.), extra trash bins, optional crafting material

6. Duration

45-90 min.

7. Main Activities

Building on the Recycling Station activity, this activity can deepen the learners' knowledge on correct waste disposal. Learners might have gathered that there are a few items that don't fit into the categories of paper, compost, recycle and landfill. A few items need proper handling as they turn into hazardous waste, once they are disposed in one of the other bins. For families it is often stressful to do the extra errands to dispose of batteries, electronics, varnishes etc. Why not collect them at school and set an example for correct disposal? Apart from pollutants there might even be objects that are collected by some entity in your community for a different purpose, e.g. crafting supplies for schools in the global south. You could also make this part of your mission.

1. Similar to the previous activity, it is a great idea to start the activity with a game (Recycling Race) to see what learners already know about the specifics of recycling hazardous waste. This time including batteries, CDs, electronics and cans with paint etc.

to make it more challenging. After discussing the results of the game, you should have different groups of waste that need special treatment.

2. Distribute the class in groups. One group per problematic item and give them the task to research online where to dispose of them properly in your community. Get the janitor or school administration on board to organise whose responsibility it would be to empty the bins.
3. Discuss with the group which of those items could be collected at school without particular risk and think about how to collect them.
4. Let the learners develop communication strategies of how to inform the school community about the collection spot and how to communicate rules and interesting facts about hazardous waste.

8. Final activities – drawing a conclusion

Reflect with the learners on what you have achieved and what still needs improvement. What are other challenges to doing recycling right and how could those be tackled?

9. Reflection, review of the objectives

As the educator, you should reflect on the above objectives and how well your learners reached those. Based on the reflection questions, but also your observations of the project, consider mainly how well they understand the importance of recycling and the degree of taking agency on it.

10. Inspiration

The German-wide initiative E-Waste Race made students experts for electronic waste. They collected e-waste in the neighbourhood and disposed of it correctly. 339 schools raced for the top spot as e-waste-disposers with 370 tons of saved carbon emissions: https://www.das-macht-schule.net/e-waste-race/ergebnisse/

11. Explanation for children with disabilities:

See activities 2.12 and 2.13 for variations of the activity for children with disabilities.

2.17 Audit your Trash

1. Type of Activity

Classroom project, learner-based inquiry

2. Topic

Circular City – Reduce, Reuse, Recycle

3. Learning objectives

The learners are able to …

- analyse their own behaviour around waste.
- increase their awareness of the importance of reducing waste.
- learn about the amount of waste that is produced individually.
- develop self-efficacy in climate action.

4. Target group

10–14 year-old learners

5. Necessary materials

classroom landfill (and recycle bin) collected over 2-3 days, big tarp or plastic table cloth, 1 poster for preparing chart with results, sharpies in various colours.

6. Duration

2 units à 45min.

7. Main Activities

The recycling rate in the EU has been stagnating just under 50% in recent year-old learners, meaning that half of our trash is not entering the recycling system and therefore lost for any kind of reuse or recycling. This is partly due to products not being eligible for recycling, but also due to our inability to sort trash correctly. The problem starts with our very own trash bins and can also (partly) be solved there. How about we have a closer look at what ends up in the landfill bin in the classroom.

INTRODUCTION

Tell your own story or ask children about why they think it is important that waste is reduced. This could be the experience of ocean plastic or polluted beaches or maybe a park in your very neighbourhood that has a lot of trash lying around.
If you have a trash sorting mechanism in your classroom weigh all bins seperately. If you only collect landfill, weigh the landfill and write down the result on the chart.

AUDIT

Next, spread all trash on the tarp. Ask learners to sort the trash into categories of LANDFILL, RECYCLING, REUSE and COMPOST. While sorting, discuss the items. What makes an item recyleble? What can be produced from recycled material? What could actually be reused? Look at plastic bags, rubber bands etc. What can go into the compost? Also discuss what can actually be done with compost and why it is valuable (e.g. animal feed, soil production, energy production).
Now weigh your new piles of LANDFILL, RECYCLING, REUSE and COMPOST and write down the results in the chart. The decrease in LANDFILL will be surprising and could motivate the learners to further engage in waste recuction activities (see other activities in this module).

8. Final activities – drawing a conclusion

Reflect with the learners on what you have achieved and what could be done to transform waste behaviour not only in the classroom, but in the family or the school community.

