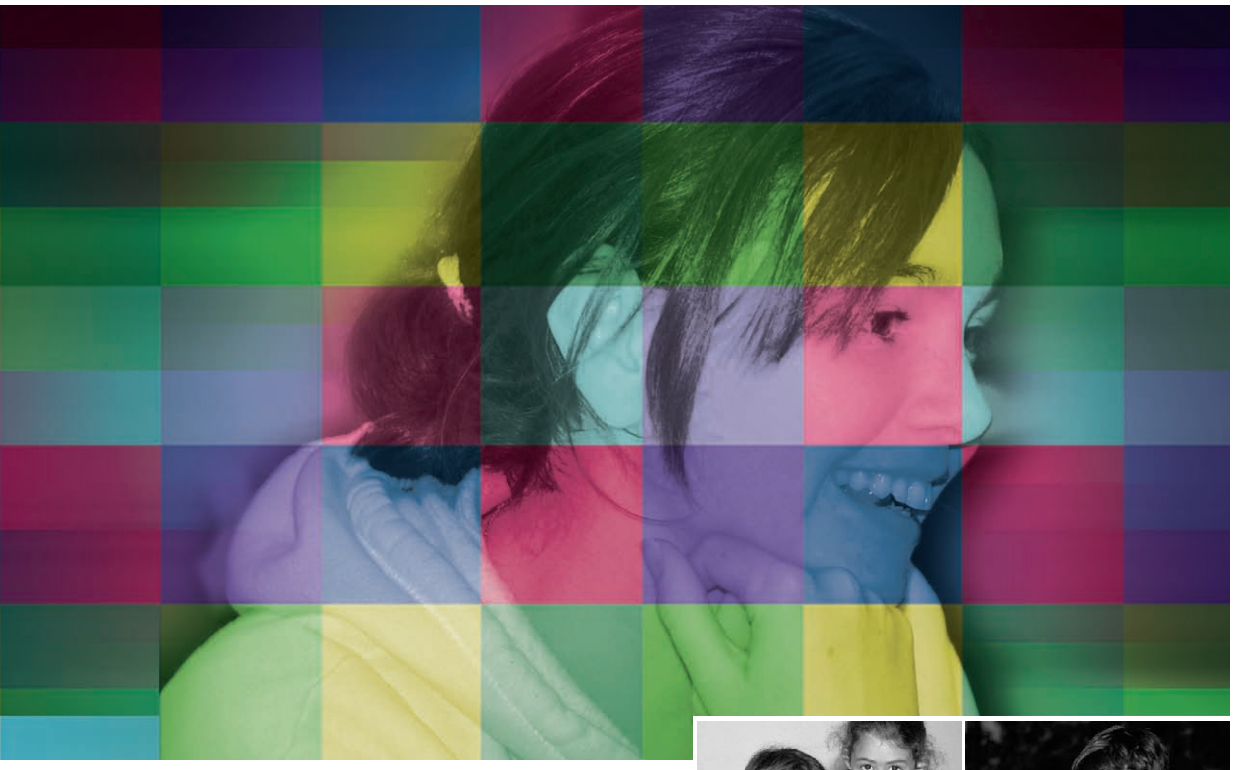
GIFTED AND TALENTED EDUCATION

PROFESSIONAL DEVELOPMENT PACKAGE FOR TEACHERS

E X T E N S I O N

Module 5



Primary

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Department of Education, Science and Training

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GERRIC
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Module 5

Further Aspects of Curriculum Differentiation for Gifted Students

Welcome to Extension Module 5: Further Aspects of Curriculum Differentiation for Gifted Students.

This Module continues the process of differentiation by examining appropriate strategies for differentiating the outcomes in a unit of work and for developing extension tasks using the Maker Model.

Bronwyn MacLeod

Extension Module 5: Primary

Further Aspects of Curriculum Differentiation for Gifted Students

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In Core Module 5B, the curriculum models of Bloom, Williams and Kaplan were introduced as scaffolds for differentiating the curriculum. Can you use the strategies of these models to differentiate your unit outcomes? How familiar are you with the strategies of the Maker Model? How will you evaluate the effectiveness of your differentiated unit of work? By completing the following pre-tests you will have the opportunity to decide which pathway you need to take through Extension Module 5.

