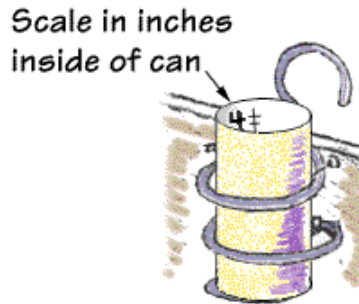


DESIGN OF RAIN GAUGE

Final design for rain gauge



We had first wanted to hang it onto a window grille using a wire and use a 1.5L bottle to collect the bottle.

EVALUATION OF DESIGN

I think that our final design is not bad but we had to hang it on a bamboo pole so as to prevent cleaners from throwing them away. Also, we did not collect as much water as we could have if we had left it on a grass patch or on the ground. Nevertheless, I still think that we had a quite accurate result using our rain gauge although we did not put it on flat ground.



Draft of rain gauge



We found out that the water could not get into the rain gauge because there was a short wall blocking it. Thus, we decided to hang it, using raffia string, on a bamboo pole because that was the only unblocked place. We could not leave it downstairs because we fear that the block's cleaners would throw it away.

PICTURES WE TOOK



Amount of rain collected and pH of rain	Day	Rain	Amt of water (mm)	Description of pH paper
	20 Aug	1230-1300	5	pH 8
	21 Aug	-NIL-	0	-NIL-
	22 Aug	-NIL-	0	-NIL-
	23 Aug	-NIL-	0	-NIL-
	24 Aug	-NIL-	0	-NIL-
	25 Aug	-NIL-	0	-NIL-
	26 Aug	-NIL-	0	-NIL-
	27 Aug	1230 - 1330	7	pH 4
	28 Aug	-NIL-	0	-NIL-
	29 Aug	-NIL-	0	-NIL-
	30 Aug	1330 - 2130	110	pH 4
	31 Aug	0645 - 1130	50	pH 5
	1 Sept	-NIL-	0	-NIL-

Done by: Ang Lee Yee Madeline (1)
 Tan Siew Hong (14)
 Crystal Tay (16)

DATA COLLECTED

A Brief History

People have measured rainfall for thousands of years. The earliest known records were taken in Greece around 500 BC. A century or so later, Indian rulers sent bowls to the villages in their kingdom as an official tool to measure the farmers' potential harvest. These rainfall measurements were then used to determine what the farmers' land taxes should be.

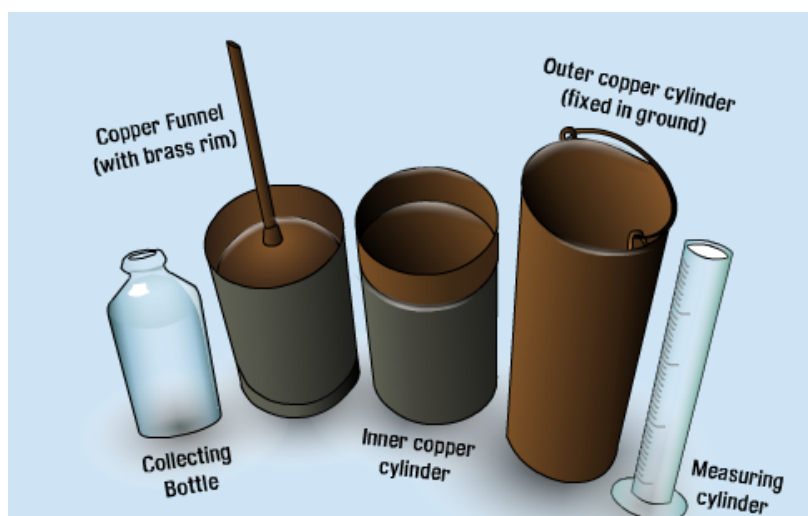
The Standard Rain Gauge

The most common rain gauge - currently used by official forecasters and at airports - was invented over 100 years ago. It consists of a large cylinder with a funnel and a smaller measuring tube inside it. The "official" rain gauge specified by the United States Weather Bureau is a 50 cm tall cylinder with a 20 cm diameter funnel. Water is collected in a measuring tube that has exactly one-tenth the cross-sectional area of the top of the funnel.

