

River Catchment Awareness and Monitoring Programme for Pinang River, Penang State, Malaysia: Role of Water Watch Penang, Private Sector and Local Community

Prof Dr Chan Ngai Weng

President, 10 Brown Road 10350 Penang
Email: nwchan1@yahoo.com

Introduction

This is an awareness raising and education programme on river conservation and monitoring (and also a related water conservation activity) carried out in the Pinang River, a small river catchment in Penang State, Malaysia. The location of the project is in Georgetown, Penang (Figure 1). The target group from the local community are school children aged between 12-15 years in Georgetown City, Penang. The programme is conducted by an NGO, Water Watch Penang (WWP) with financial support from private companies/businesses (e.g. Perbadanan Bekalan Air Pulau Pinang – PBAPP) and expertise from Universiti Sains Malaysia (USM), a local university. Each month, WWP will select a school and provide a chartered bus to pick up the students (about 40 students) and 2 teachers from their school, and bring them to the Air Terjun River, a small tributary of the Pinang River, to teach them about the role of the river and the importance of conservation. It is a one day programme. At least two experts/researcher from USM are also present to teach the children on water monitoring methods (e.g. using a pH meter or a Dissolved Oxygen meter to determine the water quality). The teachers and students are given a handbook/manual each that explains all the details about the activities. The teachers are expected to learn from the experience and use the handbook/manual to conduct future exercises/field works with other groups of students. This will ensure the potential of the programme to expand exponentially as well as its sustainability. WWP looks upon teachers as the facilitators or trainers who will spread the programme far and wide. The students are selected from schools all over Penang State in order to ensure that they come from schools with different backgrounds such as schools in which the medium of instruction is English, Bahasa Malaysia, Chinese and Tamil, schools of different ethnic background as well as schools of both gender (boy and girl schools). Based on 40 students and two teachers, each selected school is made up of a group totaling 42. Over an entire year, a total of 504 people are trained under the programme directly (i.e. 24 teachers and 480 students). Indirectly, through further programmes conducted by the trained teachers themselves, the figure could be much higher. During the day's programme, the teachers and children are first briefed about the functions of rivers to nature and society, and how many of our rivers are being polluted. They are asked questions to stimulate their thoughts and ideas about the river through a vibrant and informal discussion. They are then thought about the importance of river conservation. All the while, the group is taken on a walk along the river banks, letting them see, feel and appreciate the beauty of the river and its natural surroundings. The group is then taught some basics of river/water quality monitoring by the USM researchers. After this, they visit a water treatment plant nearby to understand the lengthy and expensive process of taking water from the river to their houses. The final part of the programme takes the group to the mouth of the Pinang River where pollution has reached a peak. It is here that they realize what humans have done to destroy the river. Many have a lasting impression on how a pristine river

(The Air Terjun River) can turn into a grossly polluted river (The Pinang River). Once the group goes back to their school, they input the data recorded (through the water quality monitoring) and the photographs they have taken into their school's websites. They then do the same exercise from time to time to monitor if the water quality has improved or deteriorated. The students can also discuss their activities (online) with students from other schools that have carried out the activity elsewhere. This way, teachers are trained and students are educated about the importance of rivers and river conservation for sustainable water resources management.

Project Objectives

The primary objective of the programme is to increase awareness amongst the younger generation on the importance of rivers, their natural and societal roles, the importance of river and water conservation and monitoring, and how local communities can assist in ensuring that rivers are not polluted or destroyed. The detailed objectives are as follows:

1. To increase awareness amongst teachers and students on the importance of rivers as our main source of water supply, as well as for other functions such as food (fisheries, aquatic plants etc), transportation, biodiversity, drainage and flood control, etc.
2. To teach students fieldwork skills in monitoring river water quality with simple field methods such as observation (for physical characteristics such as clarity, cleanliness, existence of vegetation and aquatic life, colour of water, smell, etc), simple measurements such as river depth, width and cross-section (using linen tape) and water velocity (using the ping pong ball technique of floating the ball downstream and measuring the time), and using simple water quality equipment such as pH meter, DO meter, turbidity meter, etc. (these can be borrowed or sponsored by private companies).
3. To train teachers to be facilitators of a river conservation to enable them to bring other students into the field for similar activities. This will magnify the influence exponentially.
4. To conduct a river clean-up every time a new group of students visit the river.
5. To instill a sense of attachment and care in the young generation with regard to river and water and grow up to become better citizens.

Activities and Methodology

WWP selects a school in Penang each month. About 40 students aged between 12-15 and two teachers are selected for each school. WWP provides a chartered bus to pick up the students and teachers from their school, and bring them to the Air Terjun River, a very clean and shallow tributary of the Pinang River in the morning. The students and teachers are briefed by a WWP facilitator or a USM researcher on the importance of rivers and water conservation, as well as the day's activities. The group is taken for a hike around the river source where scenic waterfalls and lush green rainforest are in abundance. The facilitator will lead the group with some help from experienced hikers. The two accompanying teachers assist to control the children while at the same time learning how to facilitate the activity. The hiking part is exciting and an experienced forester or biologist is usually asked to come along to lead the group in order to explain and identify some of the trees, plants, fauna and flora (and educate the group about the functions of fauna and flora in rainfall interception, water filtering and water retention, etc). The group should be allowed to ask questions (There are many activities which we can do with the group during the hike). The Air Terjun River, a tributary of the main Pinang River, constitutes the headwaters of the Pinang River.