Differentiating the outcomes in a unit of work

In Core Module 5A, you developed a pre-assessment (assessment for learning) task (or tasks) to ascertain students' prior levels of mastery of the unit outcomes. It is common to find that students will demonstrate a wide range in the levels of the responses they give to these pre-tests, dependent on the content and skills being assessed. Following the pre-tests, decisions need to be made as to how to address the outcomes for which some students may have demonstrated partial, or complete, mastery. What are your ideas on ways these outcomes may be addressed? You may like to use a concept map or a flowchart to organise your thoughts.

The Maker Model

The Maker Model suggests that curriculum should be differentiated in the key areas of content, process, product and learning environment. Use the following table to describe some of the strategies involved in each of these areas:

Content	**Process**
Product	**Learning Environment**

Differentiating the outcomes in a unit of work

The criteria for judging your understanding of differentiating the outcomes are:

Strong understanding: Accurately identified three or more strategies.

Some understanding: Accurately identified one or two strategies.

Little or no understanding: Unable to identify any strategies.

Your responses should include some of the following ideas:

- Extend the outcome using higher order verbs from Bloom's Taxonomy.
- Match the outcome to the extended questions in the unit concept map.
- Accelerate the outcome to the next stage or level of outcomes.
- Increase the level of the benchmarks or criteria for achievement of the outcome.

The Maker Model

The criteria for judging your understanding of the Maker Model are:

Strong understanding: Accurately identified six or more examples of the Maker Model strategies.

Some understanding: Accurately identified four or five examples of the Maker Model strategies.

Little or no understanding: Accurately identified three or fewer examples of the Maker Model strategies.

Content Content should be modified in terms of its level of: • abstraction • complexity • variety • organisation. As well as involving: • the study of people • the study of methods of inquiry.	**Process** Process should be modified in terms of the: • higher order thinking skills - analysis, synthesis and evaluation • open-ended thinking - paradox, analogy, intuitive expression, tolerance for ambiguity As well as involving: • discovery • proof and reasoning • freedom of choice • group interactions.
Product Products should be modified to include: • real world problems • real world audiences • real deadlines • evaluation • transformations.	**Learning Environment** The learning environment should be modified to include opportunities for: • student-centred learning • independence • openness • acceptance • complexity in setting • varied groupings • high mobility.

Choosing a pathway

Your responses to this pre-test task should have helped to:

- validate your current understandings of outcomes differentiation and the Maker Model if you correctly identified all of the activities.
- delineate the strengths or weaknesses of your understandings of outcomes differentiation and the Maker Model, if you correctly identified the majority of the activities.
- clarify the areas on which you need to focus while working through Extension Module 5.

Content Areas of Extension Module 5

Extension Module 5 is divided into two Parts:

- Part 1 continues the process of differentiation by examining the strategies that can be used to handle any outcomes already achieved by students at pre-assessment and also by discussing the Maker Model for curriculum differentiation.
- Part 2 examines strategies for evaluating the effectiveness of a differentiated unit of work.

Outcomes

At the completion of this Extension Module you will be able to:

- develop differentiated outcomes for a unit of work.
- develop extension activities or tasks using the Maker Model.
- select and apply appropriate strategies for evaluating differentiation in your specific area of teaching or within your school.

