

Rich assessment tasks: exploring quality assessment for the School Certificate

In programming syllabus outcomes, resource based teaching and learning units can be designed to develop information skills and information literacy for all students. During 1998, subject based assessment materials were published in English, mathematics and science to assist teachers of those subjects to implement the revised School Certificate Grading System. The materials were distributed to all secondary schools in New South Wales for English, mathematics and science faculties. Frances Plummer is a Senior Project Officer with the Securing Their Future Professional Development Team. In the following article, Frances explores some opportunities for teachers and teacher-librarians to collaboratively plan units of work which effectively integrate teaching, learning and assessment.



This article is the first in a series of four, to appear in *Scan* throughout 1999. The purpose of this introductory article is to begin exploring the elements of effective assessment. The role of the teacher-librarian is highlighted in the real context of teaching and learning practices, in particular, for the School Certificate. Follow-up articles will focus on:

- 'Collaborative task design', *Scan* vol 18 no 2
- 'Designing the scaffolding for rich assessment', *Scan* vol 18 no 3
- 'Taking the learning further', *Scan* vol 18 no 4.

How has assessment for the School Certificate evolved?

In 1991, the Board of Studies introduced the School Certificate Grading System. Since then, School Certificate grades in courses other than English, mathematics and science have been awarded by schools on the basis of Course Performance Descriptors issued by the Board of Studies. Course Performance Descriptors for awarding a grade for the School Certificate are summary statements which describe student achievement at the end of Stage 5.

In 1998, Course Performance Descriptors in English, mathematics and science were developed by the Board of Studies to assist teachers award grades to their students in those courses. Students are now awarded grades A-E in all courses, based on school-based assessment of students' achievement, with reference to the Board of Studies' Course Performance Descriptors.

Also in 1998, the School Certificate Test replaced the School Certificate Reference Tests. Information on the

revised School Certificate can be found in *The School Certificate grading system: a guide for teachers* (Board of Studies NSW, 1998).

What are the key elements of the School Certificate Grading System?

- Assessment for the School Certificate assesses what a student can do, knows and understands. This represents a shift in assessment practice where students were ranked and compared to each other.
- Student performance is matched to a set of Course Performance Descriptors based on evidence collected through assessment tasks and classroom activities.
- Student achievement at the end of Stage 5 is reported as a grade in all subjects.
- Students receive their own results of the English-Literacy and Mathematics tests.
- Moderated grades are no longer provided.

What does this mean for teacher-librarians?

The **collaborative planning relationships** model integrates approaches to teaching, learning and assessment for units of work. Teacher-librarians are familiar with this practice. However, the new School Certificate Grading System suggests further implications for teacher-librarians in designing units to provide students with a range of opportunities to demonstrate achievement. These would include:

- knowing how to modify current tasks to maximise evidence of student achievement from that task, ie developing authentic, or 'rich', assessment tasks
- designing new tasks that provide students with a variety of methods of achieving the syllabus outcomes and objectives, ie incorporating information skills, cooperative learning activities, written reports and products, oral presentations
- applying the assessment criteria for peer and teacher judgments of student achievement
- developing scaffolds to assist teachers to design more effective tasks
- knowing that improving and refining tasks is an ongoing process
- understanding how assessment informs the design of units of work and programming.

What is a rich assessment task?

Assessment tasks can be both formative and summative. They can also provide useful information for grading if the elements of rich task design are considered when constructing tasks. Assessment tasks are 'rich' if they provide assessment information across a range of course outcomes within one task, optimising students' expression of their learning. Rich assessment tasks then reduce the need for more assessment.

Rich assessment tasks:

- explicitly describe the expectations of the task to the learner
- engage the learner
- connect naturally with what has been taught
- provide opportunities for all students to make a start
- are learning activities
- provide opportunities for students to demonstrate subject knowledge, skills and understandings
- focus on the critical areas of learning within a subject
- assist teachers to determine the specific help which students may require in content areas.

(Further information can be found in *Securing their future: subject based assessment materials for the School Certificate in mathematics*, p 8.)

