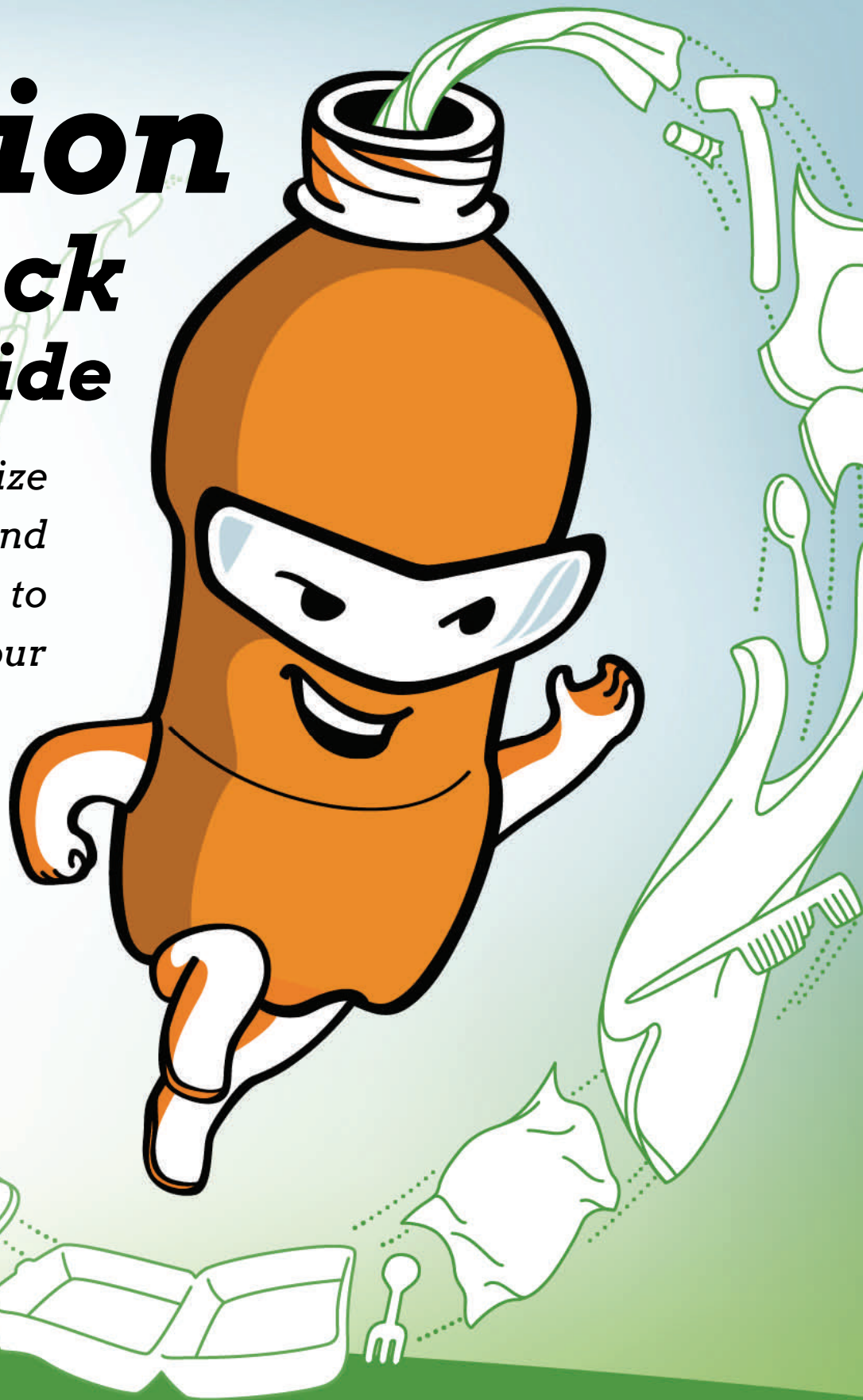


# ***Vision*** ***EcoBrick*** ***Guide***

*Mobilize  
Imagination and  
Collaboration to  
Clean & Green your  
Home, School &  
Community.*



*Photocopy Friendly*



*Free PDF Download*



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Version

**3.2**

7/14/2015  
EcoBricks.org



*When plastics are littered,  
burned or dumped, they poison  
the Earth, Air, and Water.*

*When we save, segregate and  
pack plastics into bottles, we  
can make building blocks that  
can be reused over and over  
again. Together we can build  
green spaces that enrich our  
community and environment.*



*This Guide is dedicated to our Children  
and our Children's Children...*

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*...and to All the Children of All the Species for All Time.*



# From Pollution To Solution



Vision Ecobricks (VEB's) are an exciting way that we can take action *today* to stop pollution and to start envisioning a healthier way of living with our environment. **Ecobricks** give us a place to segregate and put plastics. **Visioning** let's us imagine how beautiful our community will be— the first step in shifting from old patterns to a new reality. After all, unimaginative and short-sighted thinking is the root cause of pollution.

*Be the Hero! Lead by example and be the change you want to see in the world.*

There are many great documentary films free to download on the situation on our Planet for schools.

