the students on board, the process is in motion. Make sure that everyone understands what Technology is all about and share your enthusiasm.

"The Board of Trustees thrives on successes because they are a way of marketing the school as well as proof that their children are offered all possible opportunities for achievement."

Steve also uses direct communication with parents to lift the profile of Technology in his school. "Every year in about the fifth week we invite the parents of our senior technology students to a product technology evening, and invite senior staff as well. Parents have been tremendously responsive. We get a fantastic turnout and a lot of feedback has come back into the school about how valuable the night was. This type of feedback will also help lift the profile of technology with senior management.

"I ring the parents of my class each term and give them a 'State of the Nation' talk on their son's progress. Our parents also have online access to the course outline so they can see what's due and what's coming up. We try and connect that triangle between the student, the teacher, and the parent. It's a little more work for us but it has been successful."

And don't forget to involve the Deputy Principal, Brian says. "Because they're the ones who get all the strife and trouble. They don't get enough 'good stuff'. It's nice that the Deputy can see evidence of student learning and consequently see students in a different light."

Another way to lift the profile of Technology within the school is by involving students in school-related projects. Marietjie's Year 11 Food Technology class helped redesign the school's canteen offerings. To research the project and justify their decisions, and test reaction to their alternative offerings, the class ran sensory tests in the school foyer.

Reflections on student achievement

Brian, Marietjie, Steve, and Arthur have all had the pleasure of seeing students succeed, and it's something that gives them an obvious and continuing pleasure.

Steve: "Tim Taylor, one of my ex-students from about three years ago, keeps in contact. He completed a viticulture degree in Dunedin and has recently moved to Western Australia to pursue a career as a wine-maker. He has remarked that a lot of what we taught in the product technology course aligns to his current role and has proved to be very valuable. He found that some of the stuff that we covered at Year 13 aligned well with level one at university."

Brian: "A young scholarship winner told me that in his first year of university architecture he wasn't allowed to bring in clients or stakeholders. 'I think that's wrong,' he said. 'When I did technology and graphics you taught us that we have to consult a client, we had to consult stakeholders'. So he's now put architecture on hold for a year and is studying sociology, learning about how people react to different things. He's now doing a double degree in architecture and sociology – through his study of human behaviour he can bring into his practice a far greater understanding of the needs of stakeholders."

Marietjie: "By sharing the achievements of some students you can inspire others. Amy Lim (see **www.techlink.org.nz/student-showcase/food-and-biological/amy**) got a scholarship last year. She's a great student, and her success had a chain reaction within the school. This year we have other students interested in following in her footsteps. This increased interest in Food Technology in Year 13 has been helped by the fact that Technology is now an accredited subject for university-entrance. Amy has opted to do a business degree, but she said 'I now know how food companies work and I'm going to try and take my business knowledge back into the food industry'."

A call to action

Go ahead, commit yourself:

- talk to other teachers and visit their classrooms;
- spend some time exploring the Techlink website to get ideas on classroom practice, individual projects, enterprise links and implementing the curriculum, ;
- get in touch with your local Technology Advisor to discuss ways forward;
- attend the TENZ biannual conference to establish contact with other teachers;
- get your senior management alongside;
- involve parents and students;
- approach the journey as a series of steps, not as a leap into the unknown; and
- build on the successes you enjoy along the way and share them with others.

As Steve Ronowicz observed: "Once a teacher has started to think about teaching Technology they're-half-way there."

useful links

Curriculum support:	**www.techlink.org.nz/curriculum-support**
Case studies of teacher practice	**www.techlink.org.nz/case-studies**
TENZ, the professional body for Technology teachers	**www.tenz.org.nz**
Futureintech:, for industry support in your classroom	**www.futureintech.org.nz**

techlink involve » evolve

Adopting Technology Education

Despite the fact that Technology became part of the New Zealand curriculum more than ten years ago, some teachers are still hesitant about changing their teaching approach to align to it.

Techlink has therefore asked four teachers to put the case for Technology and explain how they see the subject as an evolutionary step forward. What real benefits does Technology offer students? What satisfactions flow from teaching Technology well? What advice can they offer to those teachers ready to commit themselves all out to the subject?

Benefits – what Technology does and what it gives

In the mid 1980s Brian Allen was worried that students were being taught skills and knowledge that were fast becoming redundant in the world around them. Where, he asked, was the Technicraft programme leading kids? If the aim of the programme was to prepare students for a broad range of future career options, then it wasn't doing a particularly good job of it. And nor was it doing a particularly good job of mirroring practices in industry.