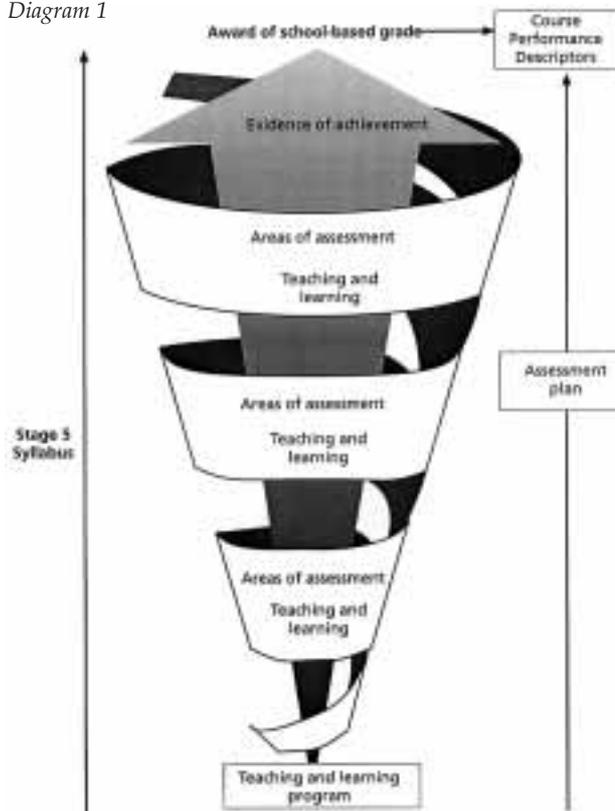
Teacher-librarians will recognise these elements as those they incorporate in designing units of work for resource based learning. Articles by Jackie Hawkes (*Scan* vol 17 no 2) and Lorraine Bruce & Owen Belling (*Scan* vol 17 no 3) highlight the application of these elements in the teacher-librarian's collaborative planning with teachers.

Designing a rich assessment task

To provide evidence of student achievement, consideration needs to be given to the task design. If we believe assessing student achievement is an integral part of the teaching and learning cycle, we can use assessment to evaluate student progress (formative assessment) which informs our planning for the next phase in the teaching sequence. This spiral approach to programming is represented in Diagram 1.

During 1998, a range of professional development opportunities was made available to schools in English, mathematics and science. The materials provided to secondary schools describe the notion of developing rich assessment

Diagram 1



tasks. To identify what these resources look like, and to find out more about professional development support for secondary teachers, visit the *Securing their future* professional development Web site at:

<http://www.tafe.nsw.edu.au/oten/future>

Elements of authentic assessment

Assessment of this nature gathers all the information the teacher needs to determine the level of each student's achievement. It represents elements of authentic assessment by:

- assessing what is taught and learnt in a unit of work
- assessing what you have told the students you plan to assess
- matching the assessment criteria to the task
- communicating explicit assessment criteria to the student as part of the task
- accommodating the needs of different students to capture the full range of student performances.

Resources

To support teachers in designing rich assessment tasks, and as part of the *Securing their future* strategy for implementing the revised School Certificate Grading System materials in English, mathematics and science were provided to all secondary schools in New South Wales.

These materials contain advice on:

