Havelock North High School

Abstract

Reference: Case Study BP608

Classroom practice: Year 9 and Year 10

Title: Developing Junior Technology Programmes

Overview: The Havelock North High School Technology department, led by co HODs Doug Sutherland and Carol Rimmer, took a long term approach to establishing compulsory Technology education. In 1999 they introduced a Year 9 programme in which students worked in each technological area, leading to an optional Year 10 course and a range of senior technology courses.

Modifications to the programme in 2005/2006 have culminated in a Year 9 Technology cycle being developed as a visual tool to help students understand technological practice. Students are organised into core classes and each term there is a focus on a component of practice; for example when Brief Development plus domain knowledge and skills of the technological area timetabled for that term. This resulted in students making great progress in technological practice and producing high quality 'take home' work.

Focus Points:

- Long term approach to implementation of Technology curriculum
- Establishing Technology in core classes
- Uniform Year 9 progression through technological practice
- Ongoing documentation and tracking of individual progress
- High quality outcomes

Background

Initial Implementation of the Technology Curriculum in 1999 Havelock North High School decided to take a long term approach to introducing technology as a compulsory subject in 1999. Co-Head of Department Carol Rimmer was determined to do the job properly: we weren't going to say 'it's what we're already doing under a different name' and just change the sign on the door".

In support of this Carol had done a two-year post-graduate diploma at Massey University and was also awarded a Woolf Fisher fellowship, under which she travelled to Britain and visited a range of schools.

In 1999 all staff were invited to be involved in developing the Technology curriculum. A *planning* group (Co-HODs Doug Sutherland and Carol, plus a biotechnology and an economics teacher) was formed, which worked with a technology education facilitator to put an overall strategy, which was then presented to the department.

A larger group met weekly for a year to work on changes within the department. This included teachers from a technical background and those interested in teaching Technology, which Carol and Doug felt gave a very broad based perspective.

Units were developed "by the boxful", but, in hindsight Carol describes them as "really academic and prescriptive, and unsuited to the classroom. However, developing the units served to bring all the thinking together and a 'whole team' ethic into the department.

The outcome of this work was the introduction of a Year 9 programme. This comprised an introductory and five technological modules, with a sixth to be covered in Year 10.

Reflection and Modification

Carol points out that although everything was being taught as planned, and it was an innovative approach at the time, they found that teachers were working out of their comfort zones. While there were some successes, there was really nothing produced of a quality that

the students could take home "and the whole knowledge and skills thing just wasn't there". Teachers were then put into areas where they felt confident and the modules were changed to one term, because everyone had found that it was impossible to do anything worthwhile in six week modules. At this stage the feeling was that everyone was getting the technological practice right but that student satisfaction with the quality of outcomes was lacking. This one-term format was retained for some time, with students going to four different technologies over the year. However practice in Term 1 wasn't necessarily progressing the students into Term 2. Teachers could teach the appropriate skills to a class in the first term but would find that the Term 2 students had covered different technology areas and knowledge.

The next step was to negotiate with timetablers that the students stay as a core class and for four hours each week for a term, moving on together to each new teacher. This proved successful, but the department had never formalised what was being taught between those four teachers. So each teacher would cover brief development, planning for practice and outcome development and evaluation.

Development Group

The next stage started with Carol and Doug asking for volunteers to work on a Beacon Practice project. Half the department (five) joined, with others declining because they only taught one technology class or were also teaching in other curriculum areas. The size of the group made organising meetings easier and anything done within the group was brought up in departmental meetings, so that there was a two-way flow of ideas, something Carol attributes to its success. Staff knew changes came from classroom teachers rather than being imposed by Heads of Department

Pre-planning

The planning group considered their current understandings of technology education and what they considered students should know after Year 13 and five years of technology education. They came up with twelve points which they agreed were the key knowledge and skills students should have. Carol says there was real buy-in on this; everyone agreed on it and there was some really healthy debate. It was at this point that a mission statement for the department was developed: *to provide individual students with the opportunity to achieve to their highest abilities, effectively communicate knowledge and skills, and be adaptable to different contexts and environments through engagement in technology education.*

This led on to deciding which generic key competencies all students should have, and creating a Year 9 to 13 draft strategic plan. It was agreed that emphasis at the beginning should be on technology terminology before moving the students on to practice. It was difficult to show technological practice in anything but a linear way – 'this is what you do, before you do…' – so the team came up with a technology cycle which changes every term.

Students move as a core group to four different domain areas, one per term. All teachers in Term 1 teach a predetermined component of practice within a given context, along with key domain knowledge and skills for that area. The four domain areas are Food, Materials, ICT and Graphics.

Doug Sutherland: "I've always seen Graphics as an essential skill area in which kids need to show their ideas".