The standard rain gauge can measure up to 5 cm (1.97 in) of rain. If rainfall exceeds five centimeters, water overflows into the cylinder surrounding the measuring tube. To find the total rainfall, the observer empties the 5 cm in the full measuring tube, then takes the water in the cylinder and very carefully pours it into the now-empty tube. That measurement added to the five cm gives the final rainfall amount.



Components of a standard rain gauge



CONSTRUCTION METHOD [found on the net]

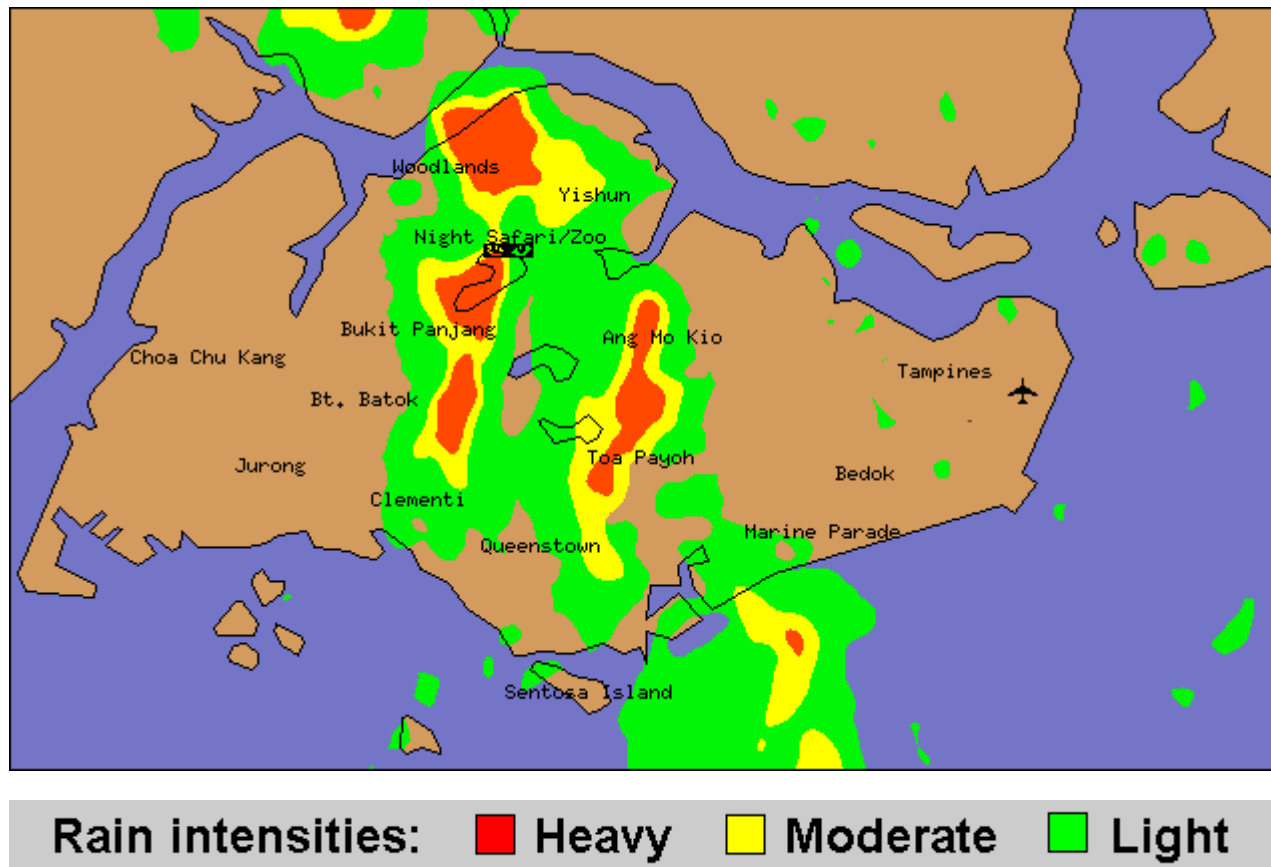
Materials

- Sharp scissors
- Fine mesh screen
- Nail file
- 2 two-liter bottles (tops removed)
- Permanent marker
- Ruler
- Duct tape