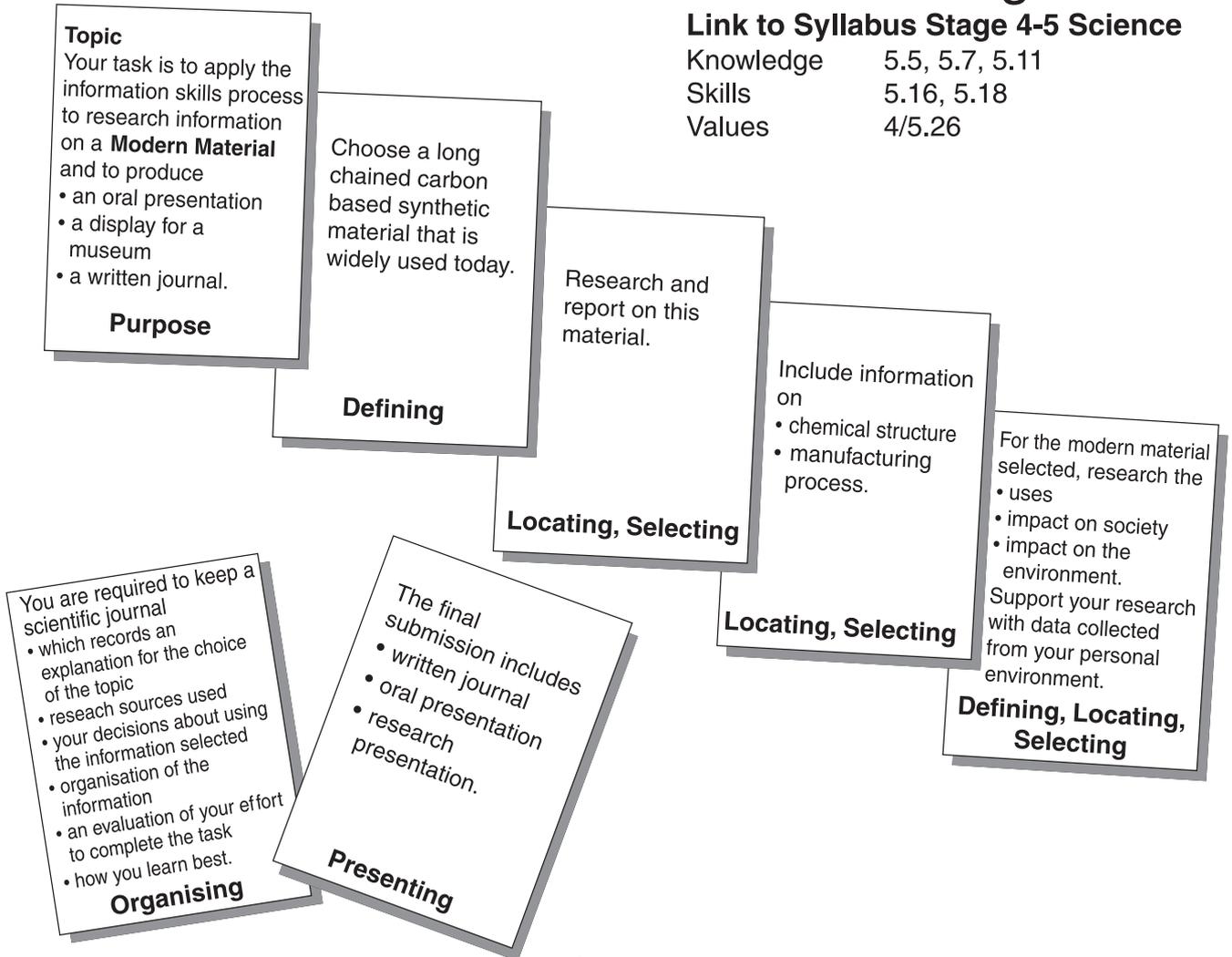
- how to design rich assessment tasks
- sample assessment tasks from trial schools, which worked with academic mentors to develop tasks in their school context
- samples of student responses to the published tasks.

Diagram 2

Modern Materials Research Assignment

Link to Syllabus Stage 4-5 Science

Knowledge 5.5, 5.7, 5.11
 Skills 5.16, 5.18
 Values 4/5.26



Name:.....

Class:.....

Assessing: Student achievement will be based on the following assessment criteria:

Assessment Criteria	low → high				
	Information about modern material	identify a modern material that has an impact on society	describe a modern material and its effects on society and the environment	describe at least two ways in which the use of a modern material has changed society and the environment	classify the impacts of the uses of a modern material on society and the environment
Apply information skills process	extract the relevant information about a modern material from a single resource	research information from two sources	select and summarise relevant information about a modern material from more than two types of sources	construct an appropriate presentation about a modern material, which blends information from a variety of sources	evaluate information, present a logical argument and identify future implications of the use of a modern material
Presentation	construct simple presentations about a modern material with guidance	construct simple presentations about a modern material without guidance	present simple information effectively	present complex information and simple arguments effectively about the impact of a modern material	explain why their method of presentation is the most effective way of communicating complex information and arguments about a modern material

Models of rich assessment

The subject based assessment materials in English, mathematics and science provide models of rich assessment tasks. These materials were a joint project of: the Department of Education and Training; the Catholic Education Commission; the Association of Independent Schools; and the Board of Studies. The sample assessment tasks were developed by thirty trial schools across the three sectors.

