Waste Management in Education – FET (Grades 10 - 12)

Written by:
Liezel Blom
Edited by:
Deirdre Hilton
Technical support by:
Dreyer Lötter
Angela Swanepoel
Mariska van Tonder

Printed by:
XXX

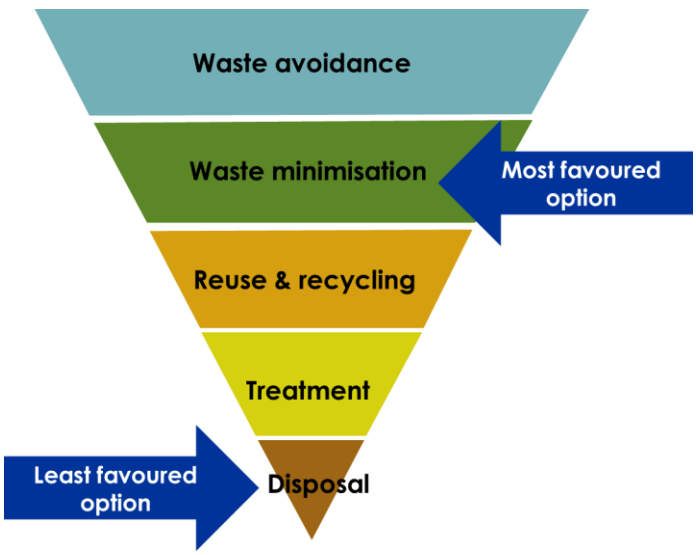
Department of Environmental Affairs and Development Planning
E-mail: Evodia.Boonzaier@pgwc.gov.za
Website: www.westerncape.gov.za/eadp

ISBN: 978-0-620-54523-5

Western Cape Government

Life Orientation Project

Index



Western Cape Government

Life Orientation Project

This module will provide Grade 10 -11 learners to work on their projects during the second Term to be handed in during the third Term. The project will cover work done under the topic **Social and environmental responsibility.**

The project will be a piece of work in which knowledge, skills and values which lead towards competence in the specific or integrated content, are demonstrated. The project requires extended reading and writing on the part of the learner. The project will involve thorough investigation into and sourcing information on a selected topic in the curriculum. This could take the form of a interview, observation and making suggestions to improve upon the topic.
The objective for the project should be clear and thorough planning should take place, e.g. preparing the questions for an interview. This is followed by the research, and finally the data/information has to be collated into evidence.
The evidence will be in the form of an essay with sub-headings relating to the criteria of the task.

Although learners will spend time outside of contact time to collect resources and information, the completion of the task has to be facilitated by the teacher in class time. The topic and nature of the project will be determined by the content covered according to the annual teaching plan. Learners should be given a project before the end of the second term, after the content related to the project has been addressed, for submission during the third term.
Learners will need adequate guidance at the outset of the project and progress should be monitored throughout. All assessment criteria applicable to the project has to be discussed with the learners prior to the commencement of the project.

Project topic in broad (Each Grade will be given a more specific topic)
- Community project to address a social or environmental issue
- Research and apply decision-making skills to challenging situations set in different contexts: a plan of action or advice for long-term success should be provided.

When preparing a project, consider these minimum requirements:
- A cover page
- A table of contents
- Text divided into paragraphs/sections as indicated in the instructions/criteria for project
- Pictures, photos, diagrams and graphs may be included
- Include a bibliography
- The project should be bound or stapled

Project Introduction

1. Project introduction

The first lesson will be used to introduce the project to the learners, which they need to hand in during the third Term.

Grade 10

Start by giving learners their topic:

- Community project to address social and environmental justice with the focus on **Waste Management**

Provide learners with dates

- You will work on this project during the 2nd Term in class and at home.
- You will submit the project during the 3rd Term. Give learners a set date.
- For homework learners should draw up a plan with dates to pace themselves doing this project.

Tell the learners that they will get marks for project layout and content.

Project layout criteria	1	2	3	4	5	6	7
Cover page							
Table of contents							
Text divided into paragraphs/sections as indicated in the instructions/criteria for project							
Pictures, photographs, diagrams and graphs							
Bibliography							
Bound or stapled							

Total: 42 ÷ 2 = (21)

Content to be covered	1	2	3	4	5	6	7
Environmental justice							
Serving the community							
Working as a volunteer							
Reduce and re-using cans, glass, paper and plastic.							
Recycle cans, glass, paper and plastic							
Recycling knowledge and community support							
How to take action as a volunteer							
Taking action in the community							
Recycling loop							
Draw a map							
Linking content							

Project Introduction

1. Project introduction

The first lesson will be used to introduce the topic to the learners, which they need to hand in during the third Term.

Grade 11

Start by giving learners their topic:

- Community project to address social and environmental justice with the focus on **Waste Management**

Provide learners with dates

- You will work on this project during the 2nd Term in class and at home.
- You will submit the project during the 3rd Term. Give learners a set date.
- For homework learners should draw up a plan with dates to pace themselves doing this project.

Tell the learners that they will get marks for project layout and content.

Content to be covered	1	2	3	4	5	6	7
Cover page							
Table of contents							
Text divided into paragraphs/sections as indicated in the instructions/criteria for project							
Pictures, photographs, diagrams and graphs							
Bibliography							
Bound or stapled							

Total: 42 ÷ 2 = (21)

Content	1	2	3	4	5	6	7
Environmental hazards and the lost of space							
Attitudes towards waste							
Serving the community on environmental issues							
Reduce and re-using cans, glass, paper and plastic.							
Recycle cans, glass, paper and plastic							
Recycling knowledge and attitudes							
Changing attitudes							
Taking action in the community							
Recycling loop							
Draw a map							
Linking content							

Project Introduction

1. Project introduction

The first lesson will be used to introduce the topic to the learners, which they need to hand in during the third Term.

Grade 12

Start by giving learners their topic:

- Community project to address social and environmental justice with the focus on **Waste Management**

Provide learners with dates

- You will work on this project during the 2nd Term in class and at home.
- You will submit the project during the 3rd Term. Give learners a set date.
- For homework learners should draw up a plan with dates to pace themselves doing this project.

Tell the learners that they will get marks for project layout and content.

Project layout criteria	1	2	3	4	5	6	7
Cover page							
Table of contents							
Text divided into paragraphs/sections as indicated in the instructions/criteria for project							
Pictures, photographs, diagrams and graphs							
Bibliography							
Bound or stapled							

Total: 42 ÷ 2 = (21)

Content to be covered	1	2	3	4	5	6	7
Act on Environmental Justice							
Personnel mission statement on waste							
National Waste Management Strategy							
Reduce and re-using cans, glass, paper and plastic.							
Recycle cans, glass, paper and plastic							
How to change life styles							
Taking action in the community							
Recycling loop							
Draw a map							
Linking content							

CAPS LINK

Waste Management in Education linking to CAPS

Grade 10	Grade 11	Grade 12
Social and environmental responsibility [4 hours]	**Social and environmental responsibility [3 hours]**	**Development of self in the socieity [1 hour]**
Contemporary social issues that impact negatively on local and global communities: • Concepts: social and environmental justice • Social issues: crime, poverty, food security, food production, violence, HIV and AIDS, safety, security, unequal access to basic resources, lack of basic services (water and health services) • Harmful effects of these issues on personal and community health • Social, constructive and critical thinking skills necessary to participate in civic life: **Social responsibilities including the knowledge and skills to make informed decisions and take appropriate action** • Youth service development: youth and civic organisations, community services or projects and volunteerism • Purpose and contribution, areas of strength and possible improvements • Own contribution to these services, projects and organisations: a group project to address a contemporary social issue that impacts negatively on local and/or global communities	**Environmental issues that cause ill-health:** • The use of harmful substances in food production • Inhumane farming methods • Impact of degradation on society and the environment: environmental hazards such as soil erosion, pollution, radiation, floods, fires, damage caused by wind and loss of open space or lack of infrastructure • Impact of depletion of resources such as fishing stocks, firewood and land • Dealing with environmental factors that cause ill-health on a personal level: attitudes, safety and first aid skills and coping with disasters **Climate change: causes, impact on development, mitigation and adaptation** **Participation in a community service that**	**Community responsibility to provide environments and services that promote safe and healthy living:** • Responsibilities of various levels of government: laws, regulations, rules and community services • Educational and intervention programmes; impact studies **Formulating a personal mission statement for life based on:** • Personal views, values, belief system, religion, ideologies, lifestyle (physical and emotional well-being), environmental responsibility, goals for studies and career choices **Impact of vision on:** • Actions/behaviour in life • Immediate community and society at large

Environmental Justice

This module comprises of 5 activities for each Grade, Grades10 - 12. This module will show learners the relationship between waste and ways on how they can make a difference and change in the field of environmental justice. In the module facts will be given and literature used to support the information given.

Remind the learners that they are going to use all this information to do their required project in the 3rd Term.

Activity 1 a

2. The problem

- Ask the learners to read the reading and look at the map. Give them the following questions to answer orally.
- Give the learners the learner activity to complete.

Grades 10 - 12

After you read the above keep the information in mind and answer the following questions:
Problem

- Why do you think most areas are separated by income?

  Why is pollution bad?
- Who/what is creating the waste?
- Why is waste dumped in one area rather than other areas?
- Why do you think waste can harmful to humans?
- Do you think it is fair that people live next to waste dumps?
- How do you think we can fix it?

Activity 1

Read and discuss the reading below.

Grades 10 - 12

Environmental Justice ... What does this mean?

"Environmental Justice" is the fair treatment and meaningful involvement of all people regardless of race, colour, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies.

Let us look at what each mean. The *environment* refers to everything around you. It is your home, your, school, and where you play. And if you have a job, it's also refers to where you work. It includes your friends' and grandparents' homes, and any other places that you visit. It includes the river where you might swim or fish, the places where your food is grown or prepared, and even the places your drinking water travels through on its way to your home.

Justice means fair treatment—fair treatment for everyone!
So *Environmental Justice* is a new term that simply means making sure that everyone has a fair chance of living the healthiest life possible.

The opportunity to have a healthy life often depends on where someone lives, plays, and works—yes, it depends on their environment! So it is important that ALL environments are free of *unhealthy materials*. Unhealthy materials can cause illness and sometimes even death. So Environmental Justice specifically refers to being sure that everyone has a fair chance of finding housing, employment, and a good education, all in a safe and protected environment.