- ✓ **Bag It:** Documentary on the perils of the plastic bag
- ✓ **The Story of Stuff:** Traces the journey of product to poison.
- ✓ **Home:** Documentary on the state of planet Earth
- ✓ **Trashed:** Documentary on effects of the global waste problem

Then, with our imaginations and our bricks we can **build our visions!** Ecobricks allow inexpensive collaborations with students, parents and staff to make beautiful green spaces: play parks, gardens and food forests.

This guide has been crafted to help you incorporate VEBs into your class and school curricula. It is based on two years of research, experimentation and hands on work with remote schools in the Northern Philippines. Since the Guide's release to all 270 Mt. Province Schools, there has been a widespread adoption of Ecobricking as a community powered solution. Ecobricking is now a family habit in countless households. Burning and dumping and litter have been drastically reduced. Ecobrick green spaces are being built and planned in every school.

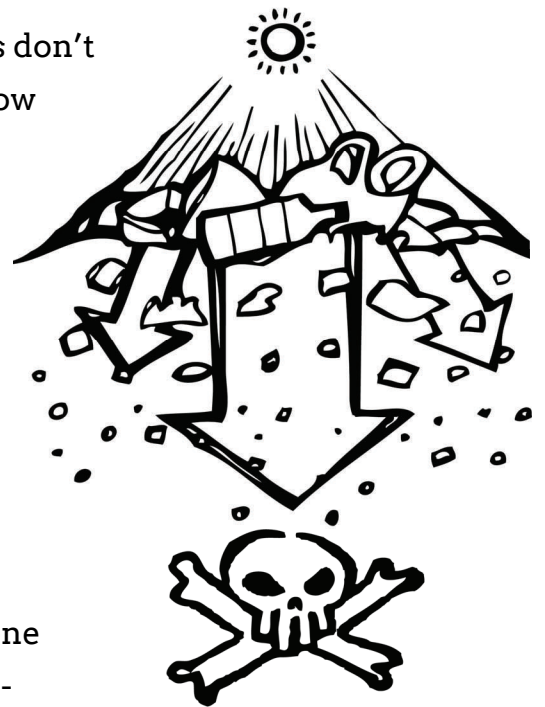
# Why Make Ecobricks?

Plastics are made from petro-chemicals. These chemicals don't fit back into the ecologies around us. Scientific studies show that these chemicals are toxic to humans—we know this when we smell plastics burning. Eventually, plastics that are littered, burned or dumped degrade into these poisonous chemicals.

Over time, these chemicals leach into the land, water and air, and are absorbed by plants and animals. Eventually they reach us, causing diseases of all kinds: birth defects, hormonal imbalances, and even cancer. Even engineered dump sites are not a solution. Whether it is ten years, or one hundred, these chemicals will eventually seep into the biosphere, affecting our farms & families.

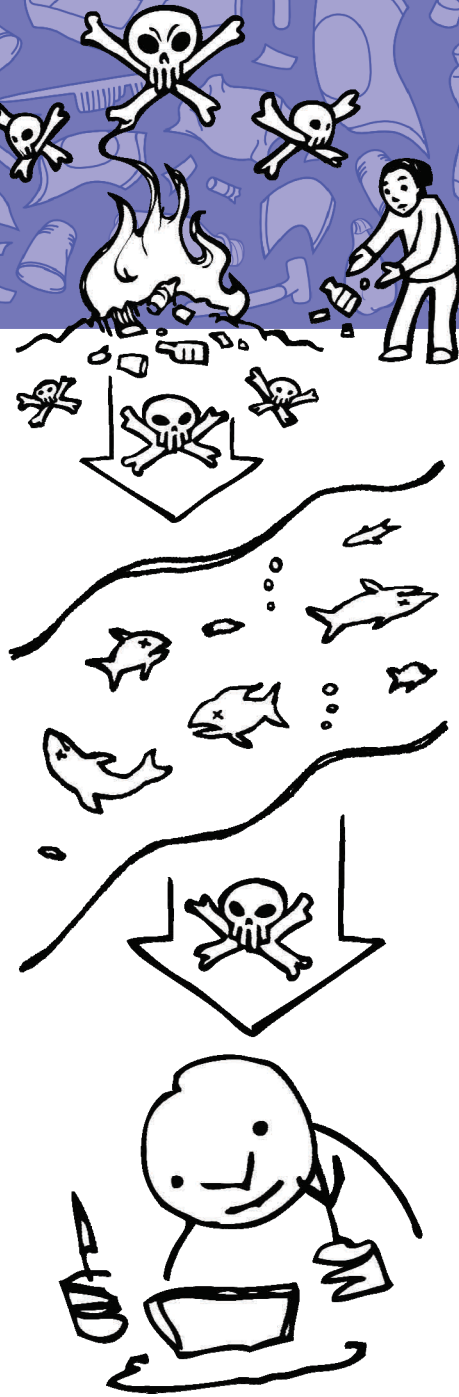
Nor do traditional recycling facilities solve plastics. Industrial recycling simply isn't perfect-- plastics are inevitably lost or down-cycled. Even the highest quality plastic is eventually cycled down into a product or material that is no longer recyclable. There is no way around it: This means that eventually ALL plastic ends up back in nature..