The English and science tasks were based on existing syllabuses. Some tasks were drawn from current assessment practices and enriched to incorporate the elements of effective assessment. Others represented new ideas, for example *English snapshot 10: Reading visual and written texts/speaking in an interview* and *Science snapshot 7: Using a field study*.

Students in each of the trial schools completed the assessment tasks. Sample student responses were collected, annotated and published in the materials to describe the range of student achievement collected from the tasks.

The mathematics tasks were developed from the new Mathematics 7-10 syllabus, designed to draw upon a range of content objectives, and completed by students in the trial schools.

The information skills process

Applying the information skills process of **defining, locating, selecting, organising, presenting, and assessing** to the development and/or modification of these tasks in your school context provides all students with enriched opportunities to demonstrate what they know and can do.

Snapshots of rich assessment

Science

This snapshot (Diagram 2) has been chosen to demonstrate how the activities in the *Securing their future* documents reflect opportunities for teacher-librarians and teachers to collaboratively plan integrated teaching, learning and assessment units. It represents a model, and suggests ways for modifying existing tasks, or for designing new tasks from existing and new syllabuses.

This task is the result of modifying **Task 8** (*Science materials*, p 61). The task design links the outcomes, from the new Stage 4 & 5 syllabus, to an investigation of a modern material through a research assignment. The links between this task and the new science syllabus are:

Knowledge:

- 5.5 Analyses how current research might affect people's lives.
- 5.7 Relates properties of elements, compounds and mixtures to scientific models, theories and laws.
- 5.11 Analyses the impact of human resource use on the biosphere to evaluation methods of conserving, protecting and maintaining the earth's resource.

Skills:

- 5.16 Accesses information from a wide variety of secondary sources.
- 5.18 Selects and uses appropriate forums of communication to present information to an audience.

Values:

- 4/5.26 Recognises the role of science in providing information about issues being understood and in increasing an understanding of the world around them.

The research assignment features the following elements of 'rich' task design:

- addresses a range of outcomes in one task
- makes explicit the purpose of the task and the assessment criteria to be applied to the final products
- connects naturally with what has been taught
- engages the learners, while giving all students an opportunity to make a start
- provides choice and openness
- is, in itself, a worthwhile learning activity
- draws on previous and current learning experiences.



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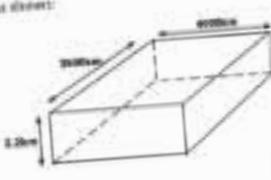
These tasks are built on stimulus material that could be collaboratively planned and collated. These types of tasks can be included in integrated units across key learning areas, or as starting points for further research by students. Students could use sources accessed through the library to create their own tasks in mathematics as part of a peer sharing activity (*Mathematics materials* Section 2, Tasks 10, 18, 21).

Name: _____

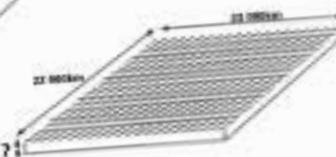
10. Greenhouse Effect and Antarctica

As the countries of the world consider the effects of global warming, one concern is that if the ice on Antarctica was to melt, world sea levels would rise, causing great destruction in low-lying countries.

The ice on Antarctica can be considered to be equivalent to a huge block of ice, with the measurements 4000 km by 3500 km by 2.2 km as shown:



The ocean of the world can be thought of as equivalent to the area of a rectangle (22 000 km by 21 000 km).



Use the information above to predict the average rise in sea levels that would be caused if the ice presently covering Antarctica was to melt. Please show all your working below.

