Focus on Inquiry

A practical approach to integrated curriculum planning

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Curriculum CORPORATION

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CHAPTER FOUR: Sample Units

Introduction
Thinking About Inquiry

Focus on Inquiry: A practical approach to integrated curriculum planning identifies how to plan, implement and assess inquiry-based integrated curriculum units. It provides background information on the concepts, values and understandings underpinning a successful unit and makes suggestions for effective resources. The first three chapters explore planning issues and answer questions about inquiry-based integrated units. They also provide assessment ideas, including generic questions and criteria for understandings and inquiry skills (see also *Integrated Assessment,* Wing Jan & Wilson, 1998). Chapter Four includes 12 sample units for primary classrooms and outlines teaching procedures that are useful in many teaching contexts. The sample units are based on units that have been written and trialled by teachers, and therefore serve to acknowledge and celebrate the great work being done in schools. They are designed for teachers to fine-tune and use according to their students' needs.

Focus on Inquiry assists teachers to investigate the *what* and the *how* of the inquiry process through clear pedagogical information and practical application of this pedagogy. Important content about the world can be explored through challenging, meaningful integrated curriculum topics using the inquiry process. This book is designed to help teachers plan integrated curriculum units that foster such inquiry.

The cornerstones of inquiry-based integrated curriculum units: concepts and understandings

The goal of effective unit planning and implementation is for students to develop significant understandings about the topic through meaningful teaching and learning experiences based on the process of inquiry. Forming the understandings upon which a unit is based is the foundational part of the unit-planning process. Teachers need to identify the 'big ideas' or important broad knowledge that the students will develop during the unit and express these in statements called 'understandings'. Before students can develop understandings or generalisations about a topic, facts about the specific events, objects, people and phenomena need to be identified. Facts are the lowest level of truth about a subject. Once facts have been collected, students can draw on these to adopt a higher level of thinking and organisation, and to form concepts.

Marsh (2001, p 78) defines a concept as a 'class of specifics sharing like characteristics.' When students conceptualise (build concepts) they identify, organise and categorise groups of objects or events to make sense of the way the world works. Conceptualising assists people to generalise by grouping things with common characteristics together. When we ask students to make generalisations about what they have learnt, they usually relate to two or more concepts (Marsh, 2001).

The development and understanding of concepts can take a long time for students to attain. Concepts can vary in level of difficulty and scope. The level of difficulty depends on:

- previous experiences
- direct experiences provided for students
- how abstract the concept is
- if the concept refers to a process or objects
- understanding of several simpler concepts.

To promote concept development, it could be helpful to:

- ask students to share their understanding of a concept
- present definitions for students to discuss
- provide common characteristics and ask students to identify the general concept
- provide examples of one concept and ask students to identify the concept and/or provide other examples
- ask students to test their understandings of concepts by providing positive and negative examples.

Concept-based planning

There are a number of key concepts that are central to the development of significant ideas within integrated curriculum units. Strong units that require higher-level thinking often have a number of key and contributing concepts. Although the key concepts are often organised in a variety of ways by different writers and researchers, Table 1 summarises those most often cited in a range of sources. These concepts have been grouped according to the learning area in which they are most likely to be developed, for example, Studies of Society and Environment (SOSE), Science (Sc), Technology (T) and Health (H). Table 1 lists key concepts that are revisited often throughout schooling regardless of the year level, and provides examples of contributing concepts. This list is not exhaustive but does provide the basis for planning for concept development. It also serves as a guide when reviewing integrated curriculum content.