**Save the Plastics!** Plastics need to be either eliminated, or put in the right place. Save plastics from a toxic destiny. PET bottles will last for 300-500 years *if they are kept from sunlight*. When packed tightly, they make an amazing brick that can be used over and over for building. They also become time capsules—a gift to future generations. What will they think when they see yours?



*Plastics don't biodegrade, they **photodegrade**. This means that plastics left for years in fields or water will slowly break into smaller and small pieces. Eventually these pieces are so small that they are absorbed by the plants, fishes and animals that we eat.*

# Where is 'Away' Anyway?



**Where** do the things that we throw 'away' go? Where is 'away'? There is no getting around it. 'Away' is always someplace in nature. All too often our wastes are washed into streams, rivers and oceans.

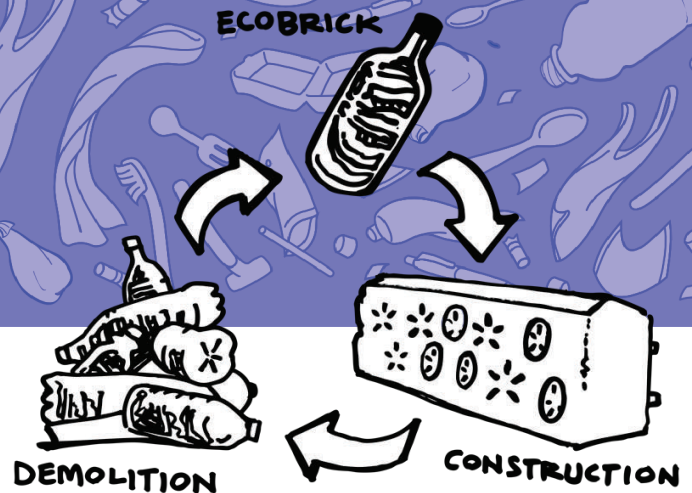
Scientists are starting to realize just how much plastic and other non-biodegradables are now in the ocean. The rest of us are realizing this when we visit the beach. Many disconcerting studies are showing the dire effect on marine animals and ecologies.

Scientists are also discovering the dire effects on the human body of the chemicals that compose plastic. Chemicals like Biphenyl A and Phalates are now banned in certain products in America and Europe. However, these chemicals continue to be widely used in the Philippines, Indonesia and other Asian countries. Even very small amounts of these chemicals have adverse effects on humans— from causing allergies, hormonal imbalances, to cancer and acute poisoning. The young are most susceptible.

*Did you know, when plastics are burned the petrochemicals inside them combine to form dioxins? Dioxins are worse poisons and contaminate both the air through fumes and the earth and water through ashes.*

Plastic is all around us. When we throw things 'away' without thinking, we do so at our peril. Asking questions and investigating these issues are potentials projects and assignments for students. This awareness is an essential compliment to Ecobrick activities.

# Cradle to Cradle



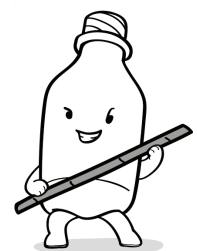
Pollution is caused by short sighted thinking. Many of the products we use go from their birth in a factory, to our hands, to their grave. Pollution results. With Ecobricks, we can do things differently. Instead of a straight line of cradle to grave, we can draw a circle. We can make sure our Ecobricks go from one cradle to the next, to the next, to the next...

Ecobricks are meant to be used over and over again. When you make an Ecobrick, think of its next use— perhaps the parent who will build a bench for your school (so pack your brick full and tight!). When you build with an Ecobrick, think of its next life also— perhaps your grandchild who will have to move the bench to make their house. Together we can begin an indefinite circle— Ecobricks that do break, can be stuffed into a new one. Its also important to think of the other materials you build with. Cement for example can cause many problems.

*Nature works in circles. That's why nature doesn't have trash pits or garbage dumps! Everything is recycled. Humans can learn from nature and design in circles rather than lines. Let's start with our Ecobricks . With a little forethought our children can reuse them rather than have to clean them up.*

*The making and shipping of cement creates 8% of the world's green house gas emissions. Normal cement constructions will stand for only 80-100 years. Various adobe/cob constructions have stood for thousands of years.*

- Use Cob as the mortar between Ecobricks. Cob will last centuries, yet it will still crumble and release the bricks intact when destroyed. This is almost impossible with cement which crumbles hard and sharp— Ecobricks will rupture before they can be extracted.
- Ensure the Ecobrick is not exposed to sunlight. UV rays photograde PET. The bottom 'star' and the surface of the cap are thick enough to leave exposed for decoration.



