Education
Physics Teachers All Four One
Ben Haywood
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An experiment in team teaching has had positive results, Ben Haywood reports.

IF IT is true that two minds are better than one, then the year 12 physics students at Glen Waverley Secondary College should consider themselves lucky.

Their teachers - Peter Francis, Paul Lee, Glen McConchie and Des Middleton - are pooling their strengths and teaching year 12 physics as a team.

The 100 students studying the subject are split into two timetable groups. Two teachers take each group, giving them the flexibility to then divide or combine those groups as best suits the course.

"We have lectures with two groups of 50 students, and then we can break down to 12 students with one teacher," says Mr Lee.

A weekly tutorial program gives every student direct contact with each teacher.

"All four of us are present at the tutorials," says Mr McConchie, "so every student feels quite comfortable coming to the staff room and asking for any one of us."

The team teaching approach requires good planning and close communication between the four, but the advantages for the students - and the teachers - are many.

"For us, it allows us to bounce off each other with ideas and what we're doing in our classes, and for the students it means they're exposed to multiple teaching styles and therefore get more out of the year," says Mr Francis.

The decision to teach the subject as a team came after a survey of past year 12 students discussing the strengths and weaknesses of the physics course.

"Past students naturally identified different strengths and weaknesses in each of us, and we said why not combine the strengths in all of us," says Mr Lee.

To avoid inconsistencies in the marking process, each teacher marks a certain piece of assessment, ensuring that all students are marked in the same way. It also gives all four teachers an insight into each student who does physics at the school.

Technology has also aided the four in their approach to the course.

"I think the technology is very useful because some of the physics concepts can be hard to grasp and for students to understand. With the technology, you can often visualise the concepts a lot better," says Mr Francis.

An interactive whiteboard that allows the teachers to draw directly onto a computer-generated projection and then upload the whiteboard notes to the school intranet helps facilitate the team-teaching approach, and fits with a school teaching philosophy that encourages autonomous learning.

"If you've got 50 students in a lecture, there isn't as much time for `I haven't got this worksheet' or `I was away yesterday'. We're able to say, `The worksheets and what we did yesterday is on the intranet'," says Mr Lee.

The philosophy helps prepare students for the learning environment they'll face at a tertiary level.

"We expect students to be autonomous learners. We expect them to take responsibility for their own learning . If you feel responsibility for your own learning, you're taking control of it not only for now but for later in life as well," says Mr Lee."

STUDY TIPS

· Make exam revision a year-long process. Revise past topics as you progress through the year.

· Do practice exams. Doing old exams under exam conditions helps build confidence and speed.

· Don't do it alone. Forming study groups with friends can help make revision enjoyable.

· If you don't know, ask. Remember, your teacher and fellow students are your best resource.

WEBSITES

· Australian Institute of Physics: www.aip.org.au[http://www.aip.org.au]

· VCAA Physics Index, including access to every exam since 2000 and other useful resources:

www.vcaa.vic.edu.au/vce/studies/physics/physicsindex.html[http://www.vcaa.vic.edu.au/vce/studies/physics/physicsindex.html]

TEACHER AIDS

· VicPhysics is an online resource for year 12 physics teachers run by the Victorian branch of the Australian Institute of Physics. Visit www.vicphysics.org[http://www.vicphysics.org] for details.

POSSIBLE CAREERS

· Astronomer

· Astrophysicist

· Engineer

· Geophysicist

· Lecturer

· Oceanographer

· Physicist

· Research fellow

· Technical analyst

CAREER CHOICE

CLINTON EAST

TELECOMMUNICATIONS RESEARCH ENGINEER

TELSTRA RESEARCH LABS

What do you do?

It's a little tough to know how to answer that, because, overall, the work I do is extremely mixed and varied compared to other jobs I've had. At the moment I'm working with the **Australian Centre for Radiofrequency Bioeffects Research**. It's a collaboration between some leading research organisations including Telstra Research Laboratories. My current work examines the effects of different types of mobile phone signals on mice. The problem is that the technical set-up of these experiments is very complex and some research organisations don't feel confident conducting their own experiments. So we

provide some of that expertise by reviewing their apparatus and methods, looking for potential problems and sources of error.

What are your qualifications?

After doing VCE physics I went straight on to study a bachelor of computer systems engineering at Monash University. It was a four-year degree. My present work amounts to computational and physical dosimetry (derived from the word "dose"), borrowing straight from physics concepts within that degree. For example, knowledge of Maxwell's equations, antenna design and, of course, the computational and experimental glue that ties it all together. I started here at Telstra Research Labs in 2003 after I graduated.

What attracted you to a career in engineering?

It was sort of by default. I did well at school and honestly didn't know what to do. Ultimately I chose engineering because I could solve real problems for people.

Is working in this field everything you hoped it would be?

Research is certainly fun if you like thinking. Somebody comes to you and says, "Here's this tough problem, nobody knows how to solve it yet, could you figure out how to do it?" You get to solve a person's problem, often in a unique or innovative way; which is a role that I definitely enjoy, although it's not like I planned it. The other really great thing is the exceptional people I work with on a daily basis. What surprised me is that although many people are exceptional engineers and scientists, and psychologists, they commonly excel at things you might not expect, such as athletics.

What are your career aspirations?

I guess I see my interest going towards a technology strategy. I have got a theoretical background, but problems aren't often purely technology. Financial or legal knowledge might be nice, so I could head off in that direction.