



# SCHOOL COMPOSTING BOX

On the small island of Príncipe, the smallest island of the African republic of São Tomé e Príncipe, the school grounds of the secondary school were covered with scrap paper at the end of each school day. Almost every student used to throw their old paper scraps on the ground. Apart from being unsightly this practice was a serious and sad waste of very scarce resources. The school kitchen also used to throw food scraps in the garbage can. And the school gardener used to throw all grass and shrub clippings into the garbage can. In the meantime the school vegetable garden was not in operation because it needed fertilizer. These problems were not unique to this school. They were observed at every school on the island with very rare exceptions.



In the meantime the secondary school students needed a group project for their wood-working workshop classes.

Under the sponsorship of a local company with a very active social responsibility program it was agreed that a *composting box* could be built with old planks or, as in this case, with rough sawn locally harvested wood, some nails, a few basic wood-working tools, a bit of goodwill and a few hours of work. This composting box would be used to collect all the food scraps, garden clippings and old school paper which would then be reused as compost in the school vegetable garden.



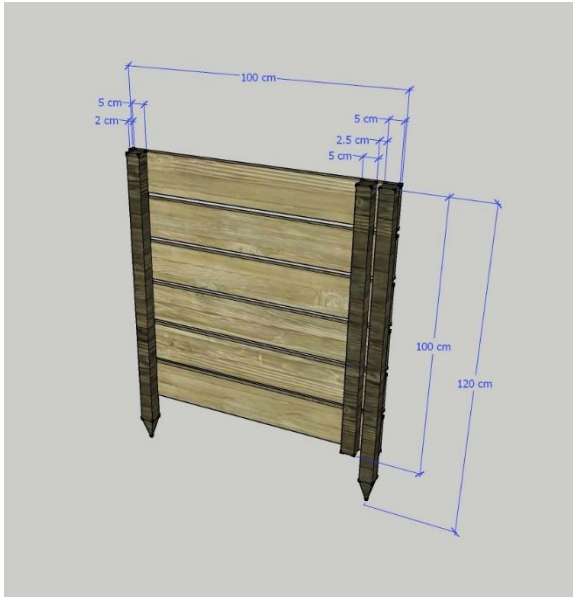
Two art and design teachers volunteered to build the composting box. This is the story of this project.

The composting box is made out of local ecologically harvested wood and measures 1 meter on the side. The 24 boards that make up the box are 100cm long, 15cm wide and 2cm thick. There are 4 (four) 5cm by 5cm vertical posts that are hammered into the ground and hold the box in place. These are 120cm long. There are also another 2 (two) 100cm long vertical posts that hold the front boards.

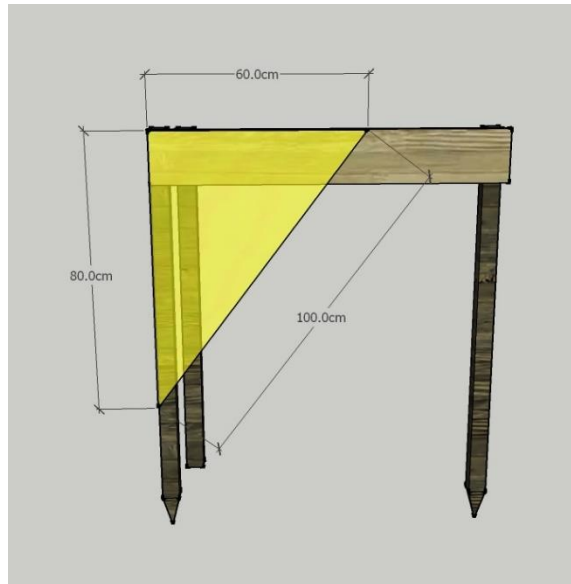
These front boards are removable to give access to the compost when it is time to turn it or to remove it.

### Making the composting box

First we make one side, let us call it the *right side*.



To make it square we use the 3.4.5 *triangle rule*. In this case the triangle will be 60cm-80cm-100cm as shown in the picture. This will ensure that we end up with a very square box with a minimum of errors.