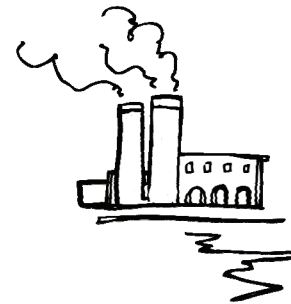
# The Junk food Connection

High sugar, low nutrient foods have been shown to cause a range of serious diseases. In America, where there has been a long rise in the consumption of these 'junk foods', there has been a corresponding rise in obesity, diabetes, tooth decay and more. High sugar foods have also been observed to impede the ability of students to concentrate. In Canada and America junk foods like pop and chips are now being banned completely in public schools. Many schools in Mt. Province are now doing the same.

Junk foods are always packaged in plastics. Junk foods come from large industrial crops, are produced in high-energy factories and shipped long distances. This requires artificial fertilizers, the use of pesticides and the burning of large quantities of fossil fuels.

20 years ago the Igorot people were renown for their strength and vitality at ages 80 and above. Junk foods are now widely consumed. Today, Igorots are beset by terminal diseases at age 40. This is a pressing issue to explore with students.

***Is there a connection between the pollution of our bodies and of the planet?***



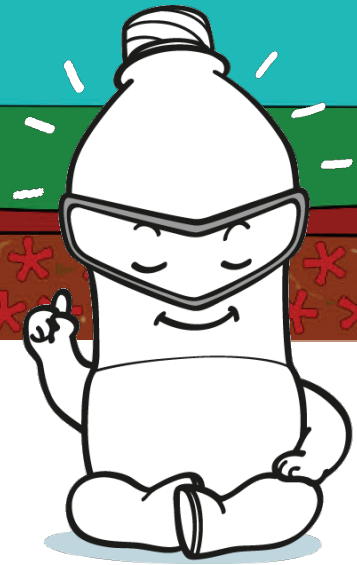
*Junk foods are the leading cause of residual waste. They are also the cause of tooth decay, kidney failure, hyperglycemia, diabetes, hypertension and many other health issues.*

## **Careful!**

*Often students are asked to complete a quota of VEBs. This is a good way to start. However, students may feel forced to finish their quota and consume junk food to do so. Is it worth making Ecobricks if students consume more junk food? Why are we making Ecobricks? These are valuable questions to discuss with students.*



# The Power of Visioning



Ecobricking is long, hard work. But this is the best thing about them— they are valuable and essential moments to reflect, imagine and envision.

**Imagine** the most beautiful place you have ever experienced. Now **envision** this place merging with your community. Visioning is the powerful process of making real a new reality through our imagination. Visioning is the first and essential step in shifting from pollution to solution.

When we put a vision in writing for all to see, this new reality becomes clearer and closer. Try it for yourself— let your imagination loose. Write your vision for your community on your Ecobricks. As you pack your brick you will find yourself thinking more and more about your vision! And soon it will be real around you.

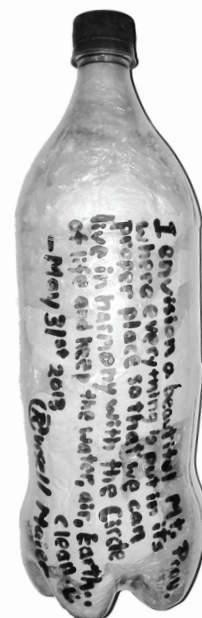
Guide students in their visioning through **reflection** on environmental issues. The questions on the next page are a great place to start. Each week they can be challenged with a new question.

*“What is your vision for the environment of your community?”*

*Have students answer this question directly on their EcoBrick*



Have students date, sign and tape over their visions/answers. Ecobricks will last for a long time. They will become time capsules to be discovered by our children’s children. This will encourage students to think long-term about their responsibility and legacy.



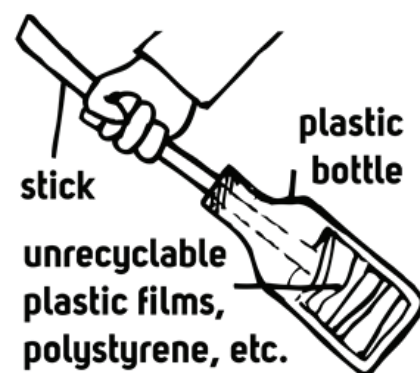
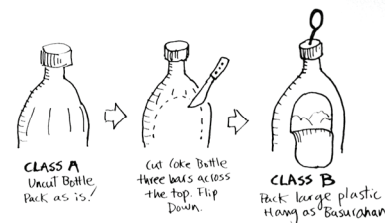
# Making Ecobricks



Ecobrick making is simple, but there are important guidelines. Start right—this is a long-term life-style habit that you, your student and school are beginning. It is important that students are guided and graded strictly for their first Ecobricks. Shortly, your school will be making hundreds of Ecobricks and over the next years, thousands—begin the habit with the best technique! See the handy Point Chart (p.12) that turns Ecobricking and visioning into a gradable and effective assignment.