9. Reflection, review of the objectives

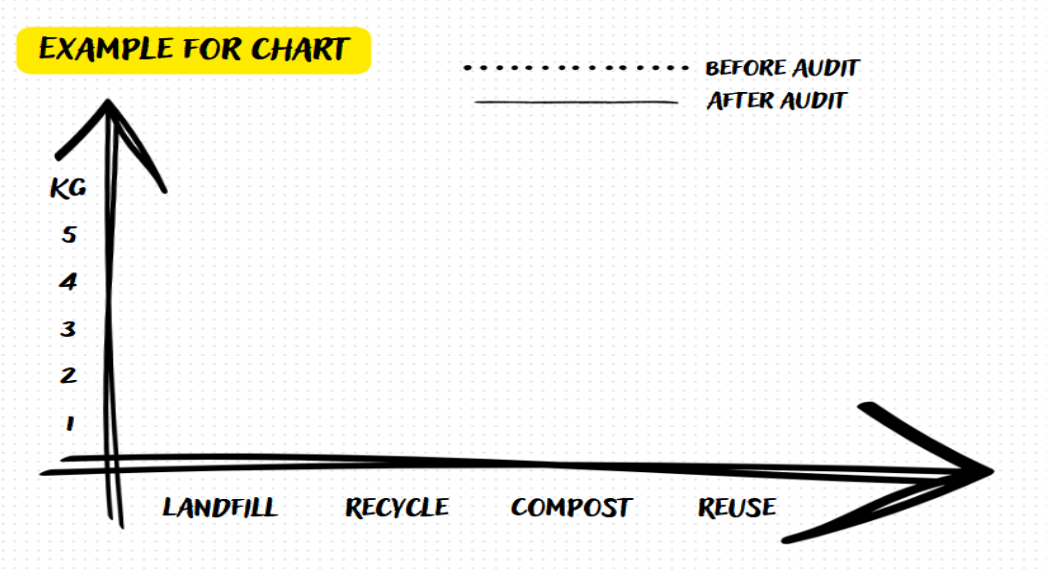
As the educator, you should reflect on the above objectives and how well your learners reached those. Based on the reflection questions, but also your observations of the project, consider mainly how well they understand the importance of reducing waste.

10. Inspiration

This activity is inspired by the US-initiative „Pioneering the simple life" by Liesl Clark and Rebecca Rockefeller. On their website they also share an inspiring video on a waste audit in a primary school class: https://pioneeringthesimplelife.org/tag/school-waste/

11. Explanation for children with disabilities:

This activity can be accomplished with every kind of ability. If some learners need support, pair them with other learners and distribute tasks, so that everyone can contribute.



2.18 Display your Trash

Rob Greenfield wearing his trash in a plastic suit in New York City in 2016 during the Trash Me awareness campaign

Picture Credit: JJRam86

1. Type of Activity

Classroom project / peer-learning project

2. Topic

Circular City – Reduce

3. Learning objectives

The learners are able to:

- increase their awareness of the importance of reducing waste.
- learn about the amount of waste that is produced individually.
- educate their peers about the importance reducing waste.
- develop self-efficacy in climate action.
- develop self-efficacy in climate action.

4. Target group

10 – 14 year-old learners

5. Necessary materials

depending on the execution

6. Duration

2 units à 45min.

7. Main Activities

In 2016 and again in 2022 the environmental activist Rob Greenfield decided to carry around the trash he produced in the previous 30 days. Thereby he put a visual to the average consumer lifestyle that most of us live. While our trash usually stays almost invisible, it sums up to 4,8 tons per person per year-old learners on an EU-average. By displaying this in public Rob Greenfield started a conversation about the necessity of changing consumer behaviour. This activity encourages learners to reflect on the amount of trash, that is produced every day and rethink strategies to avoid trash.

This classroom activity aims for the learners to illustrate the amounts of trash we produce in general. While Rob Greenfield does not do things by half, you as an educator are free to downscale his experience for your learners. Watch the youtube-video with your class (on youtube you can generate automatic subtitles) and start a discussion with the following questions:

- What surprises you when seeing Rob Greenfield?
- How do you think your trash collection would look after a month? Bigger or smaller?
- How could we visualise the trash we produce?

Think with your learners about a way of public displaying the trash of one family / one classroom / one person, that is produced and how it could make an impact on the school community. Think of it as a live infographic that could inform the school community. Take Rob Greenfield as an inspiration who chose the drastic strategy to carry it around.

You could also focus on different aspects, e.g.

- What share of the waste has been produced from recycled material (info on the packaging)?
- How much of the waste can be / can't be recycled?

Think about ways how to visualize this vividly for the school community.