TABLE 1 *Key and contributing concepts*

Key concepts	Host learning area	Example contributing concepts
Change and Continuity	SOSE/Sc/T	Heritage, Development, Mobility, Culture, Roles & Rules, Social Continuity Values, Survival, Human Rights, Global Society–Nationalism, Institutions, Life & Living, Technological Advances
Needs and Wants	SOSE/T/H	Prejudice & Fairness, Resources, Community Services, Roles & Rules, Social Values, Supply & Demand, Survival, Human Rights, Global Society, Technological Advances, Wellbeing
Cooperation and Competition	SOSE/T	Rights & Responsibilities, Difference, Resources, Roles & Rules, Social Values, Human Rights, Consumption, Production, Supply & Demand, Conflict, Communication
Power and Control	SOSE/T	Rights & Responsibilities, Resources, Roles, Laws & Rules, Human Rights, Global Society, Institutions, Communication
Interdependence	SOSE/Sc	Difference, Resources, Lifestyles, Community Services, Culture, Roles, Laws & Rules, Supply & Demand, Survival, Human Rights, Global Society, Institutions, Life & Living
Relationships	SOSE/Sc/T	Rights & Responsibilities, Difference, Lifestyles, Roles & Rules, Social Values, Human Rights, Life & Living, Communication
Equity and Access	SOSE/H	Rights & Responsibilities, Prejudice & Fairness, Difference, Resources, Mobility, Lifestyles, Roles, Laws & Rules, Social Values, Supply & Demand, Human Rights, Global Society, Institutions, Wellbeing, Communication
Decision Making	SOSE/T	Rights & Responsibilities, Prejudice & Fairness, Roles, Laws & Rules, Human Rights, Institutions
Identity and Culture	SOSE/H	Social Values, Rights & Responsibilities, Difference, Prejudice & Fairness, Wellbeing, Interdependence
Social Organisation	SOSE/Sc/H	Rights & Responsibilities, Interdependence, Social Values, Internationalism, Civics & Citizenship, Wellbeing
Diversity	SOSE/Sc	Difference, Disability, Culture, Social Values, Internationalism
Conservation	Sc/SOSE	Resources, Social Values, Supply & Demand, Human Rights, Life & Living, Change & Continuity, Global Society
Communication	T/SOSE	Social Values, Institutions, Global Society
Technological Advances	T/SOSE	Inventions, Resources, Consumption, Resources, Production, Supply & Demand, Global Society, Needs & Wants, Change & Continuity
Systems/Structures	T/SOSE	Consumption, Production, Classification, Organisation, Needs & Wants
Change and Reaction	Sc/SOSE	Chemistry & Biology, Life & Living, Evolution, Change & Continuity
Ecosystems	Sc/SOSE	Resources, Survival, Life & Living, Classification, Interdependence, Relationships
Adaptation	Sc/SOSE	Life & Living, Survival, Interdependence, Change & Continuity
Ecological Sustainability	Sc/SOSE	Consumption, Resources, Production, Social Values, Supply & Demand, Survival, Life & Living, Change, Needs & Wants
Evolution	Sc/SOSE	Life & Living, Change & Continuity
Energy and Motion	Sc/SOSE	Resources, Force, Organisation/Classification, Change & Continuity
Safety	H/SOSE	Lifestyles, Survival, Independence, Interdependence, Environment
Wellbeing	H/SOSE	Work & Leisure, Lifestyles, Roles & Rules, Social Values, Human Rights, Relationships, Social Organisation, Independence, Interdependence, Resources, Environment

The formation of understandings or generalisations requires a higher level of thinking resulting from the organisation of learning or information gained from facts and concepts. When forming understandings or generalisations, learners make links between two or more concepts that have developed from groups of related facts. The grouping together of generalisations and understandings can lead to the development of theories. Facts, concepts and generalisations are different but they can be linked. Figure 1 (based on Marsh, 2001) illustrates the relationship between facts, concepts, understandings and theory.

FIGURE 1 *The relationship between facts, concepts and generalisations*

Theory building

Generalisations
– expressions of the relationship
between two or more concepts

Concepts
– classified/categorised groups of related facts

Facts
– truths about specific events, objects, people.
These are easily investigated
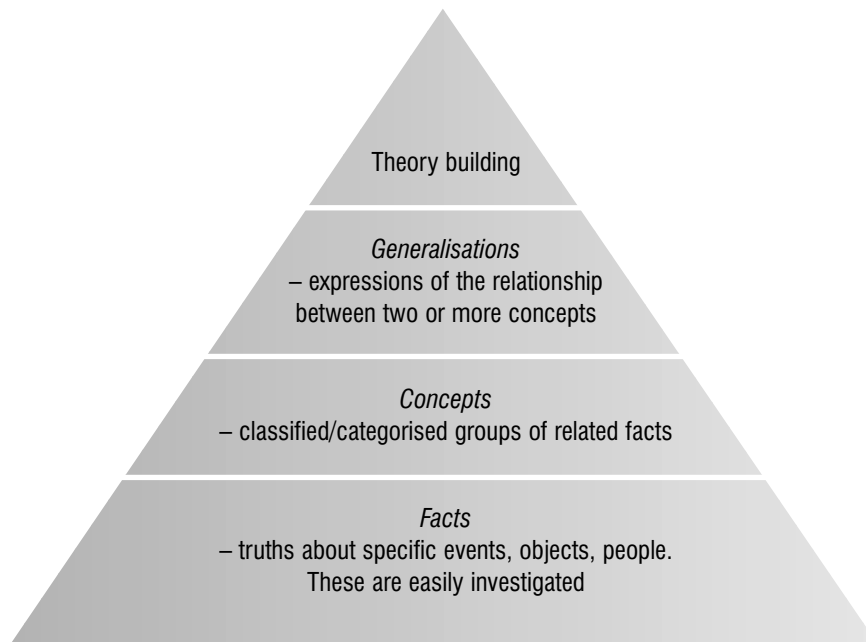
Forming understandings is often the most difficult and time-consuming aspect of integrated curriculum planning. Once they have been formed, all teaching and learning activities and assessment procedures are linked to them.