*What to do with larger non-biodegradable items? Class B Ecobricks can be made by making a moon cut on the top of the bottle. If there is no place in your community to recycle toxics like batteries, fluorescent bulbs and electronics you can pack them into a Class B brick. Discharge batteries and pack plastics between them so they are not touching.*

- ✓ Stuff bottles with **non-biodegradables only: all kinds of plastics, foams, packagings and cellophanes.**
- ✓ No paper, no glass and no sharp metal
- ✓ Use a stick to pack bottles as tightly as possible. Alternate stuffing, packing, stuffing, packing.
- ✓ Use a soft colored plastic to fill the bottle's bottom corners and any air pockets. This gives the ecobrick its color.
- ✓ Stick with one brand of bottles for your school. Use what is most plentiful. This will make building easier.
- ✓ Big bottles are good for maximizing volume, small for quick packing.
- ✓ Grade Ecobricks using the supplied point chart
- ✓ **Teachers:** Record submitted Ecobricks using attached log.
- ✓ **Principals:** Gather all logs and tabulate school progress. Logs will be used for generating provincial statistics.
- ✓ **Superintendents:** Brag about the amazing work of your schools and students using the tabulated statistics.





# Ecobrick Your Lesson

## **Careful!**

*Some teachers have observed that students spend more time on making their Ecobricks than their regular homework. Combine the two! Have students use their Ecobricks to write their homework*

The pollution of the biosphere is relevant to every subject from Art to Zoology. You can incorporate VEBs into your curricula by devising questions that encourage reflection on the Learning Standards and Competencies for your course. Reflective questions are a powerful method of 'deep learning'—where students are challenged to creatively come to their own conclusions to questions that have many layers.

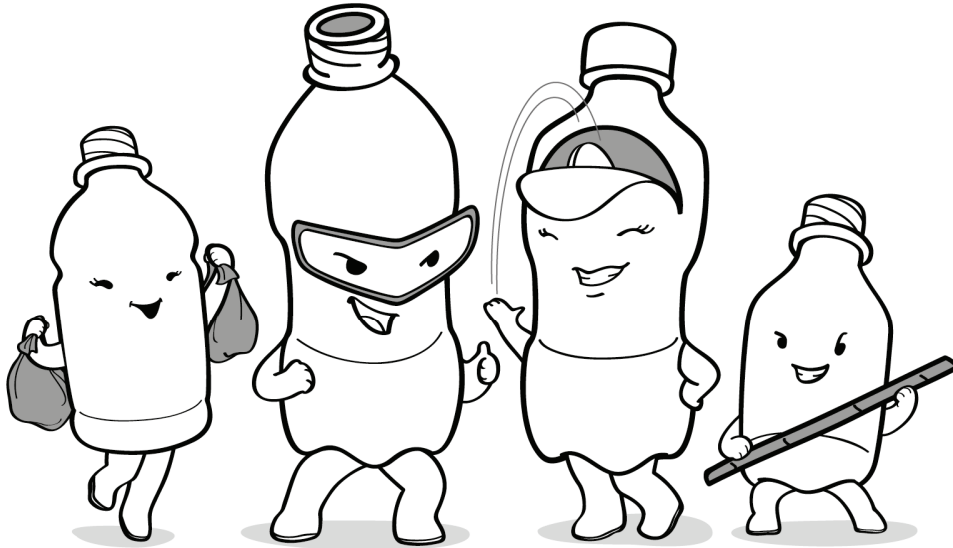
While packing their EcoBrick students will have a valuable moment to reflect and imagine. To save paper, answers/visions can be written on their EcoBrick. Sample questions include:

- Where do all the plastics come from?
- Who is responsible for the left-over plastic from the products we buy?
- Where would this plastic go if it weren't going in the bottle?
- Where would it go after that-- 10 years from now? 100 years from now?
- Who and what is affected by this plastic in the long-term?
- Where will this brick be in 10 years? 100 years?
- What alternatives do we have to using plastic?
- How do plastics fit into the circle of life (the ecology of your community's environment)?
- Why are we making Ecobricks?
- How do my choices affect my environment, and people today and tomorrow?

## Reflection of the Week

What is your Vision for the Environment of your Community?

Answer this question on your EcoBrick



Ecobrick Criteria	Points	Mark
A 1.5 L PET bottle has been used (uncut)	5pts	
A smaller PET bottle has been used	2pt	
A 1.5 L PET bottle has been used but cut so larger items can be inserted	3pt	
The brick weighs at least 1/2kg (+1 bonus for more)	2pts	
The plastics inside are dry and clean	1pt	
The brick only contains non-biodegradables	1pt	
The bottom clearly features a color from the Filipino flag	1pt	
There are no dents on bottom or sides of brick. It is capped.	2pts	
The student's answer is written on the brick. Poor or Excellent?	5pts	
The student's name, the day, the month and the year of completion are written. All writing is with a permanent marker and taped over.	1pt	
Bonus points can be awarded for extra work: The plastics are cut to maximize space, artful packing, layers of colors, etc.	1-2pts	
<b>TOTAL</b>	<b>20-25pts</b>	



# EcoBrick Class Log

Teacher: \_\_\_\_\_

Date Started: \_\_\_\_\_ Log Completed : \_\_\_\_\_

School: \_\_\_\_\_

Name of Student	Name, Date, Vision	Bottom Color	Bottle Brand	Volume (mL)	Weight (g)	Hardness 1-5
Russell Maier	✓	✓	Coke	330ml	304g	5
Junsay Bakala	✓	✓	Aqua	1.5L	512g	4

# We are part of the Story

**N**OT SO LONG AGO, IN THE LAND RIGHT HERE, our *Ancestors* lived in harmony with the plants and animals around them. Their homes, clothes, food and community were like melodies that danced to the songs of Nature's Cycles. Our *Great-great-great-grandparents* grew food so healthy that they danced century-long and lively lifetimes.