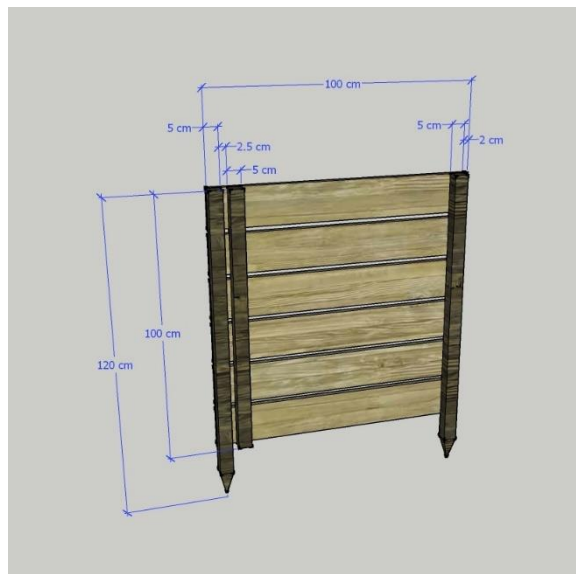


We then nail the boards, one by one, making sure that every board is perpendicular to the posts.

Each board is 2cm away from the next leaving a 2cm gap between each other. This will ensure the compost is properly ventilated.

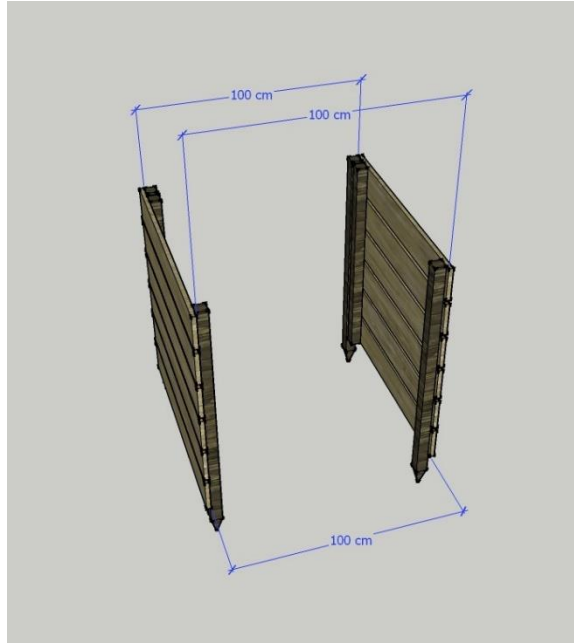
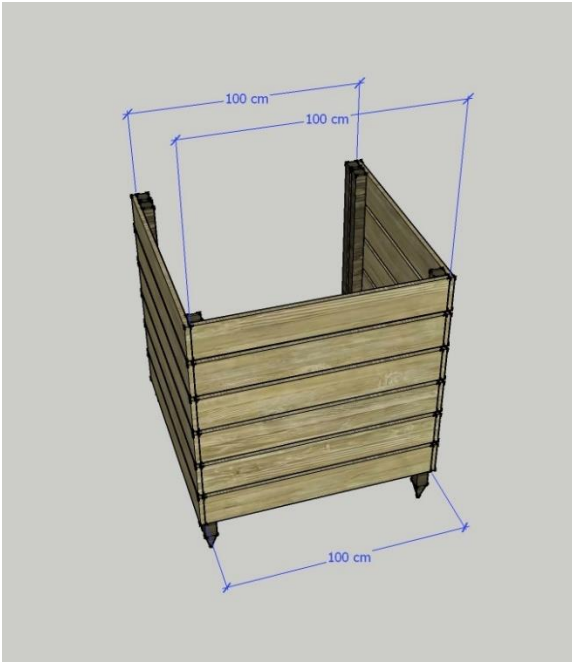


Then we make the other side, let us call it the *left side*, as a mirror image of the *right side*, as shown in the picture.