Source: http://kids.niehs.nih.gov/explore/ehs/justice.htm

Activity 1b

Map work

Use the attached map. The map will show the following: location of landfills, parks, income levels and poverty levels.

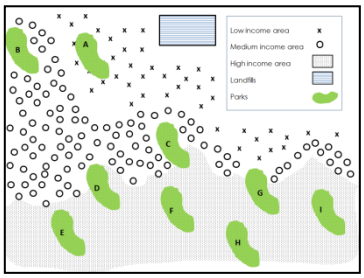
Grades 10 - 12

Before starting the activity, make sure the learners understand the key of the map as well as what the various symbols mean.

Use language like: "This area over here has a higher level of poverty than this area".

Ask the learners to answer the following questions in their groups:

- What do you notice about the location of the landfills?
- What do you notice about the poverty levels of this area?
- Why could this be?



Ask the learners to use the chart on the next page to record their observations. When the Grades complete their charts their focus should be"

Grade 10: Environmental justice

Grade 11: Environmental hazards and the lost of space

Grade 12: Act on environmental justice

(http://en.wikipedia.org/wiki/Environmental_justice)

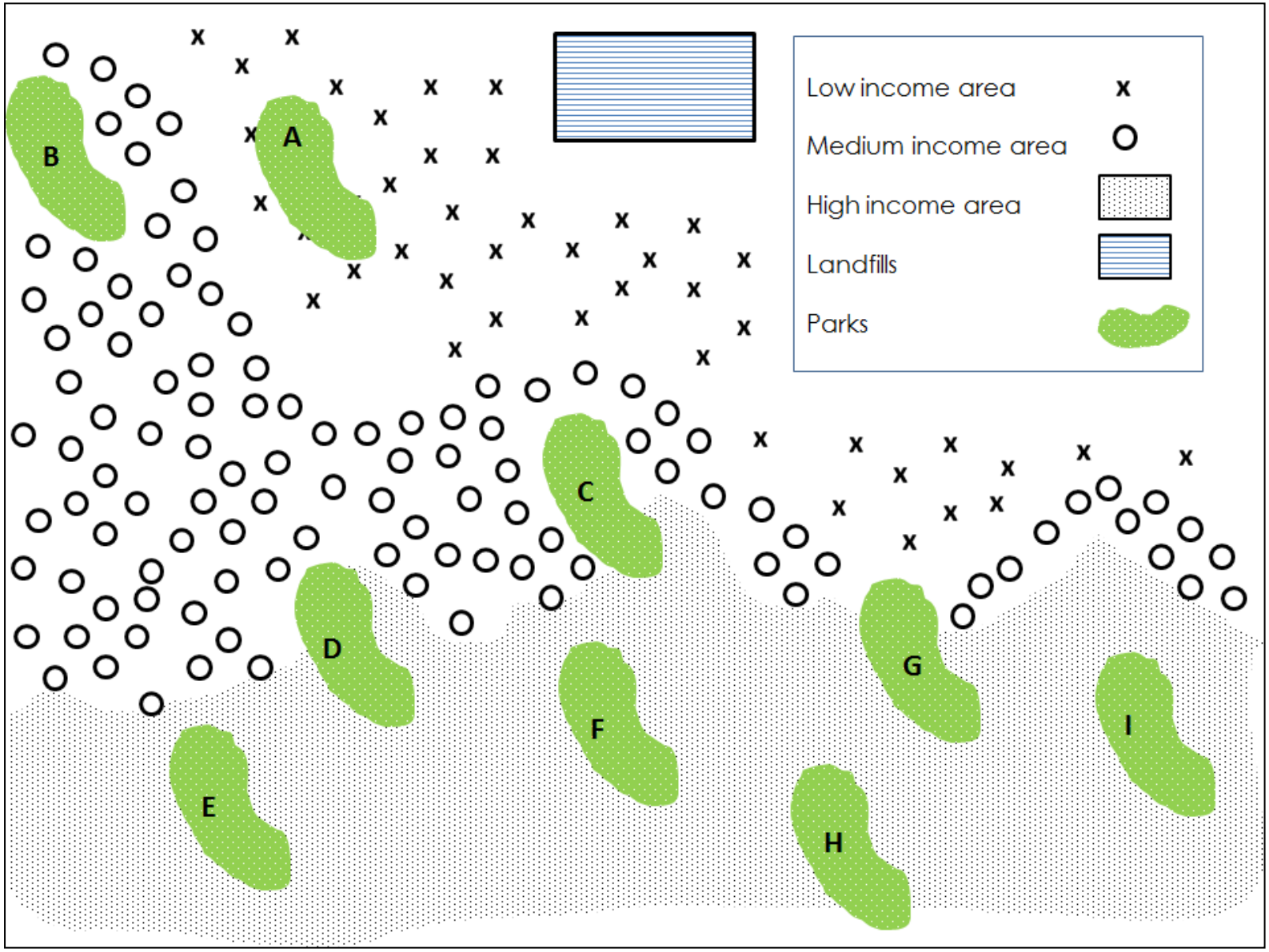
Discussion after the map

After the learners have been given time to make observations and have discussions in small groups, bring the class back together as a whole. As a class discuss what the learners have observed. Write the main points of their observations on the board. Ask them what do they think is wrong with the map.

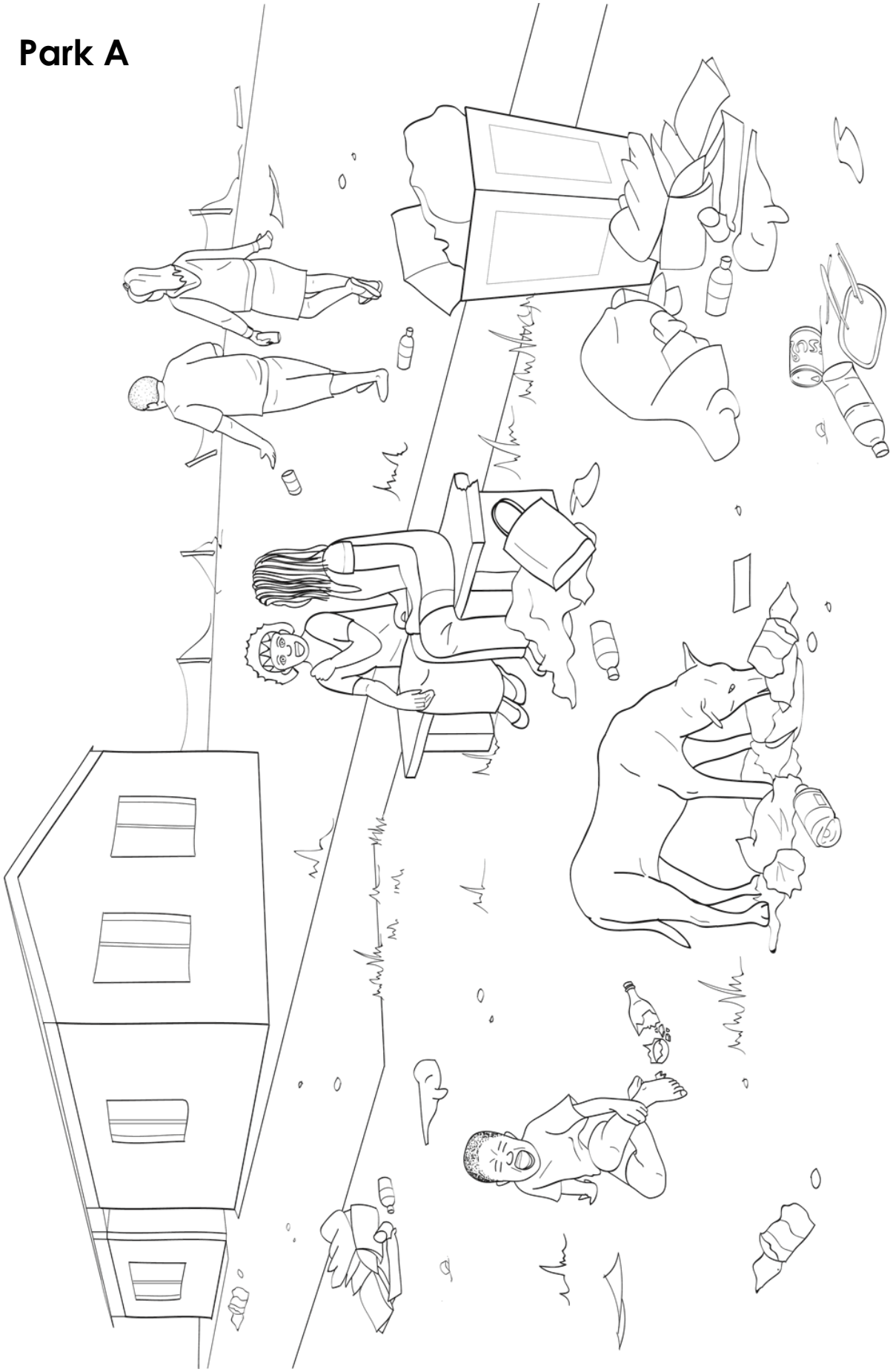
Reorganize the city (fix the city)

Give each group of learners a big blank sheet of paper. Tell the learners that they should re-organize the map in any way they think the issues canl be fixed, as seen on the first map. They may not add extra landfills or parks to their maps. Each group will be given the chance to present their maps to the rest of the class.

Ask each group why they think their maps are better.


Low income area
Medium income area
High income area
Landfills
Parks
A
B
C
D
E
F
G
H
I

Park A



Activity 1b

Use the attached map to record your observations. There is also a drawing of Park A. Include this in your table as well.

Grade 10

The map shows the following: location of landfills, parks and income levels. Use the map and record your observations in the left hand side column and on the right hand side you write why you believe it is so.

Observation	**I believe it is so because …**
Example: I noticed that the landfill is closer to the areas of higher poverty.	I believe it is so because _____ _____ _____

Activity 1b

Use the attached map to record your observations. There is also a drawing of Park A. Include this in your table as well.

Grade 11

The map shows the following: location of landfills, parks and income levels. Use the map and record your observation in the left hand side column and on the right hand side you write why you believe it is so.

Observation	**I believe it is so because …**
Example: I noticed that the landfill is closer to the areas of higher poverty.	I believe it is a hazards because _____ _____ I believe we lost space because _____ _____

Activity 1b

Use the attached map to record your observations. There is also a drawing of Park A. Include this in your table as well.