Our *Great-geat-grandparents* had to work hard, but it was rewarding work that saw their family and community blossom like the flowers and fruits in their gardens. Nothing was wasted. Everything they used was returned to the Cirlces of Life.

As our *Great-Grandparents* prospered, they became excited at the new things they could make, buy and trade. They sought with love to make the lives of their children easier with new inventions, substances and stuff. But in their passion, our *Grandparent's* forgot how these new things would fit back into the world around



## Student Reflective Homework

*Its an exciting time! We are shifting away from old poisonous habits to ways that are in sync with the circles of life. Where do Ecobricks fit in? Where do you fit in? Write a 500 word essay or draw a picture to illustrate the part of the story that you like best.*

us. Waste arrived. And it began to pile up. Sickness and disease followed closely behind.

Afraid for the future, our *Grandparents* locked the animals and plants in mass cages, mono-fields, and... plastic packages. There was more food— but it seemed to make people sick. And there was even more waste. Our *parent's* were even more concerned for their children— for us. They worked even harder to solve the problems. But try as they might, the trash piled ever higher.

Almost forgotten, the gentle melodies of our ancestors sung back to us across the generations. And *WE* could hear it. *We* realized, we remembered, that we are part of nature's song, just as the flowers, the fields, the trees... and the 'trash'. The song included it also— what we had thought was waste was but new notes for our ears. Bottles and plastics and cellophanes weren't useless— they were marvellous materials to be segregated, saved and sung into new songs never before heard!

Together we began to work with our parents and grandparents to transform our problems into solutions. Together, we began to bend dead-end lines back into circles of use and reuse. It was a lot of work, and it was even more fun. Our grey communities began to return to green, the plants and animals frolicked freely and our children were happier than ever before as they played in the rivers, fields and forests.

Never before had the planet sung so sweetly, for once again, this time with deep intention, our lives were melodies in harmony with the song and cycles of life.

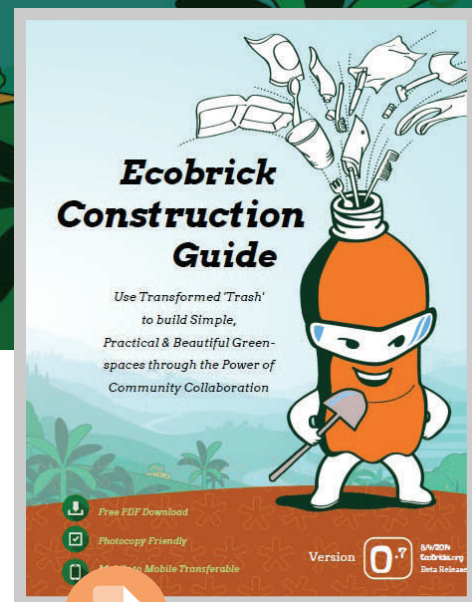
# What to do with the Ecobricks?

Teaching children to grow their own food is the most valuable skill we can impart to the next generation. Self-sufficient personal and community food production (as opposed to mass mono-crops) is essential for preserving the Earth's biosphere for future generations. School's can set the example: Ecobricks easily build great green spaces—gardens, play parks and permaculture food forests. Here, composting and ecobricking put all your school's 'wastes' to enriching the school and students.

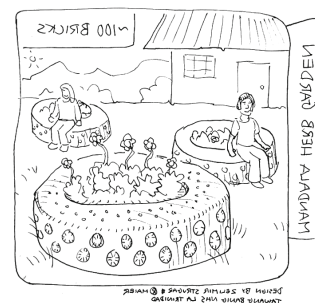
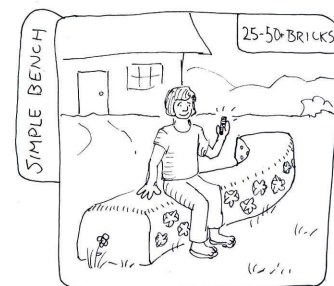
People get excited when they are empowered. With one clear green space vision, the entire student body, parents and teachers can unite. Often the project can be guided through the Student Government, the YESO or an environmental club.

Ecobrick constructions are fueled by collaboration. Projects will require hundreds of bricks. Invite and inspire the community with a bold green vision! The more folks involved, the faster and merrier.

See [www.Ecobricks.org](http://www.Ecobricks.org) for ideas.



Download the *Ecobrick Construction Manual* for detailed guidelines on how to build gardens to furniture with your Ecobricks. Free PDF download at [www.Ecobricks.org](http://www.Ecobricks.org)



Sample Ecobrick constructions. See more in the *Ecobrick Construction Guide*.