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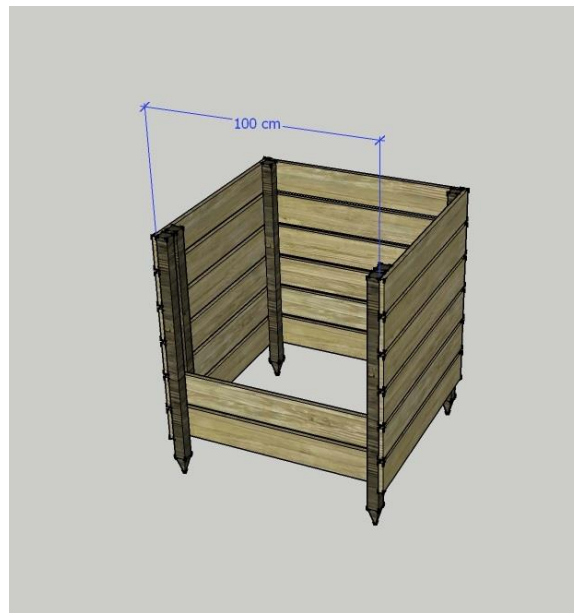
To fix the composting box in place we can either carefully hammer these two sides into the ground 100cm away from each other. Either that...



... or we can nail the boards that make the *back end* of the composter and then carefully hammer the whole thing into the ground. Notice how the boards are supposed to fit around the vertical posts.

Whichever way we do it we need to make sure that the whole structure makes a perfect square on the ground.

We also need to make sure that the boards that will close the *front end* of the composter will slip easily into the grooves made up by the posts and the additional vertical posts as shown in the picture.



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### The school composting box

Only one box was built during this school project. Its construction helped adapt the design to the available materials and develop the skills required to teach the secondary school students.

The composting box has been installed in a shady place near the school kitchen and is covered with a plastic sheet to protect its contents from the frequent rain.

The content of a single box composter will have to be turned over from time to time to ensure a uniform composted material.



### A larger composting unit

One can expand this composting box and obtain a two or three box composting station. If there is enough compostable material to be processed a multiple box set becomes a great advantage.

In the first box one keeps dumping all the new organic material. As the composting process advances one can *turn* the contents of the first box into the second box.



This process can be repeated where the compost material from the second box can then be *turned* over into the third box.

It is very important to *turn* the composting material. What is meant by *turning* is to ensure that whatever organic material has been at the top of any one box, becomes, after *turning*, at the bottom of the following box. This action ensures a quicker composting process and a more uniform end product.

The objective will then be that the new organic material will always go into the first box and the finished compost will always be removed from the third box. The content of the middle or second box will always be in a process of maturation.

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## References

- Composting principles - <http://seafood.oregonstate.edu/.pdf%20Links/Basic-Principles-of-Composting-LSU.pdf>
- Basic principles of composting - <http://www.greenbuildingsupply.com/Learning-Center/Energy-Water-Air-LC/Sun-Mar-Composting-Tips>
- Using a 3 bin composter - <http://ncmg.ucanr.org/files/118303.PDF>
- Composting methods - <http://www.fao.org/docrep/014/i2230e/i2230e14.pdf>
- A 3 tray composter - <https://3dwarehouse.sketchup.com/model.html?id=u298103d7-20fc-4192-9ee3-7db1d58bc6a9>
- A composting bin - <https://3dwarehouse.sketchup.com/model.html?id=u05c4474b-919c-4814-a122-945207060f06>

*School Composting Box* was written by Nando Aidos, a volunteer with the Project Mais Valia (More Value). This project has been sponsored by the Calouste Gulbenkian Foundation in Portugal, which finances senior volunteers to travel and work with NGO's for development that work in Portuguese speaking African countries.

The Secondary School of Santo António is located on the island of Príncipe, Republic of São Tomé e Príncipe. Its attendance includes 300 elementary school children during morning classes and over 400 secondary school students during the afternoon. Education is provided by 12 elementary school teachers and 25 secondary school teachers. It was built in 1997.

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