When Brian was first exposed to Technology he immediately recognised that the new curriculum provided the approach he was looking for. As well as equipping students with a set of hand skills, Technology teaches them to think and had the potential to prepare students properly for the changing world, he says.

"Technology education prepares students for a wide range of careers. It teaches students to think and this is applied through the reflection, justification and analysis that a student does as they become technologically literate. Take, for example, when a student uses a glue to join two pieces of material. As teachers we would encourage students to test a variety of glues and pick one that's got the right properties

Brian Allen

A woodwork teacher since 1972, Brian sat on the 1983 Ministry of Education committee that looked at Technology teaching and led the change to the teaching of Technology in several schools. In 2004, as HOD Technology, he rejuvenated the Technology Department at St Patrick's College, Kilbirnie. In 2007, as Adviser with Massey and Waikato Universities, he worked extensively with North Island teachers to develop their understanding of Technology Education. (Brian has recently accepted a new position at the Correspondence School).

Marietjie van Schalkwyk

Marietjie specialised in Home Economics at university in South Africa and taught the subject for 14 years. When she immigrated to New Zealand in 1997 and started teaching at Wellington High School, she didn't feel comfortable with the idea of teaching 'Food Technology' (a term she had not heard of before) and focused on Home Economics-based units. However, Marietjie is now an enthusiastic Food Technology advocate, finding it a fascinating subject.

Steve Ronowicz

Steve trained as a teacher after 14 years as an automotive engineer. He taught at Feilding Agricultural High School for 13 years before moving to Tauranga Boys' College in 1999 to head the Technology Department. During his 22 years of teaching Steve has experienced the transitions through Engineering Shop work, Workshop Technology and Design Technology to the current Technology curriculum. Steve is currently on a one-year secondment to NZQA.

Arthur Johnstone

Arthur recently moved to Waihi College from the UK, bringing with him 21 years of teaching experience. Much of that experience was gained in the UK but Arthur also spent time teaching at an international School in Kuwait. He has a Masters Degree in Educational Management.

the teachers interviewed

for the job. Apprentices need to know what type of glue to use when fixing say gib-board. Not every glue retains the flexibility yet also the rigidity required for gib-board."

With a background in Technology, a young apprentice will think about the properties of the materials they are using and will understand the need to choose materials with the right properties for the job at hand. They will come to work equipped with what many employers wistfully describe as initiative.

Steve Ronowicz also saw the potential of the new curriculum pretty quickly, because he recognised his experiences with product development aligned neatly with the processes outlined in the Technology curriculum. Experience had validated Steve's understanding and appreciation for the product development process and in Steve's eyes this experience also validated the new curriculum. And he came, in time, to appreciate that aspects of the achievement standards actually validated and extended his own understandings.

Marietjie van Schalkwyk says the greatest benefit Technology offers students is the opportunity it presents for them to think creativity within a sound framework of good project management.

"The teaching of Technology is based on project management processes. Students learn to think, analyse, and ask questions. They can't move forward unless they have first formulated the right questions and then found the answers."

When Arthur Johnstone introduced Technology to Waihi College, he was already a convert, having taught product design in the UK, which has a very similar approach and philosophy. However it was still a challenge, he says.

"The first task was to gain the confidence of the students and this was done by showing them examples of work produced by my students in the UK. I said 'if they can do it, so can you!' Secondly, I needed to develop the resources to teach Technology – the tools, machines and equipment. Then I needed to decipher NZQA standards and work out what the curriculum required (an on-going process)."

To teachers who feel that Technology tends to focus on planning and process to the detriment of the teaching of hand skills and will somehow disadvantage students heading for the trades, Arthur is adamant that Technology doesn't devalue skills.

"Far from it," he says. "Technology teaches skills relevant to the world that students will be living in. The world of technology is constantly changing, and the curriculum equips students to recognise and exploit this change.

"To argue that 'practical' teachers should focus on skills because New Zealand has a skills shortage misses the fact that such a narrow focus wouldn't actually provide what most students need or want. No student will ever use purely manual skills in their career. Even using the broadest of

In this project, which won a 2006 Transpower Neighbourhood Engineers Award, ten Year 5 and 6 pupils from Elm Park Primary School worked with an engineer to design and create a fountain for their primary school.

definitions, Arthur says, the number of students who will make their living in jobs where manual skills are the priority are limited and this has been the case for some time.

If Technology is properly taught, there is no reason why those who follow a trade-based course should be disadvantaged, he says. "I have no doubts that Technology is the best vehicle to keep practical subjects alive in schools."

"I have developed several Technology departments in the UK, making the transition from a more traditional approach to a process-led technological approach. In every case students have been given increased opportunities to express their creativity and realise their potential.