Procedure

1. Carefully cut a two-liter bottle in half to make a funnel. File any sharp edges.
2. Place the cut bottle on the uncut bottle so that spouts are touching and in line.
3. Tightly tape the bottle spouts together.
4. Mark the rain gauge up the side in 1/4-inch (or 1/2-cm) graduations with the permanent marker. For more accurate readings, tape a ruler to the side of the bottle.
5. Place the rain gauge outside, preferably in a shady, but uncovered, spot.
6. Decide on a time period to wait before collecting data.
7. Keep a record of rainfall totals for each day and the average amount of rainfall over the time period you specify.

Location and intensity of rainfall as of 3:10 on Sept 11 2006



Done by: Ang Lee Yee Madeline (1)
Tan Siew Hong (14)
Crystal Tay (16)

REFLECTIONS

After doing this project, our team members all agree that we have learnt a great deal from it. At the start of the project, we thought that it would be a simple project that would not include much effort, but after doing it then we knew how tough it was. It was not just coming up with a design, building the rain gauge and writing a report. There was more to it.

As we all jolly well know that background reading was a very important concept before the start of any work, therefore, before constructing the rain gauge, we first read up on some background information about it, understood the concept of how the rain gauge worked, and finally, we start building the rain gauge.

The construction process behind the rain gauge was tough too. We had to first decide on what materials to use and how the final product will look like. Also, we had to finish drinking a bottle of 1.5L mineral water. After coming up with the most satisfactory design, it was time to get things out of it. The mineral bottle was finally up to use, after many times of trial and error, our rain gauge was finally done! Now was the time to get some research done to complete the report. Luckily before starting the whole project we were already equipped with some general information from our background reading, so the whole process of researching was considered pretty smooth. At the same time, in order not to waste any precious time, we collected rain from our rain gauge to test the acidity of the water collected each day using pH paper.

Also, we noticed that out of 13 days that we were tracking the rainfall, only 4 days had rained. And, out of these 4 days, it rained only for, the shortest around a half hour and the longest, around 4 hours and 85 minutes. We inferred that Singapore even though being a country near to the Equator, had not that much rainfall too. This proved that water, to Singapore, is really a precious source. We have learnt to cherish water more after constructing this rain gauge.

After so much hard work, the project was finally coming to an end. We compiled all the information that we have gathered from the Internet and from our rain gauge and turned them into a magnificent report that is easy to understand. We have learnt lots from this project and is all to the cooperation of our team members that we can make this a success!

EVALUATION

NAMES OF TEAM MEMBERS – Madeline Ang (1), Tan Siew Hong (14), Crystal Tay (16)

TITLE OF PROJECT – Rain Gauge Project

Use the following rating scale to evaluate. Assign a mark to each element

A = 2 B = 1.5 C = 1 D = .5

Elements of Project	Name of member	Name of team member	Name of team member
1. Team contribution			
2. Resources supply			
3. Team Objectives			
Total score	/ 6	/ 6	/ 6

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1. Team contribution			
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1. Team contribution			
2. Resources supply			
3. Team Objectives			
Total score	/ 6	/ 6	/ 6

	Project component (A)
1. Content	
2. Design	
3. Analysis of information	
4. Critique	
5. Presentation	
Total Score	/10
	Team work component (B)
Score by team member (Average of peer evaluation)	/6
Score by teacher	/4
Total Score for project A+ B	/20

Done by: Ang Lee Yee Madeline (1)
 Tan Siew Hong (14)
 Crystal Tay (16)