Name: _____

21. What Australians Eat and Drink

The information in the table below shows the amount of food and drink which Australians ate and drink on average in 1985 and 1995, for certain items:

Drink per person (Litres)	1985	1995
Beer	113.9	93.8
Wine	18.4	18.2
Salt drink	97.5	198.1
Milk	191.4	100.0
Tea (kg)	1.1	0.9
Coffee (kg)	2.0	2.2

Food per person (kg)	1985	1995
Red meat	85.1	72.8
Poultry	24.7	27.2
Butter	2.9	2.9
Cheese	8.8	9.7
Margarine	6.3	5.3

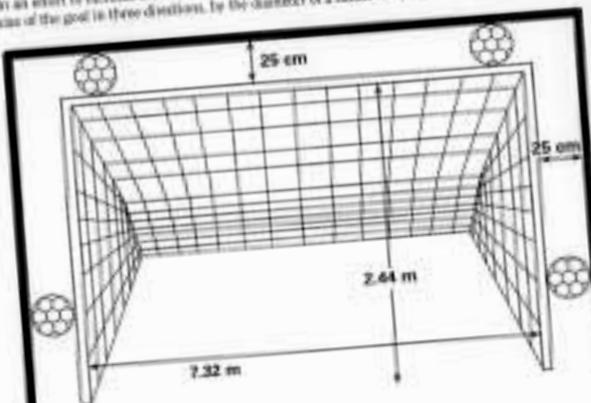


Write a brief newspaper article below (with heading), discussing the issues raised by these data, with possible explanations for the changes over time. Your article should be around 100 words.

Name: _____

18. Soccer Goals: How Big is Big Enough?

In an effort to increase the number of goals scored in soccer, it was proposed to increase the size of the goal in three directions, by the diameter of a soccer ball, as shown in the picture:



- What would be the percentage increase in the area of the soccer goal, if this increase in size were accepted?
- If this soccer goal was increased by this percentage, would you predict that the number of goals would also increase by the same percentage? Please explain your reasoning.

Mathematics

Rubric scores	Summary/Description (Used for areas of assessment: Geometry, Number, Measurement and Trigonometry, Chance and Data, Algebra, Working Mathematically)	Grades and General Performance Descriptors (Awarded if the scores across a number of tasks over a range of assessment areas over time "balance out" around the score in a given row)
1	Task accomplished. Central mathematical ideas clearly demonstrated and understood. If appropriate, student has applied processes and skills to new situation. Appropriate plan. Clear communication of strategies and mathematics used. Shows ability to apply necessary skills to new situations.	A: Excellent Achievement The student has an extensive knowledge and understanding of the course content and can readily apply this knowledge. In addition, the student has achieved a high level of competence in the processes and skills of the course and can apply these skills to new situations.
2	Task accomplished, but there are minor flaws in diagrams, description, calculations or application of processes and skills to new situations. Reasonable plan. Communication or reasoning lacking to some extent. Some ability to apply necessary skills to new situations.	B: High Level of Achievement The student has a thorough knowledge of and understanding of the course content and competence in the processes and skills of the course. In addition, the student is able to apply this knowledge and skills to most new situations.
3	Substantial progress towards completing the task; indicative of understanding of relevant knowledge, concepts and skills; but some key ideas may be missing. Some evidence of planning; some communication of strategies and mathematics used.	C: Substantial Achievement The student has demonstrated attainment of the main knowledge and skills of the subject and has achieved a sound level of competence in the processes and skills of the course.
4	Attempt at the task shows some progress has been made; partial but limited grasp of the central mathematical ideas; reveals gaps in knowledge, conceptual understanding and/or relevant skills. Little evidence of effective strategies, communication or reasoning.	D: Satisfactory Achievement The student has demonstrated an acceptable level of knowledge and understanding of the course content and has achieved a basic level of competence in the processes and skills of the course.
5	Little progress or understanding evident, limited competence in processes and skills. Ineffective strategies, communication or reasoning.	E: Elementary Achievement The student has an elementary knowledge and understanding of the course content and has achieved limited competence in some of the processes and skills of the course.

8

This completed sample scoring rubric is based upon making a *holistic judgment* on a single piece of work, rather than assigning marks to small parts of the task and combining them. The left column describes levels of achievement for individual tasks in the areas of assessment in mathematics. Beside this column is a restatement of the grades and General Performance Descriptors for the School Certificate. ■