Grade 12

The map shows the following: location of landfills, parks and income levels. Use the map and record your observation in the left hand side column and on the right hand side you write why you believe it is so.

Observation	**The law says …**
Example: I noticed that the landfill is closer to the areas of higher poverty.	The law says _____ _____ _____

Activity 2

3. Landfills

Introduce this activity by telling learners to imagine the following: "You have just finished your meal at a fast food restaurant and you throw your uneaten food, food wrappers and drink cup in the waste bin. Ask learners where the waste goes after the waste collectors come to pick it up.

Grades 10 - 12

Landfill
The disposal of refuse and other waste material by burying it and covering it over with soil.

Learners should realise that their waste goes to the landfill. Give the learners a definition of a landfill.

Ask the learners to look at the picture of the landfill and discuss it. Ask the learners to copy the words below on to their pictures and use it to describe the picture.

Grade 10 words
fair, treatment, everyone, living, healthy, life, lives, plays, environment, unhealthy materials, illness, housing, education, safe, protected

Grade 11 words
society, environment, education, environmental hazard, infrastructure, ill health, attitudes, community, pollution

Grade 12 words
Environmental services, safe and healthy living, laws, regulations, rules, community services, educational programmes, lifestyle, community, actions, behaviour

Activity 2a

- Look at the photograph and discuss it. Copy the key words provided by your teacher, below.
- Write a paragraph about the photograph.

Grades 10 - 12

Key words:

Extra Activity: Plan a trip to the local landfill. Have students make observations and describe what they smell, hear, feel and see.

Activity 2b

Look at the photographs. How do you link landfills, MRFs, recycling plants and justice with each other.

Grade 10

A **landfill** is a dumpsite designed to collect waste and to keep it separated from the surrounding environment. A plastic liner contains dirty liquids inside the landfill and stops it spreading to neighbouring land and into streams or groundwater. Each day a layer of soil is spread over the landfill to cover the day`s waste.

Materials Recovery Facility (MRF) is a specialised plant that receives, separates and prepares recyclable materials for the market, e.g. end-user manufacturers and/or recycling companies. It is a waste management facility where the waste received gets separated into a number of waste streams such as cardboard, metal, paper, plastics, etc., by using either an automated system or, as in most cases, a manual system where workers hand pick the different recyclables and place them in dedicated containers for subsequent compaction and bailing.

At a **recycling plant,** the materials to be recycled, are either brought to a collection centre or picked up, then sorted, cleaned, and reprocessed into new materials bound for manufacturing.

Activity 2b

Look at the photograph. The environmental factors that cause ill-health on personal level are attitudes, safety and first aid skills. What do you think are these people's attitude? How do you think we can change it?

Grade 11

Discuss this:

Did you know in certain countries not all of the waste goes to local landfills. Some of the materials that are thrown away gets transported across the world to what are called third world countries. Many countries send used electronics, such as TV's and old radios to these third world countries. Here people suffer from the effects of having these materials dumped near their homes. Many people get sick from these materials which also leak fluid into the ground, causing even more problems.

Activity 2b

- Look at the photograph. Which level of government is responsible for this. Why?
- Which intervention programme will you suggest to government, to improve the life of the people working at these sites?

Grade 12

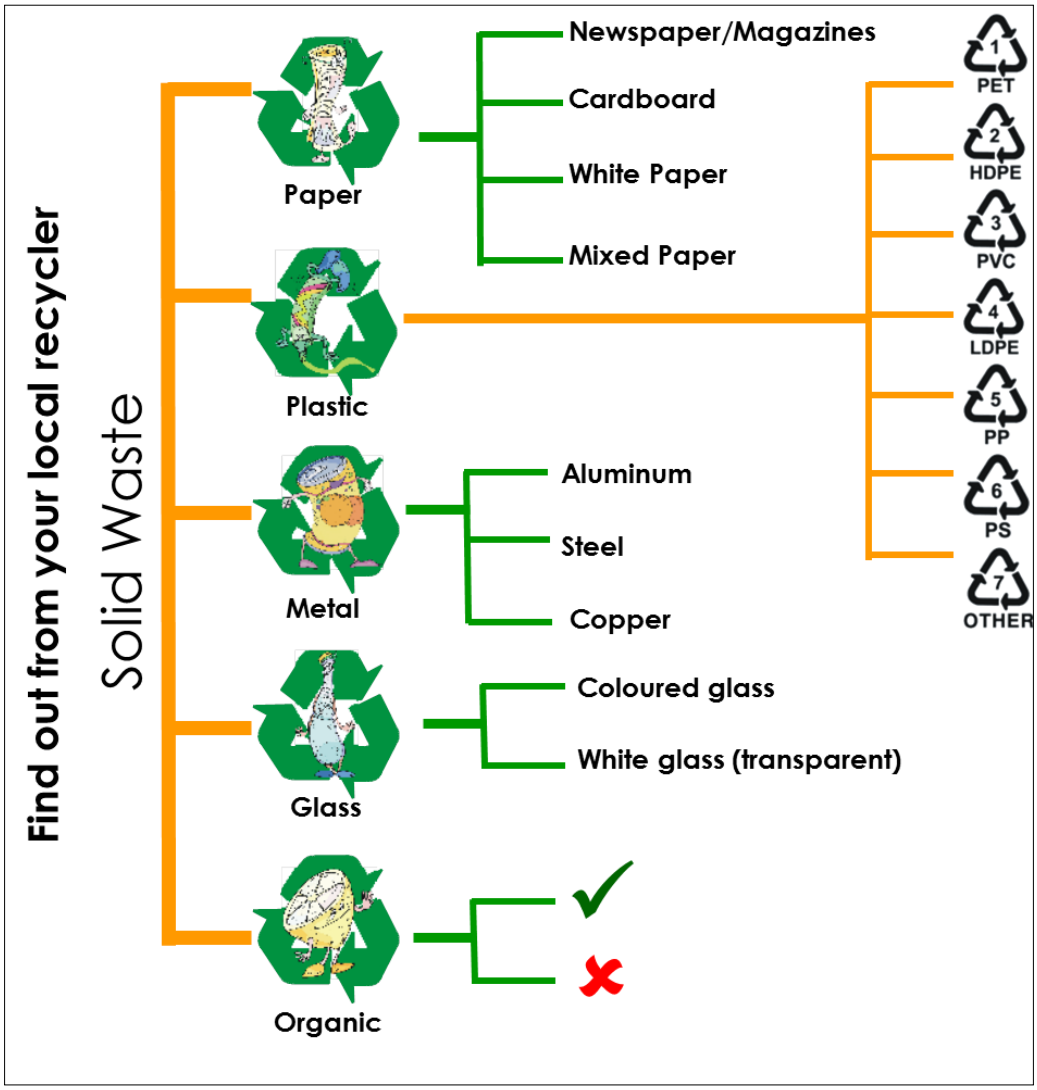
Activity 3a

4. Recycling

Take the classroom waste and set it aside for about a week while it accumulates a variety of waste items (throw the recycling into the same bin).

Grades 10 - 12

- To start the activity take the waste bin and throw it out onto a big black bag. Ask the learners where they think all this waste goes? Remind them of the activity on landfills.
- Take the waste, wearing plastic gloves and separate the contents, for it to be laid out and easy to see. Discuss with the class all the different things in the waste and how they were previously used, before thrown away. They then separate the waste based on what the learners think should be recycled and what should be thrown away.
- Ask the leaners to find out how their local recycler sort waste. Below is a completed example.



Activity 3a

Find out from your local recycler how they sort waste.

Grades 10 - 12

Find out from your local recycler

Solid Waste

Paper

Plastic

Metal

Glass

Organic

Activity 3b

Give the learners the reading on recycling. Learners read it in their own time to gain some background knowledge.

What is recycling?

Recycling means taking the materials from old discarded materials to make other new products from it.

If you drink cool drink from a can, make sure you recycle the can, because doing so will save energy and other natural resources. That can will stay in recycling and out of the landfill, saving space in the landfill and other resources that are used to produce new cans from entirely new materials.

What is the recycling loop?
Have you ever seen this symbol before? This is the recycling loop.
The three arrows in this symbol represent the three steps in the recycling process.

- The first of the three steps is the collection of the recyclable materials through collection facilities.
- The second step is taking the old material and making it into new products.
- The third step happens when you buy products made from materials taken from products that you would have thrown away.

How do we recycle? You begin to recycle when you separate recyclable materials from other your other trash. The segregated materials are collected by different collection programmes. Some programmes are instituted by the government while others are run by individuals or organisations that are concerned about the environment. The materials that are collected are first processed, then sold to manufacturers as raw materials for new goods.

What kinds of materials can we recycle?
Ever wonder which materials can be recycled?
Paper, glass, cardboard, aluminium cans, steel cans, and other metals can all be recycled. Plastic bottles can also be recycled to make new products. These products can then be used to make new products.

Where can you find out more about recycling? Go to www.recycling.co.za or see the summary on the following pages.

Activity 3b - Cans

Use the information from **The National Recycling Forum (NRF)** to answer the questions

Grades 10 - 12

Cans



What to collect:

- Steel beverage cans (soft drinks and beer)
- Aluminium cans
- Food (Milo, dog food, baked beans)
- Coffee tins
- Paint tins
- Aerosol cans
- Oil cans used at garages and fuel stations

For more information go to www.recylcing.co.za

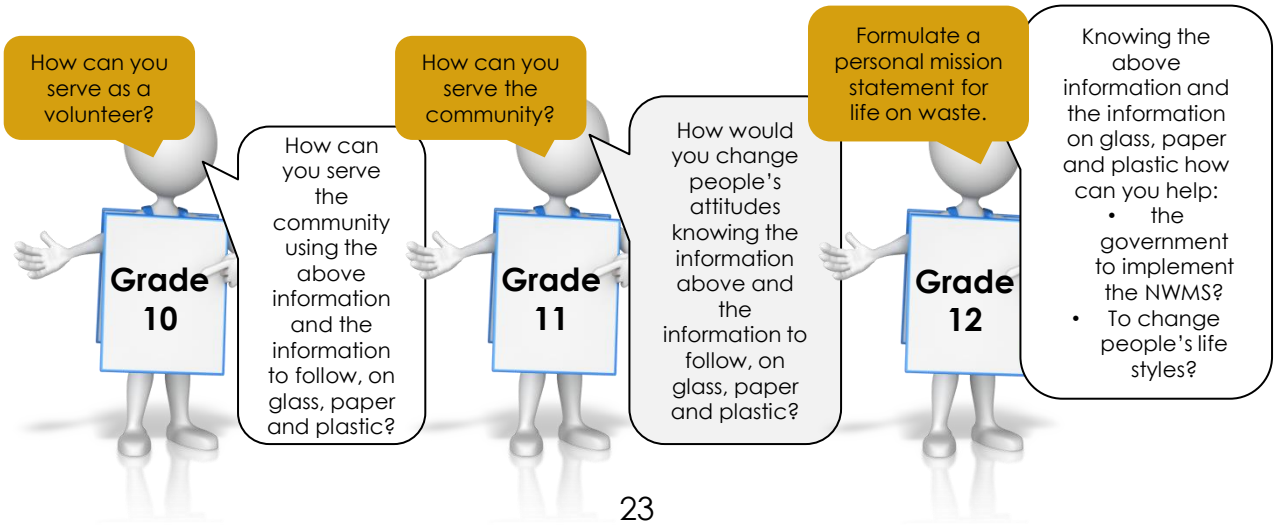
Preparation tips:

- Cans should be empty

Facts and figures:

In Southern Africa, over two billion steel beverage cans – beer, soft drinks, cider, fruit juices and others – are consumed every year. They are 100% recyclable. The current recovery rate for Southern Africa is 69%. The recovery rate refers to the actual number of steel used beverage cans recovered in Southern Africa. It is calculated as a percentage of the total number of steel beverage cans sold in Southern Africa. Collect-a-Can also recovers food and other household cans.