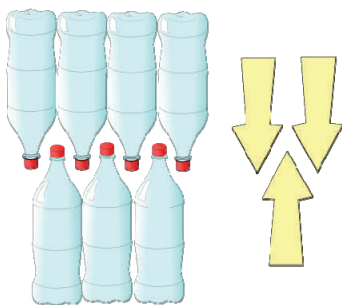
# HexBench Modules



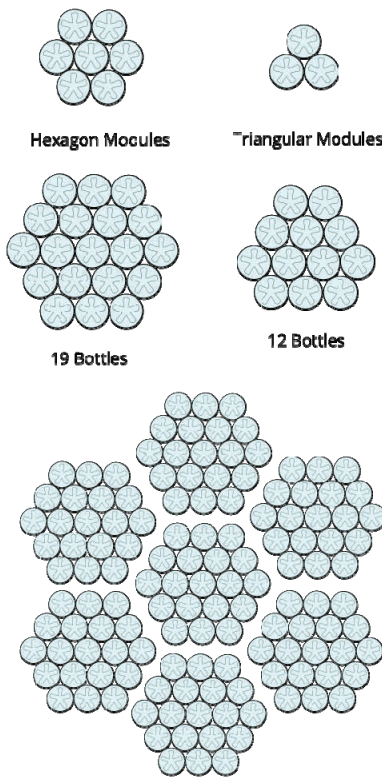
HexBench modules are the easiest Ecobrick output. Made with simple silicone sealant, they are durable, and tremendously practical indoor furniture. Modules can be used individually as seats or combined like LEGO to create tables, beds, benches and more.



Lay bottles on a perfectly flat surface. Ensure all bottles are the same size. Arrange a color pattern with caps and bottle bottoms. Silicone junction points. Press together. Let dry 24 hours.



If you have used bottles of identical brand, the hexagon module top will fit perfectly into the triangular module bottom.



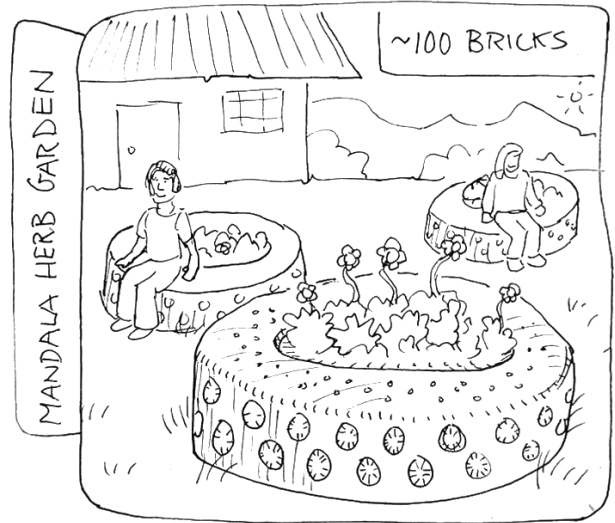
Hexagonal bench modules can be arranged to make bigger hexagonals, triangles and more!

*Ecobricks should never be left outside exposed to the sun. UV rays will gradually photodegrade the plastic bottle. After only two or three years, the brittle bottle will crack and burst, releasing all our hard packed plastic!*



*Did you know? A Coke bottle left out in the Sahara desert sun will photodegrade into a crumbled pile of plastic particles in only one month!*