Individual teachers within the project then developed units of work, student resources and achievement criteria for their specialist area. All teachers were consulted during this development stage. Once developed, this planning was checked against the key technology competencies to identify any gaps.

Using the planning group's work, Carol developed an overview booklet which covered unit planning, components of practice, assessment schedules and generic technology embedded in the unit.

Carol Rimmer: "We've absolutely recognised the fact that we want our students to build their knowledge and skills to produce quality outcomes – that has been a key decision within our department".

Delivery

Doug and Carol recognised the specialist knowledge and skill level of their staff but it's how they're being taught and how they're being embedded in the practice that are the crucial things.

During 2006 departmental meetings were held and strategies for teaching the key competencies were shared and discussed. *Carol Rimmer: "What I really enjoy is seeing two teachers from different 'areas' brainstorming together about teaching food technology – we're losing those wood/metal/food boundaries".*

Term 1: the students were doing very simple technological practice; for example, where they might be verbally evaluating they were not expected to provide any formal evidence of the evaluation. At this stage teachers wanted them to get to grips with an issue. They were given a brief, looked at how stakeholders are used, research and concepts development, final design and manufacture before a very simple evaluation.

Term 1 teachers are aware of their responsibility to deliver the planned unit of work as the Term 2 teachers will build off that point. Once again the departmental collegiality has been a huge bonus.

Term 2: the focus moved to brief development. Students had the technology cycle in their folders and on the classroom walls and were again asked for quite simple things – an initial brief, a written initial brief developed from the class brief and then a final brief.

Term 3: planning was the focus for Term 3 with students expected to work on management of time as part of their practice.

Term 4: looked at outcome development and evaluation. Students were taught to evaluate their concept ideas, after their development phase, and after manufacture, when they had to consider not only the success of their product but whether it had met the brief.

Outcomes

Unit outlines have been developed to encompass what can be managed with a full class of mixed ability students in one term. They are flexible enough that the teacher is able to simplify a unit or extend students through it. Departmental feedback on the changed approach has been very positive. At meetings everyone reports on the progress in their classroomand all are open to the idea of making changes within the present structure. Student feedback, both written and verbal, has been very positive. Data collected at the beginning and end of 2006 showed that student understanding of technology had improved considerably.

Some very high quality student work has come out of this approach and 2006 teachers have seen student outcomes at the end of the year improve. This is attributed to the technological progression happening over the year in the Technology cycle and the quality of the domain knowledge and skills being taught.

Reporting

During each term students are assessed using a set of achievement criteria based on the components of practice and the specified domain knowledge and skills. Reports showing student achievement are sent home at the end of each term.

At the end of the year parents had a comprehensive document showing achievement over the whole year, rather than each part sitting in isolation. The 'teacher comment' section had more flexibility so a Term 4 teacher could change a Term 2 grade if, for example, a student's brief development had improved. The KAMAR system was used and fitted comfortably with the school reporting criteria.

Keeping ongoing, complete records meant teachers in later terms would know which students to push or which needed extra help in a particular field. This information will also be used to track these students through Year 10 in 2007 and during senior Technology.

Carol notes that while they have always had great support fromsenior management, one of the unexpected outcomes has been the buy-in from absolutely everyone.

Carol Rimmer:" I think we're in the unusual situation in our school where we're treated equally; as a curriculum area we have equal status to the likes of English, maths and science".

Where to Next?

The key competencies for Year 10 have been established and unit outlines, student resources and achievement criteria drafted. A big change is going from two one-off single term units to a half year course. Carol trialled this in 2006 and reports that it changed the student outcomes dramatically. She found that with the extra time to persist she was able to develop the less able and really extend the top students, through dividing the course into three parts. There was a basic knowledge and skill building part A, technological practice as Part B and then Part C as extension, which some students would not do. 2007 is the trial year for the Year 10 programme across the department.

Doug and Carol hope there will be more innovation in student outcomes as this Year 9 group, with its better base, comes through and is hopefully more confident to face new challenges. They are still working on getting more students at senior level; there are five Level 1 classes, three Level 2 classes and three Level 3 classes. Although Technology is a core subject at Years 9-10 it is still timetabled as an option, which possibly adds to that barrier technology teachers are trying to break through.

Things are happening in the senior school too. Teachers are detailing the scaffolding of the key technology competencies Years 11-13 and will further develop senior units of work. Kate McLennan will be working with food technologists; Jeff Arnold with an inventor with expertise in plastics; John Foster is integrating electronics to his senior courses; Andrew Hughes continues to develop key design ideas in his classes and Doug Sutherland is exploring the benefits of functional modelling.

Success has meant that the whole department is constantly seeking to improve the delivery of their programmes, and with a new curriculum on its way there are further challenges ahead. The increased collegiality in the group is leading to more effective responses to whole school initiatives such as literacy.