The group is initially briefed on the importance of water conservation and hence the need to keep our rivers clean. The group will then be exposed to some water activities such as identifying fish/aquatic life, flora, take photographs (this can be a competition whereby the best photographs submitted by the students can win prizes). Students and teachers are taught fieldwork skills in monitoring river water quality with simple field methods such as observation (for physical characteristics such as clarity, cleanliness, existence of vegetation and aquatic life, colour of water, smell, etc), simple measurements such as river depth, width and cross-section (using linen tape) and water velocity (using the ping pong ball technique of floating the ball downstream and measuring the time), and using simple water quality equipment such as pH meter, DO meter, turbidity meter, etc. (these can be borrowed or sponsored by private companies). Often, if there is enough time, a water painting competition by the river side with the river as the theme can be held.

Just before lunch (packet lunch is provided by WWP with a drink), the group carries out the river clean-up. Students are grouped into pairs, one recording the garbage collected and the other collecting the garbage into a bag. A competition is held whereby the pair that collects the most number of garbage wins a prize. This will spur the students to collect almost all garbage from the target section of the river. After this lunch is served. After lunch, the group is taken to a water treatment plant (The Waterfall Treatment Plant located inside the Botanic Gardens [Prior permission is required]) and an engineer of Perbadanan Bekalan Air Pulau Pinang will explain in detail the water treatment process from “river to tap”. The emphasis here is to let the students know that the entire process is a lengthy one and the importance of keeping our rivers clean. After this, the group is taken by bus to downstream Pinang River (at the river mouth where the water quality has turned filthy as a result of pollution). Here, they will be asked to do similar activities and exercises and to their disgust, many will find the huge contrast in river cleanliness between the two sites incredible! Many will refuse to get into the river at the second site! And many will even cry! The results of the exercises will confirm the vast difference in the quality of the river at the two different locations. Students will hardly believe their eyes when they see the amount of rubbish in the river (Students are not allowed into the river at this location for safety. Water samples are drawn out of the river with buckets). This will be a good time to ask them to guess what caused the river to be so badly polluted. The facilitator can then round up with a discussion as to the reasons for the change in water quality and cleanliness. Students are then asked to write a short essay each when they return to their school about why the river has deteriorated so much, and recommend ways and means of cleaning up the second site and how best to protect the river and the catchment. The best essay will get a prize as well (Chan, 1998).

Conclusion

This project is a good example of a Public-Private-NGO Partnership that is successful. The Penang Education Department is involved in the approval of the programme and in the selection of schools. The PBAPP is the funder and USM provides the expertise. The NGO is WWP who carries out the project. The entire project budget for each fieldwork amounts to RM1400.00 (US\$378.00) per school. This includes bus fare (RM300.00), Food and Drinks (RM300.00), Cost of equipment rental (RM400.00), Plastic bags, cups and stationery (RM100.00), Honorarium (RM200.00), and Other costs (RM100.00). This budget is easily met by just one company/business establishment as many large businesses have a Corporate Environmental and

Social Responsibility (CESR) budget, as more and more companies seek to have a green and responsible image. The larger multi-nationals might even sponsor the entire year's programme which incidentally will cost about RM16,800.00 (US\$4540.00). Currently, the main source of funding on this project is partly (in cash) provided by the PBAPP and partly (in kind) provided by WWP. Sometimes, if the school selected has its own bus, the cost on transportation is saved. The project is a success and have significant impacts. Often, WWP is asked whether the project had met its goals and objectives. WWP firmly believes that the project is not only successful in raising awareness about rivers, but also about the need to conserve water, Penang being a “water-poor” State (Chan, 1998). It is imperative that the water consumers, including domestic and industrial, reduce their water usage and conserve their rivers to ensure water sustainability in the future (Chan, 2002). In terms of the beneficial impact on water quality and biodiversity, the monitoring activities contributed to better river water quality. This is because poor water quality is immediately reported to the authorities. In addition, the river clean-up definitely contributes to better water quality for the sections cleaned. Better water quality in rivers will translate into better living conditions for aquatic insects, fish, and other wildlife as well as aquatic flora. Indirectly, the students who are sensitized towards river and water conservation will save water at home and in the school, reducing water wastage, stop throwing garbage into drains and rivers, all contributing towards better rivers. In terms of project sustainability, more companies in the Penang Free Trade Zone (FTZ) will come in as “partners”. Due to their commitment on CESR, WWP expects more companies to come forward. WWP has also applied for funds to conduct similar activities from other organizations and do joint work with other like-minded NGOs.

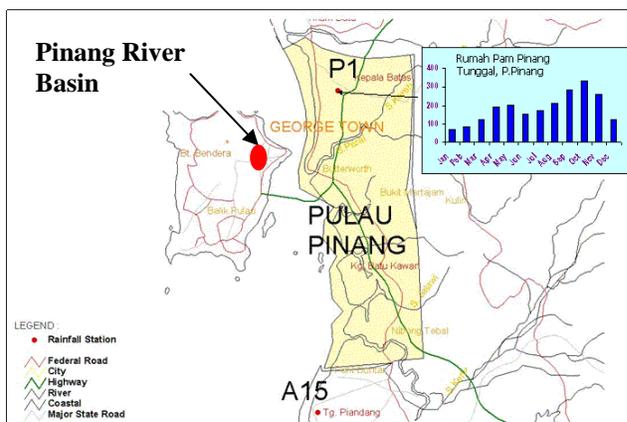


Figure 1: Location of Pinang River in Pulau Pinang (Source: Department of Drainage and Irrigation Malaysia <http://www.agrolink.moa.my/did/> 8 May 2004)

References

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