Source: recycling.co.za (2013)



Activity 3b - Glass

Use the information from **The National Recycling Forum (NRF)** to answer the questions.

Grades 10 - 12

Glass

What to collect:
All glass bottles and jars (green, amber, clear). Whole and broken bottles and jars are acceptable.

For more information go to www.recylcing.co.za

Unacceptable items:

Light bulbs, car headlights, drinking glasses, ceramic dishware, plate glass (window panes), computer and TV screens, crockery and cookware, laboratory glass and wire reinforced glass

Preparation tips:

- In South Africa, it is not necessary to wash glass before placing it into "Glass Banks"
- It is preferable to remove corks and lids.
- It is not necessary to separate different coloured glass into separate banks.

Tips for householders:

- To find a glass bank near you SMS "Glass" and the name of your suburb to 32310, or
- Visit www.theglassrecyclingcompany.co.za to find a glass bank in your area.
- Plan your trips to the bottle banks to fit into your daily schedule – it will become part of your plan rather than a chore! Take your children along with you and show them how and where to put their bottles.
- Purchase an additional sturdy dustbin/container that can house all your recyclable glass before depositing it into the local glass bank.

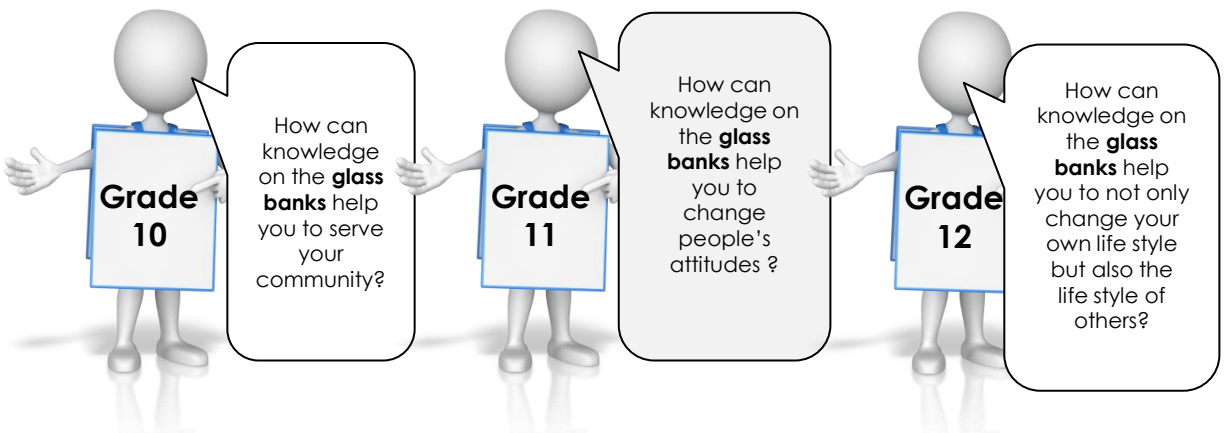
More Glass

- If delivering the waste glass can't be accommodated into your daily routine contract the services of a waste removal company to collect it from your home each week.
- Begin recycling at the office and not just at home and encourage your child's school to participate or start a recycling programme of their own.
- Glass bank allocations are made to appropriate site owners based on the following strategic considerations:
  - Sufficient traffic to warrant a glass bank
  - Site location
  - Visibility and accessibility to the general public
  - Safety considerations (are also taken into account)
- Try and avoid recycling at night to avoid disturbing the surrounding communities Reuse old glass containers – they are great for storing paint, crayons, buttons and arts and crafts tools, such as paint brushes, rulers and much more.
- Take refillable bottles back to the retail outlet you purchased them from and get back a "returns" deposit.
- If the local glass bank you visit is full be sure to report this to:
  The Glass Recycling Company on 0861 2 GLASS. (45277).

Facts and figures:

Glass is 100% recyclable. Currently 295 879 tons are recovered annually for recycling. The glass is recycled to manufacture new glass containers.

Source: recycling.co.za (2013)



Activity 3c - Paper

Use the information from The National Recycling Forum (NRF) to answer the questions.

Grades 10 – 12

Paper

What to collect:

- High grade: computer printouts, office paper
- Kraft paper, corrugated board, cardboard, boxes, wine boxes
- Newspapers, magazines
- Mixed paper: scrap paper, junk mail, envelopes, wine bottle sleeves, pamphlets, telephone directories

Products made from recycled paper and board:

Grades	Recycled into
Corrugated boxes	New corrugated boxes
Newspaper & magazines	Newspaper
Office paper, newspaper, magazines, printer off cuts	Bath tissue products, kitchen and industrial paper towelling
Office paper, corrugated boxes, newspaper, carton board trims, printer off cuts	Carton board – cereal boxes, soap cartons
Newspaper, carton board trims	Moulded paper products, e.g. egg boxes

Unacceptable items:

Unsuitable for paper recycling	Reason
• Cement bags • Dog food bags	Contamination from the residues of the contents makes them unsuitable for recycling.
• Disposable nappies • Plastic lined papers • Foil lined papers	The raw materials and liners required to waterproof these and similar products are not recyclable.
• Self adhesive post-it notes • Chemically treated fax or photographic papers • Wax coated boxes (bananas, Liquid packaging, plastic or wax coated paper, e.g. Milk cartons)	Contamination from the glue and wax makes them unsuitable for recycling.

More Paper

Preparation tips:

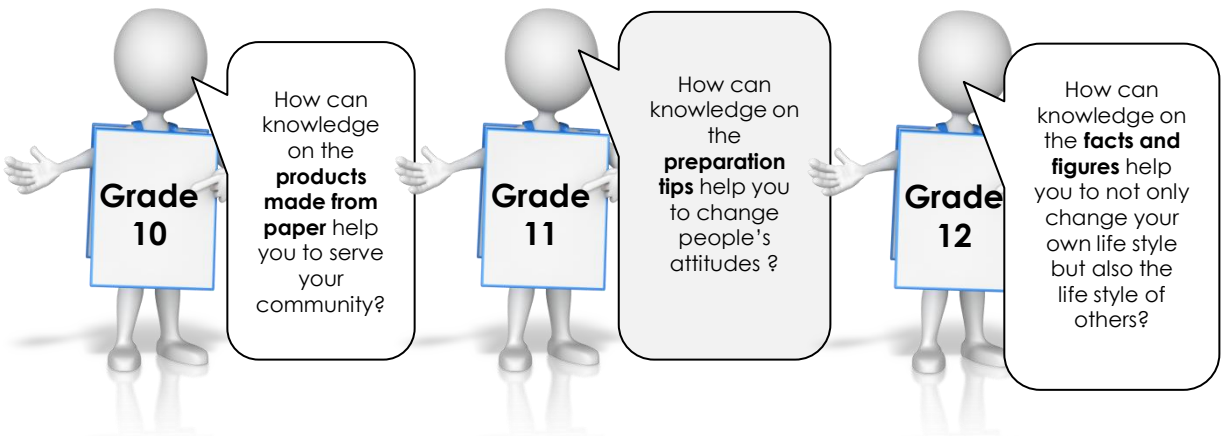
Get a separate reusable container for your paper waste.
Separate your paper waste from your other waste by placing it in the container.
Keep your waste paper clean and dry – quality is important for a good end product. Buyers will not accept wet paper.

Find out from your local recycler what paper grades should be kept separate from the rest.
Please refer to www.prasa.co.za for SA Standard Grade.

Facts and figures:

In 2009, 2166 thousand metric tons of paper were consumed in South Africa. Of these 180 thousand tons were exported and 346 thousand tons (approximately 16%) of paper consumed is not suitable for recovery. 943 thousand metric tons of paper were recovered, i.e. 57.55% of recoverable paper.

Source: recycling.co.za (2013)



Activity 3d - Plastic

Use the information from The National Recycling Forum (NRF) to answer the questions.

Grades 10 - 12

Plastic

Polymer identification code:

A special system of identifying plastics is used worldwide to identify packaging plastics. The overwhelming majority of plastics packaging is made with one of six resins or polymers. A polymer identification code is put on each product - with bottles usually on the base. The number in the triangle denotes the type of polymer used. This information is critical for sorting plastic waste into the different types for recycling.