"I have always expected staff to work to ensure students produce high quality outcomes that demonstrate high level thinking skills and high level design and manufacturing skills. At no stage do I believe that following a technological approach has lead to a diminution of technical knowledge or practical skills. There is no reason why it should!"

Marietjie agrees: "Technology is the foundation of any craft. Students need to think about what it is that they want to do, look at what skills they have, what their options are and the process of making it all works. Technology enables them to understand the process behind any object."

Technology also supports a student's communication skills and literacy, she says. "The need to record all the data related to the development process is an opportunity for students to practice their communication skills. This is just one example of how Technology links with all of the other subjects taught in school. Thinking and expressing yourself clearly flows naturally out of each lesson."

Marietjie believes this sort of clear thinking can be applied to all aspects of life, not simply to careers in technological industries or trades. The same processes applied to finding a solution to a technological problem and managing a project can be applied to 'everyday life' – choosing transport, planning a camping trip, creating a healthy family meal, or coaching a sports team.

A good example of the universal applicability of technological practice is seen in Brian's approach to his job as an advisor. "I have to see a need and opportunity when I go into a school, I have to do my research, I have to collect some data to base some decisions on, I have to consult my clients, I have to consult my stakeholders, and I'm using tech practice in my role as Advisor."

Taking the first steps

If a teacher has come to recognise the benefits Technology offers, what's the best way to go about realising some of those benefits?

To Marietjie, the first step is clear: "Familiarise yourself with what's going on out there and see what's possible. Go to the Techlink website, and see what's being done. It's much easier when you look at the case studies. Some teachers have done some amazing stuff. The way Havelock North High School has structured their whole department. If you look at examples like that, it will motivate you.

"Get as much advice as you can from other people. I've found that other teachers are happy to share – visit their classrooms and see what they are doing. And then just do it, because it's really exciting. Had we not got the right advice, we would have never had our Green Bread unit"(see **www.techlink.org.nz/BP633-kiwi-bread**).

Go and visit a school that's doing Technology well in a similar context, Steve Ronowicz says. "Observe what they are doing and what their outcomes are. Form a relationship to support each other."

To find suitable schools for visiting, contact your local Technology Education New Zealand (TENZ) branch. TENZ branch meetings are an ideal way to network with like-minded teachers whose experiences can be invaluable. To become a member of TENZ and participate in local branch meetings visit **www.tenz.org.nz**

In this project, Technology students designed and manufactured original lighting units for a local city nightclub, in consultation with the client, university design students and industry professionals.

Take small steps, says Brian. "Start modestly and gradually. Start off with something small and simple that offers good chances for success and positive reflection, then build on that."

"A helpful strategy at St Pat's College was to use Futureintech Ambassadors (**www.futureintech.org.nz**) who visited regularly and worked with students. These young people working in Technology help students to be more realistic in their learning and gave them real and practical examples of how they solved a need or an issue. Students built up a relationship with the Ambassadors, who helped them with key factors, planning strategies for practice, being more specific in evaluations and writing a brief to enable a measurable outcome, and suggested materials to use they had not considered."

Winning the support of the school

Ok, so you're convinced. But what about the rest of the department? What about senior management and the Board of Trustees?

The key, Steve believes, is communication. "Technology leaders and teachers need to communicate to senior management the benefits of Technology. They need to explain what they plan to do, why they want to do it, and most especially how it benefits students."

But be realistic and think strategically, he says. "School budgets can be tight. Securing funding for resources and/or upgraded premises may need to be a medium term goal."

Don't try and do too much at once, Brian cautions: "Don't try and win over the Board and the principal in one year. Have some student success around some small examples in your classroom. Expose the Board to them. Photograph the outcome, record the outcome, so that the Board can see it. And it's not only the board, pull in the parents as well."

Parent support is crucial. At St Pat's Brian deliberately set out to court this support, with some success. When a student did something particularly good, he made sure people knew about it. "I wanted the Board, the principal and the parents to know. I'd tell the student: 'Go home and tell your parents'. Then I'd ring up and ask: 'Did your son come home and tell you?' If they said 'Yes, it was good!', I'd say 'Well if it means something to you, tell the principal'. So then the principal discovers these wonderful things going on, and he goes and congratulates the teacher, and the teacher says to the principal 'Well how about sharing that with the Board? So the principal does, and ultimately the Board will ask the teacher to come back to the Board and share what they are doing. Then you've got the cycle going. So you have to be thinking a little bit to get that going."

Marietjie suggests a similar strategy. "It all starts with the teacher being motivated to deliver Technology. No principal will deny an enthusiastic teacher an opportunity. We do a lot of show-and-tell about students' success and once you have