There are some 'umbrella understandings' underpinning many of the topics students study in primary school. Some of these are also applicable at higher levels of schooling depending on students' experiences. These understandings provide a guide for the formation of specific understandings for many integrated inquiry units. Table 2 provides examples of understandings for the learning areas of Science, SOSE, Health and Technology. This is not a definitive list; however these understandings have been chosen to help teachers form understandings for Prep to Year 6 topics. The key concepts are also noted to assist with planning.

Chapter 3

Assessment

Assessment within integrated curriculum

Assessment within integrated curriculum is an ongoing process involving both progressive (cumulative) and summative assessment data. This data is used to determine each student's progress, improve student learning and provide information for the teacher to plan appropriate teaching and learning experiences. A good assessment plan, within an integrated curriculum unit, involves the following.

- Identify what students should accomplish by the unit's end. This is done as the initial part of the unit is written, prior to writing the sequence of teaching and learning experiences. It is important to identify what will be assessed. For example:
  - knowledge/understandings
  - skills
  - processes
  - attitudes
  - values
  - actions
  - outcomes.
- Form the assessment criteria against which the students' progress will be monitored. Teachers need to decide what is deemed as meeting the pre-determined criteria. It is helpful to work with a team of teachers to plan rich assessment tasks that involve the application of a range of skills and knowledge, and allow the students to demonstrate their learning against the criteria.
- Decide how good is good enough – decide on the performance standard for the criteria.
- Identify the assessment procedures and strategies to be used. Teachers need to select a range of assessment strategies that have the potential to contribute to student learning and which will inform further classroom planning. Ensure the assessment strategies:
  - cater for a range of learning styles
  - allow for different progress rates

- allow for a range of planned and unexpected outcomes
- involve the students in the assessment process
- make assessment integral to the program
- can be used in different contexts, for example, individual, group and whole class contexts
- can be repeated, if required, to compare individual learning and progress
- reflect your beliefs about learning and assessment
- consider issues of social justice (gender, race, ethnicity and other perspectives).
- Keep a clear picture of what you want to find out about the students' learning and progress while planning the teaching and learning experiences.
- Locate contexts within the unit that provide for the collection of assessment information. Teachers should ensure that they space assessment procedures throughout the unit; collect information at the beginning (prior knowledge) and end of the unit (post-knowledge); and integrate assessment strategies into the teaching and learning experiences
- Use manageable recording methods that allow recording of planned and unplanned outcomes and enable you to record progress 'on the run'. Consider the use of:
  - *Checklists* comprising the students' names and the specific behaviours, skills and knowledge (indicators) to be monitored;
  - *Performance lists* comprising a set of criterion elements and a rating scale. Teachers assign a rating or score for each element;
  - *Anecdotal records* comprising a systematic record of relevant comments about observed changes in an individual student's learning as revealed in a variety of contexts and using a range of strategies;
  - *Assessment rubrics* that are analytical (see page 32), holistic (see page 33) or that make explicit a specified measurement scale for identified criteria (see page 119);
  - *Developmental continuums* on which the students' progress can be plotted over a period of time;
  - *Teacher-devised tests* that could include a variety of oral, aural, written, artistic and manipulative tasks;
  - *Group assessments or peer assessments* during which the students use specific criteria to assess how well something has been learnt or done;
  - *Student self-assessments* during which the students reflect on and assess their progress in refining their knowledge or skills related to an integrated unit;
  - *Annotated work samples* which result from the teacher entering specific information about the students' knowledge, skills and progress as demonstrated through the particular piece of work;
  - *Open-ended rich assessment tasks* which allow the students to demonstrate, in a variety of ways through a complex task, multiple facets of what they know and can do;
  - *Portfolios* comprising a collection of the students' work, interpretive data, reflections and assessment records that provide a picture of the students' progress and development over a period of time;
  - *Video or audio recordings* that allow the teacher and the students to observe and/or listen to the learning in action at a time that best suits the assessment process;
  - *Photographic records* that show the product and context of the process.