Identification	Products	Recovered plastic recycled into products such as:	
1 PET Polyethylene Terephthalate	• Cool drink bottles • Juice and water bottles • Jars - peanut butter, salad dressing, oils, cosmetics and some household cleaners • Some food trays	• Fibre for polyester carpet, fabric for T-shirts • Fibrefill for sleeping bags and winter coats • New PET products for both food and non-food contain • Geotextiles • Plastiwood	
2 PE-HD High Density Polyethylene	• Milk bottles • Bags • Film • Juice bottles • Household containers • Shampoo	• Refuse bins and bags • Irrigation pipes • Buckets • Garden furniture • Shopping bags	
3 PVC Polyvinyl Chloride	• Bottles • Clear trays (toiletries and food)	• Shoe soles • Door mats • Hoses • Garden Fencing • Car mats • Window frames	
4 PE-LD Low Density Polyethylene	• Frozen vegetable bags • Soft squeezable bottles • Bags • Milk sachets • Consumer bags - boutique	• Refuse bin liners • Bags • Building film • Irrigation pipes • Outdoor furniture • Containers	
5 PP Polypropylene	• Bottles - detergents and toiletries • Bottle tops and closures • Yoghurt cups • Margarine tubs • Ice-cream containers	• Bottles and containers • Paint trays • Buckets • Garden Furniture • Crates and boxes • Ropes	

IDENTIFICATION	PRODUCTS	RECOVERED PLASTICS RECYCLED INTO PRODUCTS SUCH AS:
	• Cutlery, cups • Yoghurt and cottage cheese containers • Clear salad containers • Television sets • Computer casings • CD boxes • Make-up containers • Cups, bowls, plates • Trays • Clamshells, meat trays • Egg cartons • Protective packaging	• Picture frames • Cornices • Curtain rods • Seedling trays 

Facts and figures:

Annually, approximately 1 250 000 tons of plastics are converted into products, of which 573 000 tons are converted into packaging. Approximately 228 000 tons are recovered and used in the manufacturing of new products. 18.3% of total polymer produced is recycled, with 28.9% of packaging produced being recycled.

Polyethylene terephthalate (PET):

What is PET?

PET is the type of plastic labelled with the no.1 polymer identification code on or near the bottom of bottles and containers. The PET container is recognisable as the transparent, rigid container used to package bottled water, carbonated soft drinks, sports drinks, water, juice, household cleaners and food trays. It is a popular package for food and non-food products. Manufacturers use PET plastic to package products because of its strength, thermo-stability and transparency. Customers choose PET because it is inexpensive, lightweight, resealable, shatter-resistant and recyclable.

What to collect?

All containers labelled with the no. 1 polymer identification code on or near bottom of bottles and containers.

Unacceptable Items:

- Any plastic that does not have a polymer identification code on it
- Mixed polymers.
- PET bottles covered in PVC labelling

Preparation Tips:

- Remove bottle caps
- Sort according to colour

Tips for householders and collectors:

- Do not wash the bottles when collecting it is a waste of valuable water.
- Flatten the bottles before transporting. They take up less space and more can fit into the vehicle.

Polystyrene: 

Polystyrene is a plastic and can be recycled.

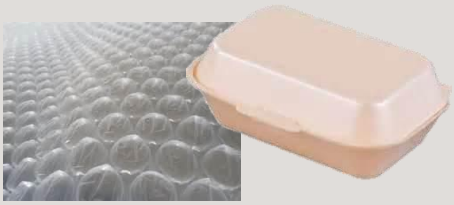
Types of polystyrene:

Expanded Polystyrene - used to make cups, bowls, plates, trays, clamshells, meat trays and egg cartons as well as protective packaging for shipping electronics and other fragile items.
High Impact Polystyrene (HIPS) and clear General Purpose Polystyrene (GPPS) – used in products such as cutlery, yoghurt and cottage cheese containers, cups, clear salad containers, television sets, computer casings, CD boxes and make-up containers.

What to collect?

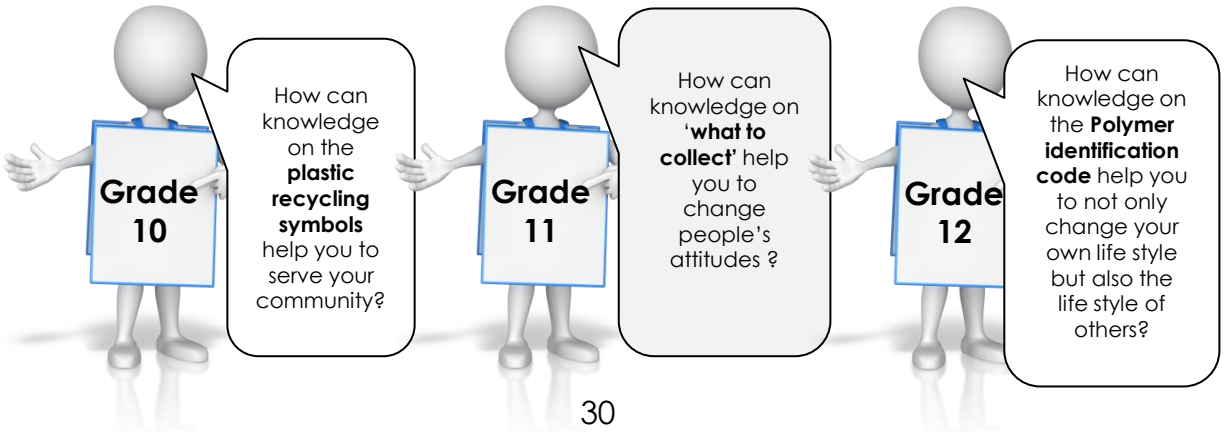
All items with the no. 6 polymer identification code on or near bottom of containers.

- Protective packaging
- Food trays
- Fast food containers
- CD cases
- Yoghurt tubs



Preparation Tips:

The items must be free of all food stuff and rinsed.
Separate Expanded Polystyrene from High Impact Polystyrene.



Activity 3e – E-Waste

Use the information from The National Recycling Forum (NRF) to answer the questions.

Grades 10 - 12

E-waste

What is e-waste?

Electrical and electronic waste (e-Waste) or Waste Electrical and Electronic Equipment (WEEE) is the term used to describe old, end-of-life or discarded appliances using electricity. It includes computers, consumer electronics, fridges, etc. which have been disposed of by their original users. e-Waste contains both valuable recyclable materials as well as hazardous materials which require special handling and recycling methods.
e-Waste contains a variety of recyclable materials like metals, glass, and plastics. All of these materials can be reused to create new products, which decreases the need to mine the earth for raw resources.

e-Waste may be:

collected for repair and upgrading, i.e. refurbished as a second-hand product, for use by another consumer or collected for recycling, i.e. dismantled to recover metals, plastics, and glass and other materials, to be re-used to create new products.
The hazardous substances contained in e-waste need to be correctly handled to prevent health and environmental risks.

If you have old electric and electronic equipment you don't have to store it anymore in your backyard or dump it somewhere. Visit www.ewasa.org for a list of collection points in the different provinces where you can take your equipment. Most of the collection points are at major shopping centres to make it as convenient as possible to get rid of your e-waste.

What to collect:

Large Household Appliances

- Washing machines
- Dryers
- Refrigerators
- Air-conditioners
- Stoves, ovens

Small Household Appliances

- Hair dryers
- Kettles
- Vacuum cleaners
- Coffee Machines
- Irons, Toasters
- Microwaves

Office Equipment
- PCs, Laptops
- Keyboards, mou
- Ink cartridges
- Scanners, Copiers, Printers
- Projectors
- Screens

Telecommunications Equipment
- Fax Machines
- Modems
- Mobiles phones
- Telephones
- Head sets
- Cables

Electric and Electronic Tools
- Drills
- Electric saws
- Sewing Machine
- Lawn Mowers

(Except: large stationary tools/machines)

Entertainment & Consumer Electronics
- Televisions
- VCR/DVD/CD play
- Hi-Fi sets
- Loudspeaker
- Radios
- Cameras

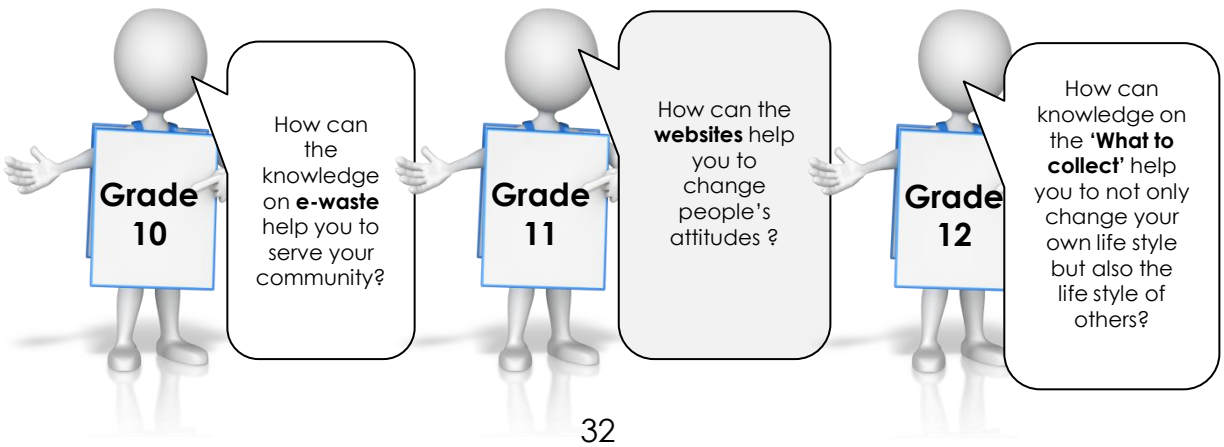
Lighting Equipment
- Fluorescent tubes
- CFLs
- Sodium lamps

(Except: Bulbs, Halogen Bulbs)

- Medical Instruments and Equipment
- Surveillance and Control Equipment
- Automatic Issuing Machines (ATMs)
- Safety equipment

Radioactive materials
Tips for householders/commerce and industry/collectors.

- Due to the hazardous materials contained in e-waste, dismantling of equipment should be left to the experts.
- Handle CFLs and florescent tubes with care to prevent breakage.
- Handle TV screens and computer screens with care, since the glass contains lead in the case of Cathode Ray Tubes and mercury containing backlight lamps for LCD screens.
- Take batteries and mercury containing lamps such as CFLs and florescent tubes to collection points at Woolworths, Makro and Pick n Pay (special containers at the store's entrance normally).



