

09/06/1999

Innovative Tan shows his colours

Tan Chin Siang

STUDENTS studying the phenomenon of adding and subtracting coloured lights never really get to see the results they hope for, if at all. This is because the textbook recommendation of using simple light bulbs or the slightly more sophisticated "ray box" to conduct such experiments yield very poor results.

Tan Chung Yong, a science teacher at Sekolah Menengah Bantuan St Thomas, Kuching, still remembers the time when this particular topic was taught when he was in school.

"I remember my teacher drawing a few circles on the blackboard representing the three primary colours of red, blue and green. And that was it! We had to make do just with the theory alone - that when this colour mixes with this, it will produce such and such a colour."

Tan added that in schools where ray boxes were used, the resultant colours were not only relatively faint but incorrect because the bulbs used were of low wattage and had a yellowish tint to them.

To solve this problem, this 44-year-old teacher came up with an innovative idea some three years ago.

His innovation paid off when he received the "Guru Inovatif 1999" (secondary school category) award during the recent national-level Teacher's Day celebration attended by Prime Minister Datuk Seri Dr Mahathir Mohamad at the Mines Exhibition Centre.

To solve the problem of having a powerful light source, Tan made use of a slide projector, an equipment which can be found in most schools.

For the three primary colours of red, blue and green, Tan made a special slide comprising three coloured transparent strips. When the projector is switched on, it produces three distinctive rays of coloured lights.

The beams of these three coloured lights are then deflected through a clever gadget made of discarded plastics and three movable mirrors, held together by screws and gum. This gadget is placed in front of the projector and the resultant deflection of the three coloured lights are beamed onto a white wall.

What one will see on the wall are the three colours of red, blue and green. To know what colour will emerge when, say, red mixes with blue, all that has to be done is move the two mirrors which are reflecting the red and blue lights in such a way that their beams cross path, and hey presto! magenta appears on the wall.

Tan said that when he was still in teacher's college way back in 1978, he already foresaw the problem of teaching such a topic.

Mixing water colours, he pointed out, was out of the question because coloured lights and water colours work differently.

"While in college, I did build some teaching aids to solve this problem but they were not successful.

"Then in 1996, when I was asked to teach Form Four science, I had a re-look at those aids I made before and modified them," he said.

The modifications, which took nearly a year, turned out to be a success. And how much did it cost him to build the simple looking equipment?.

"For the plastics, you can say I got it from the rubbish dump because they were discarded by a shop dealing with such materials.

"The mirrors cost me only a few sen. So the whole thing is very cheap to construct," he says.

He received a cash prize of RM100, a certificate and a plaque for

winning the Innovative Teacher award.

Having won both the State and national-level awards, Tan has initiated moves to patent his innovation.

"It would be great if some company out there can mass produce it. But it's not the money I am after. My primary interest in this project is to come up with something which can make learning science more interesting for the students.

"I believe that in science, we should not simply accept other people's results blindly. Students should be taught the process of getting the results through their own experimentation and investigation.

"In that way, they will be able to think creatively and approach things with a new perspective."

Churning out innovative educational items is nothing new to Tan, whose wife Julie Liew is also a secondary school science teacher.

Two years ago, he succeeded in developing a set of transparencies which, when projected using an overhead projector, could explain visually the phenomenon of high and low tides.

He garnered the Toray Award in 1997 for his invention. The Toray Award is given out annually by a Japanese firm, Pen Fabric Sdn Bhd, to outstanding teachers.

What next?

"I am now looking at how to tackle the problem of teaching astronomy. There are so many objects in the solar system you have to grapple with that you just can't build a model and simply move it here and there.

"I have recognised this problem for quite some time and I intend to solve it," said Tan, who is one of the advisers of the school Invention Club.

Tan said he was lucky to have people such as his wife, SMB St Thomas principal Evan Yeo, and some State education officers who are very supportive of what he was doing.

(END)