8. Final activities – drawing a conclusion

Reflect with the learners on what you have achieved and what still needs improvement. If you can collect some reactions from the school community to the display and discuss them with the class.

9. Reflection, review of the objectives

As the educator, you should reflect on the above objectives and how well your learners reached those. Based on the reflection questions, but also your observations of the project,

consider mainly how well they understand the importance of reducing waste and their effort to inform the school community about it.

10. Inspiration

On his website Rob Greenfield gives insight on his activism, e.g. his 30 days of wearing trash: https://www.robingreenfield.org/activism/
This youtube video can serve as an entrypoint to the discussion on waste:
30 Days of Wearing My Trash in Los Angeles - YouTube

11. Explanation for children with disabilities

This activity can be accomplished with every kind of ability. If some learners need support, pair them with other learners and distribute tasks, so that everyone can contribute.

2.19 Repair Café

1. Type of Activity

Excursion or in-school-project

2. Topic

Circular City – Reuse

3. Learning objectives

The learners are able to …

- increase their awareness of the importance of repair.
- learn about the possibilities of repairing household items.
- experience self-efficacy in repairing.
- appreciate objects longer.

4. Target group

6 – 14 year-old learners

5. Necessary materials

depending on the implementation

6. Duration

120 min.

7. Main Activities

Repair is one of the pillars of a circular city. For young people today though it is a cultural technique that can hardly be experienced. It is common to dispose of goods that are not

functioning anymore and buy them new. In the long run, this also means that valuable repair know-how and skills get lost. To teach young people a more sustainable behaviour, we need to normalize repair and establish it as a strong strategy for the circular city.

To institutionalize a repair café at your school, some efforts are necessary. For the actual repair activities, you should involve community members as volunteer experts. Actually, it is a great idea to benefit from the diversity of your community, like older community members or people who grew up in another country and might be familiar with different repair know-how.

Some points should be considered:

1. Prepare a lesson that gives the learners context to the activity. Anchor it in your learners' reality by asking questions like: What is the last thing your family threw out because it was broken? Where did it go and what do you think happened with it? When did you last repair something in your family? Do you know other people who repair things? And then start a discussion on the benefits of repair and add that it is one principle of the circular city that they can be an active part of.
2. Send the learners home with the mission to find broken goods and let them make a list. What are the broken objects? What needs to be fixed?
   This could be toys (electronic or otherwise), pottery, jewelry, clothes, electronics, household items like picture frames or small furniture, and tools.
3. Based on the list discuss with your group of volunteer experts (cooperating or from your community) what can be fixed and what equipment is needed and can be provided by your volunteers.
4. If you are setting up the repair café at your school, you need some extra organisation, e.g. making sure public liability insurance is in place or checking the technical setup. You should also get a declaration of consent signed by the learners' parents explaining the concept and setting up rules for the kids.
5. For the volunteer experts and you as a coordinator, it is helpful to think about tasks that are part of the repair procedure that can be done by the learners themselves under supervision, like applying a measurement device or easy sewing tasks. It is also helpful to have an extra crafting station if the repair stations are too crowded or if kids do not bring a broken object.
6. Take time at the end of the repair café to thank the volunteer experts and celebrate your achievements. Maybe take a photo with everyone and all of your repaired belongings.

8. Final activities – drawing a conclusion

Reflect with the learners on what you have achieved and what still needs improvement. If you can collect some reactions from the school community to the display and discuss them with the class.

9. Reflection, review of the objectives

As the educator, you should reflect on the above objectives and how well your learners reached those. Based on the reflection questions, but also your observations of the project,

consider mainly how well they understand the importance of reducing waste and their effort to inform the school community about it.

10. Inspiration

On his website Rob Greenfield gives insight on his activism, e.g. his 30 days of wearing trash: https://www.robingreenfield.org/activism/
This youtube video can serve as an entrypoint to the discussion on waste:
30 Days of Wearing My Trash in Los Angeles - YouTube

11. Explanation for children with disabilities

This activity can be accomplished with every kind of ability. If some learners need support, pair them with other learners and distribute tasks, so that everyone can contribute.

2.20 Repair Café Visit

This activity can take very different forms according to your local context. If it is not feasible to implement it at your school, there are different alternatives that still will have your learners experience the benefits of repairing. If you have a repair café in your community the best would be to go there for an excursion. Discuss in advance, if you should bring items for repair, so that learners get an actual result from the repair effort. If this is not the case you could cooperate with a technical VET-school or a technical University and see, if you could visit their workshop with your class and do a repair session with the learners and educators on that institution.