- See www.reclite.co.za for a list of collection points

- To find a list of collection sites, refurbishes and recyclers in your area, click on:
- National Collection Centres -
http://www.ewasa.org/recycling/national/national.html

- Gauteng - http://www.ewasa.org/gauteng.html

- Kwa-Zulu Natal - http://www.ewasa.org/recycling/kzn.htm

- E Cape - http://www.ewasa.org/recycling/easterncape.html

- W Cape - http://www.ewasa.org/recycling/westerncape.html

- Free State - http://www.ewasa.org/recycling/freestate.html

- N Province - http://www.ewasa.org/recycling/northernprovince.html

- Mpumalanga - http://www.ewasa.org/recycling/mpumalanga.html

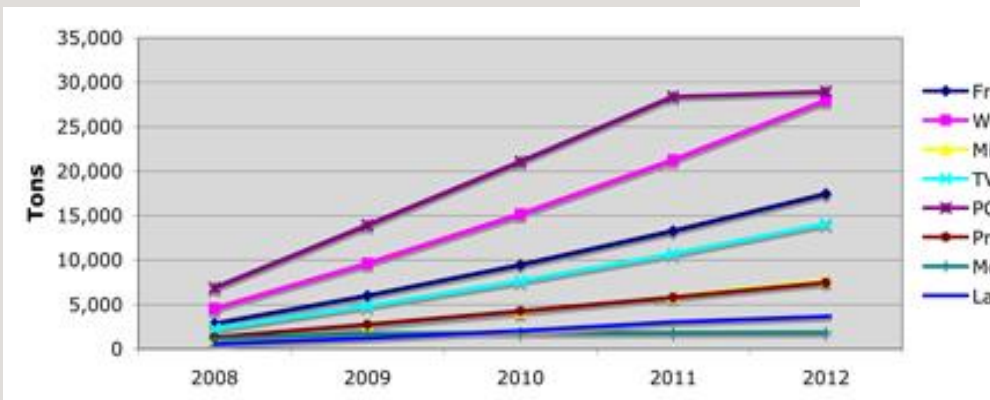
- Limpopo - http://www.ewasa.org/recycling/limpopo.html

- North West - http://www.ewasa.org/recycling/northwest/northwest.html

Facts and figures:

Angela k
Ek dink e

The management of e-waste is in its infancy in South Africa. The following graph sets out projections for baseline e-waste volumes for 2008 - 2012, and includes all new units sold into the market. The tonnage figures are informed estimates, and cannot be scientifically exact.



E-waste projections

(Source: eWASA: e-Waste Assessment South Africa, Nov 2008)

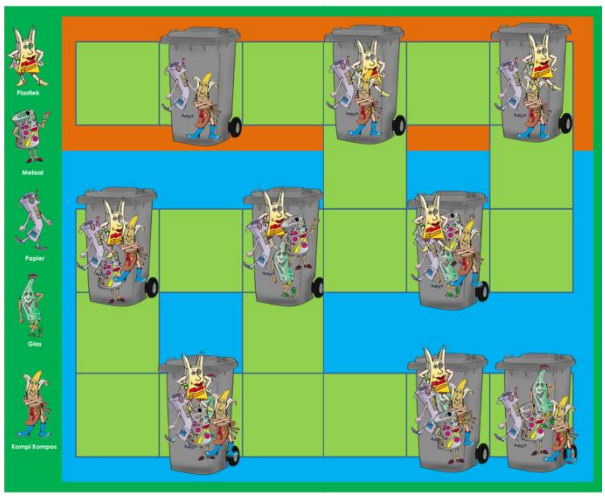
Activity 4

5. Taking action

Tell the learners that they have learnt about landfills and the recycling of waste. In this activity they are going to take action in their communities.

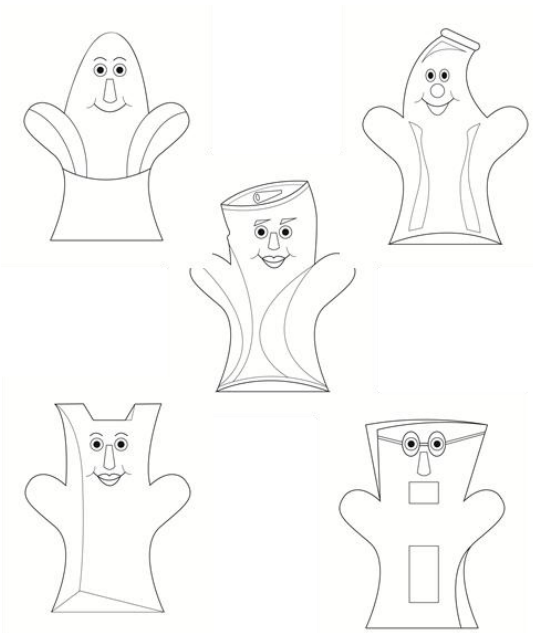
Grades 10 - 12

Grade 10: Give the learners a poster made by Primary school children. Each learner should come up with an individual plan on how they will participate in a community project using the resource. Tell them that they can even better the resource.



Grade 11: Give the learners the following game made by Primary school teachers. Each learner should come up with an individual plan on how to change attitudes in the community, using the game. Tell them that they can even better the resource.

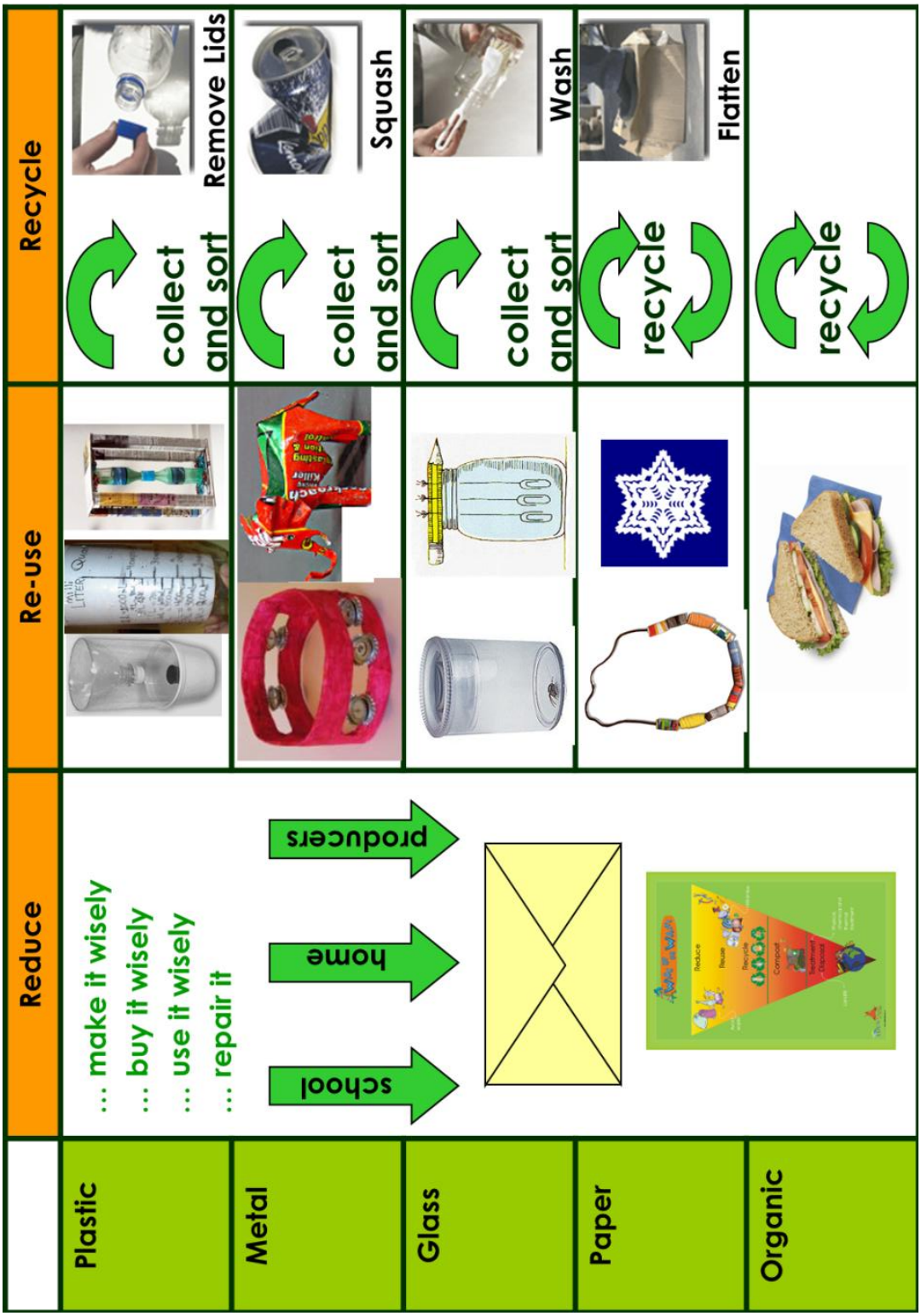
Grade 12: Tell the learners: Your aunt created five waste puppet templates. You feel that the action and behaviour in your community on waste is not to the benefit of the community and not inline with the South African laws. Learners should create and perform a puppet show to their community. Learners should start off the puppet show with a personal mission statement.



Activity 4a

The following poster was made by Primary school children. Come up with an individual plan on how you will participate in a community project using the resource.