TABLE 9 *Analytic rubric*

Topic	
Name	

	Outstanding	Excellent	Good	Not Good
Understandings				
Depth of understanding	Made all important connections between all ideas. Thorough and complete understanding.	Made some important connections between ideas. Substantial understanding.	Made a few connections between important ideas. Partial and incomplete information.	Made no connections between ideas. Some misunderstandings and misconceptions.
Accuracy	All the information (facts, concepts and understandings) was accurate.	Most of the information was accurate and inaccuracies didn't affect the overall understanding.	Some of the information was accurate. The inaccuracies affected the work.	Much of the information was inaccurate. Errors affected the quality of work.
Clarity	Exceptionally clear and easy to follow.	Generally clear, easy to follow.	Lacks clarity, difficult to follow.	Unclear, disjointed information, impossible to follow.
Inquiry Skills				
Planning for inquiry	Thorough planning – identified all information and resource needs and set goals.	Effective planning – identified most information and resource needs and set some goals.	Moderately effective planning – identified some information and resource needs and set a few goals.	Ineffective planning – didn't include information and resource needs or set goals.
Implementation of inquiry	Highly effective approach to gathering and sorting information.	Effective approach to gathering and sorting information.	Moderately effective approach to gathering and sorting information.	Ineffective approach to gathering and sorting information.
Representing findings	Highly effective presentation of findings using appropriate formats.	Effective presentation of findings using some appropriate formats.	Moderately effective presentation of findings using a limited range of formats.	Presentation of findings not effective.
Work Habits				
Planning for inquiry	Completed the work independently.	Completed the work with minimal assistance.	Completed the work with moderate assistance.	Needed considerable assistance to complete the work.

(Adapted from McTighe, 2002)

TABLE 10 *Holistic rubric*

Topic	
Name	

	Understandings	Skills for planning for inquiry and gathering, sorting and presenting information
4	Has a thorough and complete understanding of the topic. Has an advanced grasp of the connections between all ideas, identification of concepts and key ideas. Able to apply knowledge to many other situations.	Always plans for inquiry; identifying all information and resource needs, forming good questions and setting time lines and goals. Consistently works independently to gather and sort information from a large range of resources. Always presents information in a wide range of appropriate formats that are exceptionally clear and easy to understand.
3	Has a solid understanding of the topic. Has a good grasp of most of the connections between all ideas, identification of concepts and key ideas. With prompting, is usually able to apply knowledge to most other situations.	Generally plans for inquiry; identifying most information and resource needs, forming some good questions and setting some time lines and goals. Frequently works independently to gather and sort information from a limited range of resources. Generally presents information in a limited range of appropriate formats that are usually clear and easy to understand.
2	Has a good understanding of the topic. Makes some connections between the ideas, identifies most of the concepts and key ideas. With moderate assistance is usually able to apply knowledge to other situations.	Occasionally plans for inquiry; identifying some information and resource needs, forming a few good questions and, with support, setting some time lines and goals. Requires minimal assistance to gather and sort information from a small range of resources. Sometimes presents information in a small range of appropriate formats that may be difficult to understand.
1	Has misconceptions which affect understanding of the topic. Makes few, if any connections between ideas. Unable to identify concepts and key ideas. With considerable assistance may apply some knowledge to limited situations.	Rarely plans for inquiry. Requires considerable assistance to identify information and resource needs to form a few basic questions. Rarely sets time lines and goals without considerable assistance. Requires considerable assistance to gather and sort information from a couple of resources. Needs considerable assistance to present information in an appropriate format. Often difficult to understand.

(Adapted from McTighe, 2002)

Reporting on integrated curriculum

Reporting is used to inform the stakeholders (parents, students, teachers, institutions) of curriculum content and student progress with regard to each student's strengths, weaknesses, improvements and plans for further action. Reporting should be used by everyone as a basis for improving student learning.

Reports should clearly document and communicate what students have learnt, and provide a balanced account of this learning, including knowledge, skills, values and attitudes. Valid and reliable judgements of student achievement within an integrated curriculum is possible when teachers:

• understand the content of the relevant subjects
• know what should be assessed, how and when
• develop shared understandings of the requirements of standards (if appropriate)
• validate judgements about standards
• use a range of assessment strategies and contexts to cater for different learners
• maintain ongoing records of student progress
• include self-assessment of students (if appropriate).

What should be included in an integrated curriculum report?

An integrated curriculum report should reflect what the school values in terms of student learning. For example, the report should include:

A description of curriculum content
• An overview of the content covered within the integrated curriculum (knowledge).
• Specific skills developed (for example, subject-specific skills, inquiry, research and communication skills).
• Other aspects of learning (for example, values and attitudes).
• Assessment tasks used.
• The criteria for judging progress (may be in the form of a rubric).

An indication of student progress
• Strengths and weaknesses of the individual student.
• Significant individual progress.
• Further teaching/learning goals or improvement plans for student learning.
• A clear indication of where the student is at in relation to the pre-determined, set standards (not in comparison to others).

There are many formats for reporting on integrated curriculum (for a comprehensive overview see *Integrated Assessment*, Wilson & Wing Jan, 1998). One effective reporting procedure is the use of portfolios. They can include examples of many aspects of integrated curriculum and demonstrate student progress in a range of tasks over a period of time. The portfolio contents should incorporate the specific criteria against which the student's learning is judged and thus enable all stakeholders to clearly see the student's achievements in relation to the curriculum expectations.