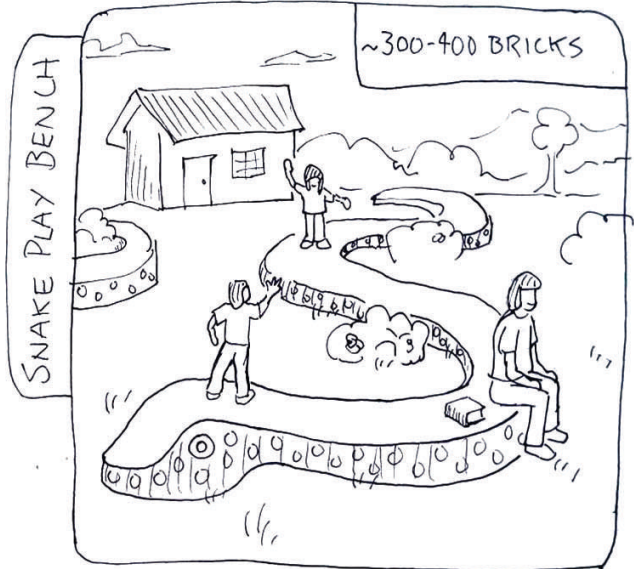




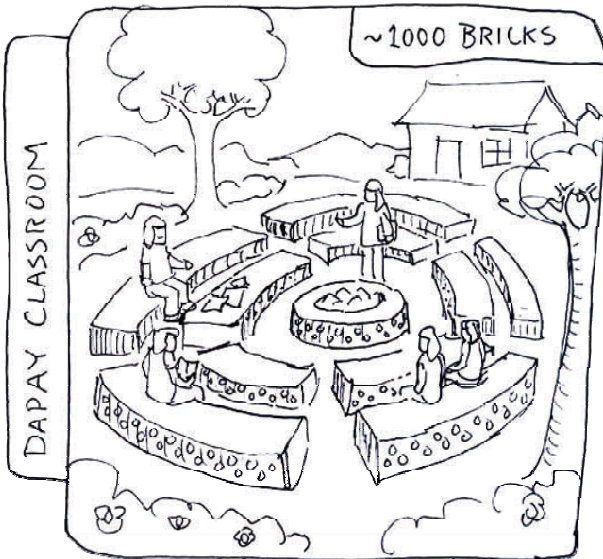
DESIGN BY ZELMIR STRUGAR & @MAIER  
TAWANG BANIG NHS LA TRINIDAD



DESIGN BY NIKLAUS GERBER - SAN ALFONSO HS, SADAUNAN



DESIGN BY SARAH QUEBLATIN, SOLEDAD KITONG, & @MAIER  
BONTOC PROVINCIAL PLAZA, IN FRONT OF MULTI PURPOSE BUILDING



DESIGN BY KELSEY BRANNON - COLUMBIA NHS



DESIGN BY PI VILLARAZA, ZELMIR STRUGAR, @MAIER  
- GUINAYUND ELEMENTARY

# Reduce, Reuse, Recycle, Refuse

Vision Ecobricks aren't just about protecting our environment—they are about creating a world where the environment doesn't need protecting! To do so, we need to add a fourth R to the three R's.

We live in a pretty crazy time with lots of crazy products and materials. It is only by **refusing** to buy products that are non-biodegradable, non-recycleable and eventually poisonous, that we can shift our living into harmony with the circles of life. The greatest contribution of Ecobricks is in shifting perceptions— *so that the craziness becomes clear.*

A useful class exercise is to present several common everyday products to students: perhaps, a shampoo bottle, a plastic bag, and a woven basket. Where will these products end up in a year? In ten years? Is the utility of these products worth their environmental cost? *Who pays this cost? Can we do better?*

**We can do better!** After two years of unfolding In Mt. Province, Philippines, Ecobricking has become a long term community habit. Dump sites are used less or have completely shut down! Plastic burning and tossing have been dramatically reduced. Politicians can be seen packing Ecobricks in their office, segregation is rampant, and some villages have so little plastic they borrow from their city friends so Ecobrick parks can be finished. The era of 'Trash' is at its end.



*Can it be reused or recycled? Can it be Ecobricked? No? Then, let's do better.*

## **Make Your Own**

*The internet is full of the most amazing step by step instructions to make the coolest alternatives to everything from furniture, to shampoo— all from local materials, trash and organics.*

## **Grow Your Own**

*A large percentage of one-time-use plastics come from food packaging. By growing our own food (in our Ecobrick garden) we not only eat healthier, we don't need as much plastic.*

*A vast array of products we consider completely normal today are in fact poisons tomorrow. We might not think so much of our purchases today, but there are coming generations that will shake their head at our folly.*

The Vision Ecobrick Guide began in the humble villages of the Cordilleras in the Northern Philippines where it is quite clear that plastic does not fit with the rivers, forests and fields. The guide was made possible by a small group of basureros—teachers, administrators, principals and artists passionate about keeping our water, earth, air, and bodies clean and vibrant. We all pack Ecobricks in our homes and we are joyful to see the end to the burning and dumping of what was once known as ‘trash’.

## Principals



*Russell Maier* is a regenerative designer based in Sabangan, Mt. Province, Philippines. He has been deeply inspired by the deep sustainability of the Igorot people while living in their land.



*Irene Angway* is a teacher turned administrator turned basurera. She is currently the Indigenous Peoples Education Coordinator of Mt. Prov.



### Characters

Mr. Ecobrick & Family are designed by intrepid Manila Illustrator El Tiburon Grande. He is most passionate about projects that deal with sustainability and helps communities.



### Illustrations

Joseph Stodgel founded the Trash to Treasure festivals in South Africa and directs Upcycle Santa Fe. He is passionate about building community wealth through the alchemy of ‘trash’.

### Translate for your region!

Does your community still have trash? We are happy to help you customize the VEB Guide for your area and language! Our team can set you up with the VEB Guide source files for translation and region contextualization. Contact us at [vision@ecobricks.org](mailto:vision@ecobricks.org)

### Please share what you make!

Inspire the world! Have you made something awesome with Ecobricks? Whether it's the smallest bench or the first Ecobrick sail boat, you can help inspire others to transform their pollution in to solution. Please share it on [www.Facebook.com/ecobricks](https://www.facebook.com/ecobricks)

This booklet was made possible through people and passion—no governments, NGOs, or corporations were involved in its design.

*UNLESS someone  
like you, Cares a  
whole awful lot,  
Nothing is going to  
get better. It's not.*

*-Dr. Seuss*



[www.Ecobricks.org](http://www.Ecobricks.org)

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