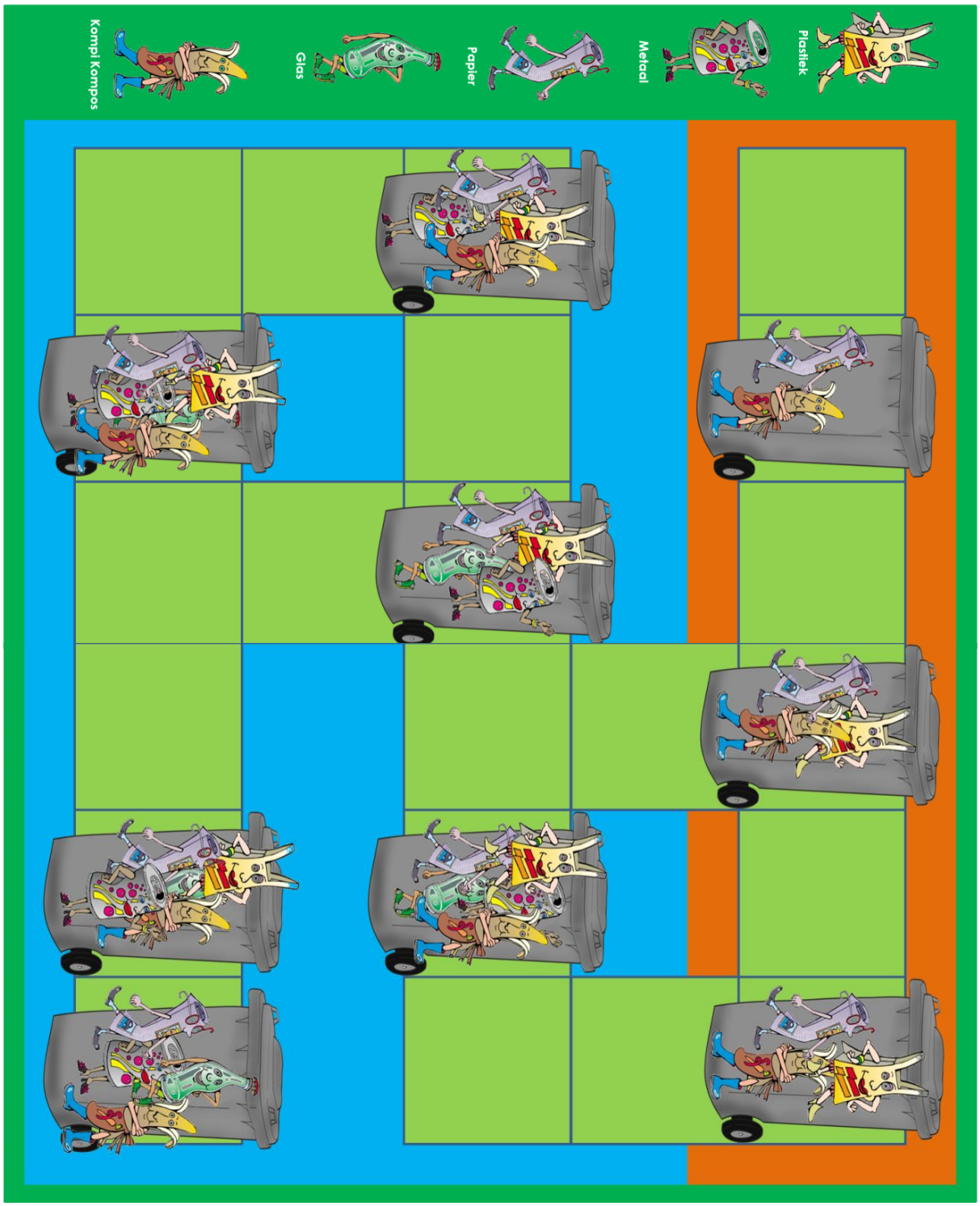
Grade 10



Activity 4a

The game was made by Primary school children. Come up with rules for the game. The aim of the game should include waste, hazards, infrastructure, etc. You may also add to the game.

Grade 11



Activity 4

Your aunt created five waste puppet templates. You feel that the action and behaviour in your community on waste is not to the benefit of the community and not inline with the South African laws. Learners should create and perform a puppet show for their community. Learners should start of the puppet show with a personal mission statement.

Grades 10 - 12

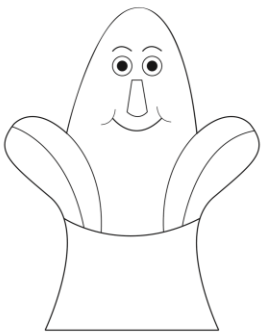
Compi Compost

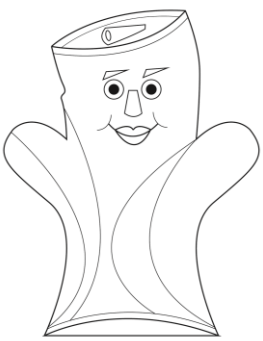
Milly Metal

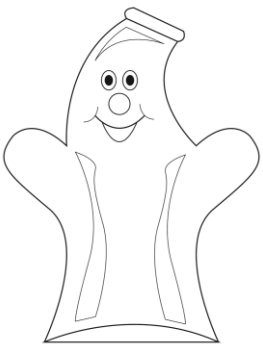
Gugu Glass

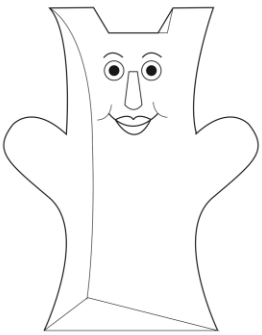
Penny Plastic

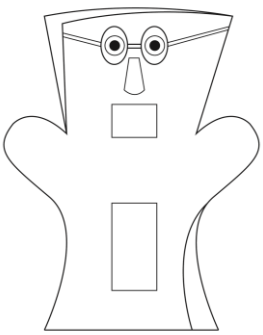
Peter Paper

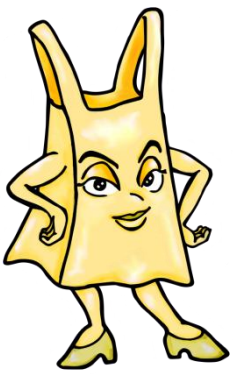


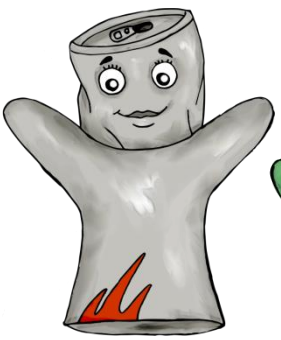


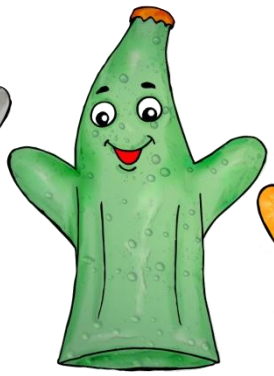




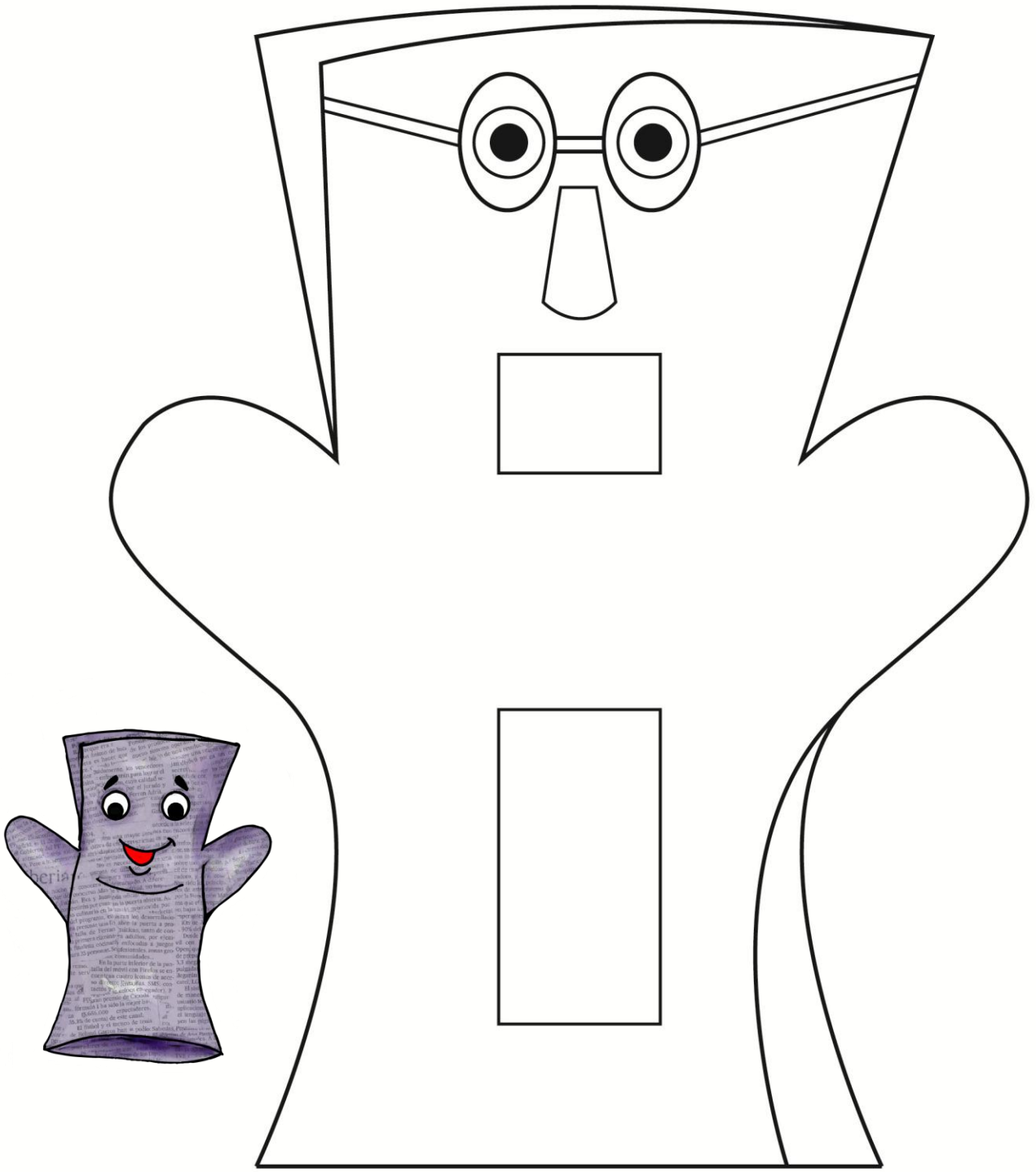




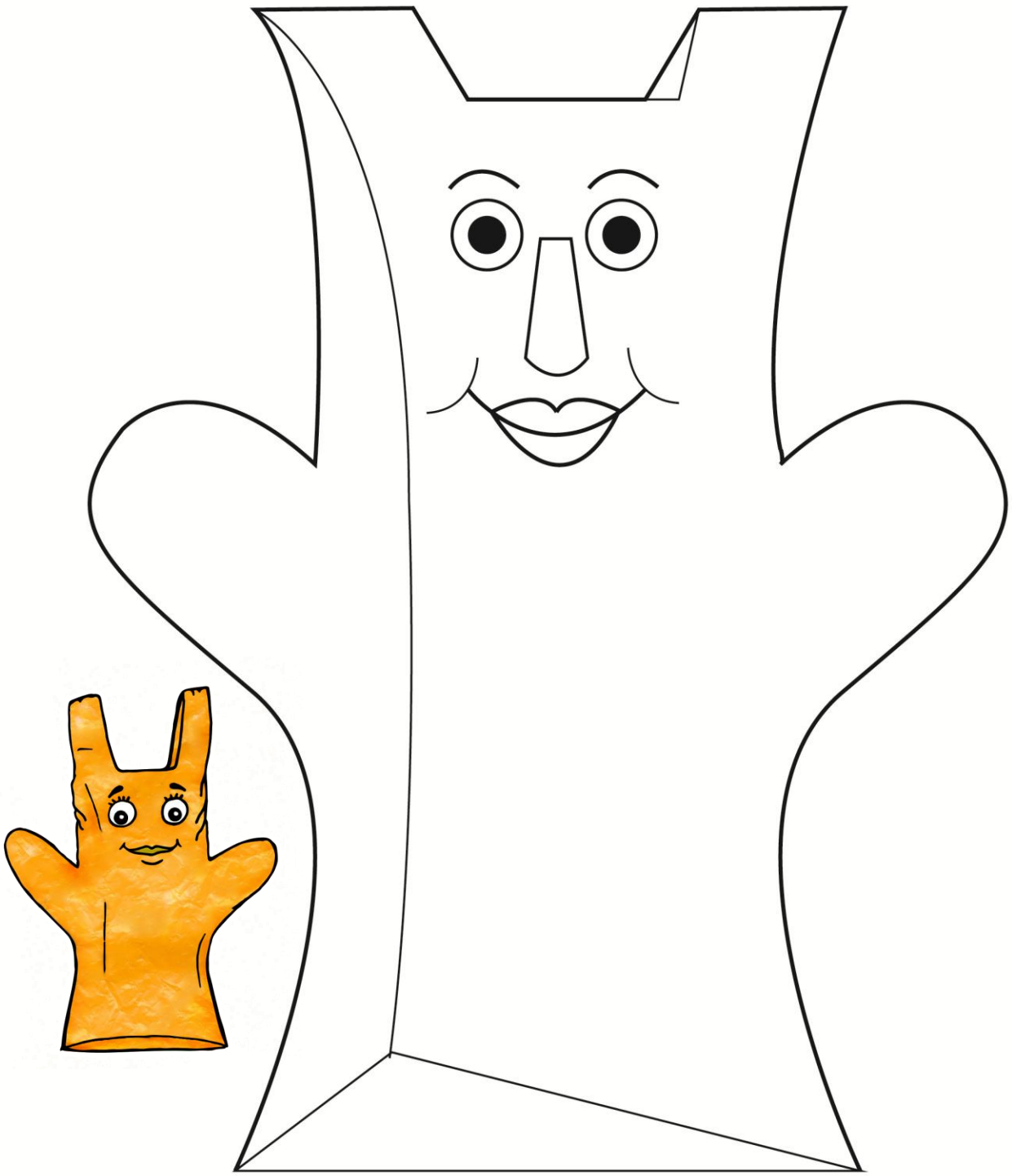




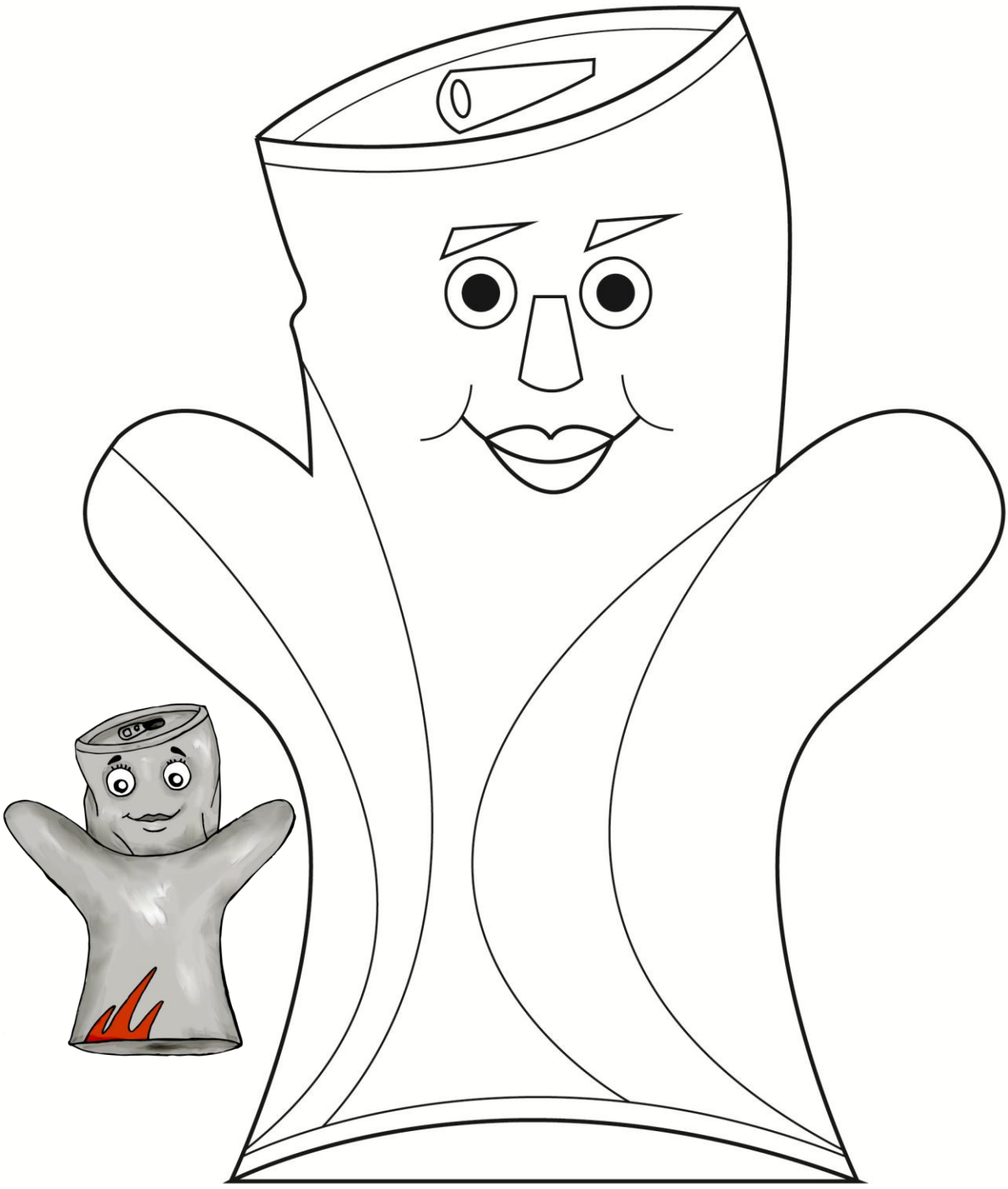
Hand puppet template: Peter Paper



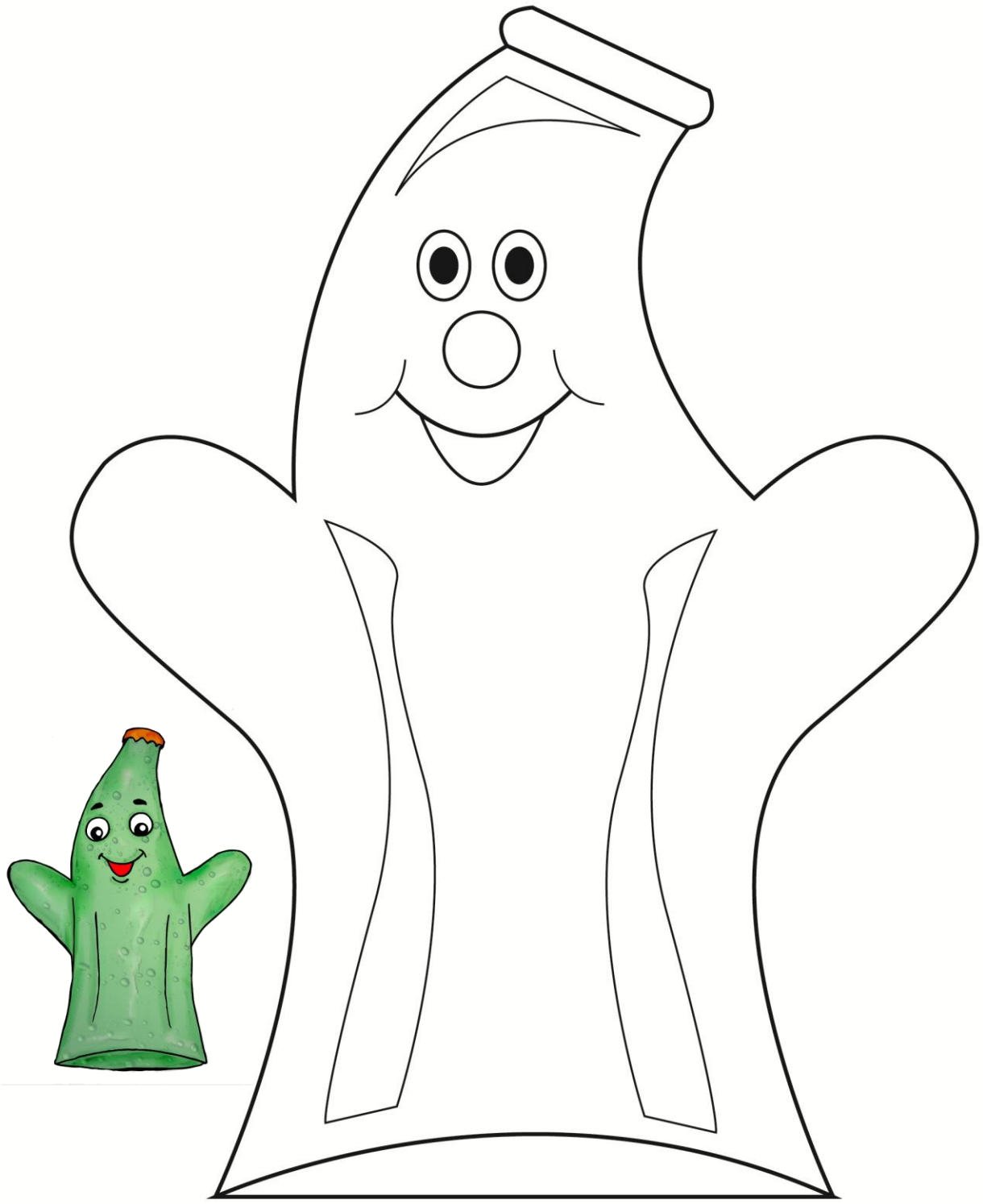
Hand puppet template: Penny Plastic



Hand puppet template: Milly Metal



Hand puppet template: Gugu Glass



Hand puppet template: Compi Compost