Part 1

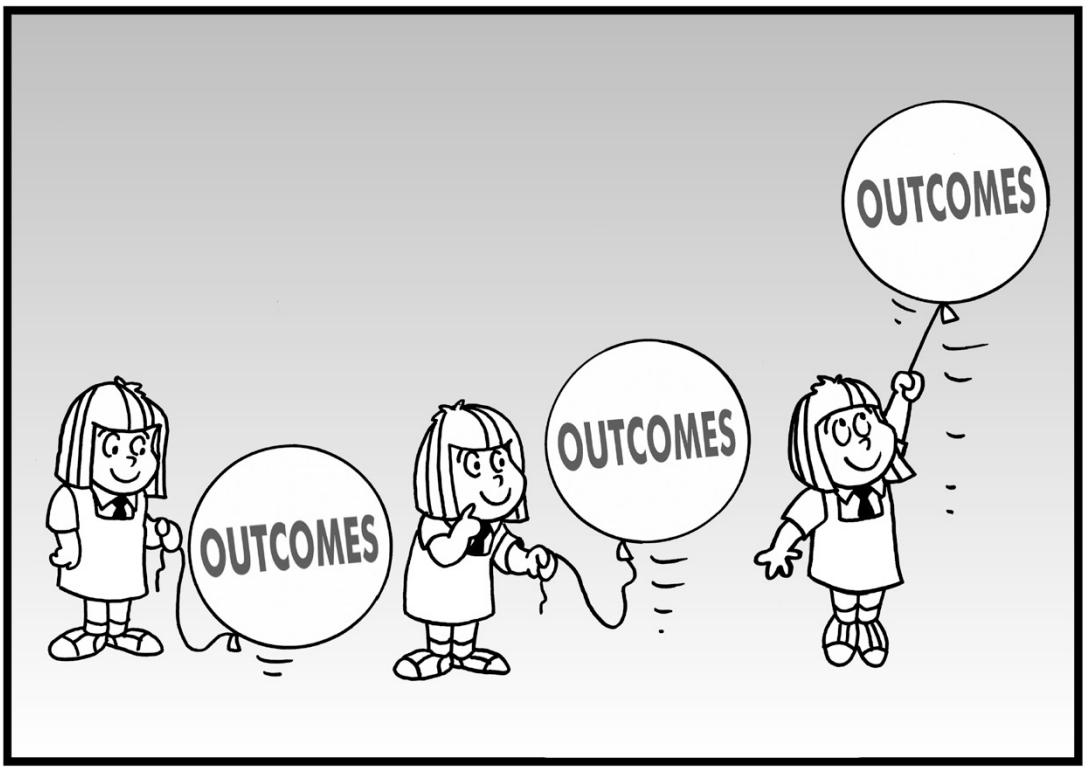
What do you do with the core outcomes when students demonstrate competency or mastery of them in the outcomes-based pre-tests?

The question of how to best extend students who have demonstrated some or all mastery of the unit outcomes was raised in Core Module 5B. The criteria posed by Passow (1988), to gauge whether the curriculum presented to gifted students is appropriate, are also important in the discussion of how to handle the core outcomes:

- **Would** all students **want to be involved** in such learning experiences?
- **Could** all students **be involved** in such learning experiences?
- **Should** all students **be expected to succeed** in such learning experiences?

The answer to these three questions should be 'no' if the curriculum is to be appropriate only for the gifted students in your class. If the answer is 'yes' then the curriculum is suitable for all students.

It therefore follows that if Passow's criteria are to be met when differentiating the curriculum, the outcomes linked to this differentiated curriculum may also need to be modified. Many state and territory syllabus documents address the issues of both special needs students and gifted students with regards to the curriculum outcomes by suggesting some of the following strategies:



- **Modify the core outcomes to develop extended outcomes by adding higher order verbs.** For example, examine the verb or verbs in the outcome to decide which level of Bloom's Taxonomy (see Core Module 5B) they best represent. Where the verb is a lower order verb from Bloom's Taxonomy of Knowledge (Knowing), Comprehension (Understanding) or Application (Applying), a verb from the higher order Bloom's Taxonomy of Analysis (Analysing), Synthesis (Creating) and Evaluation (Evaluating) may be added to the outcome. An example of this is:
    - Core outcome: Identify and describe the ways living things grow and change.
    - Extended outcome: Identify, describe and compare the ways living things grow and change.

- **Modify the core outcome to develop extended outcomes by adding complexity to the outcome.** For example, when the verbs in the core outcome are already Bloom's higher order verbs, a degree of complexity may be added to the outcome. An example of this is:
    - Core outcome: Analyse the role of audience in the development of text.
    - Extended outcome: Analyse the role of audience in the development of text, evaluating its overall influence.

Note: It is important that the extended outcome is in fact a step between the core outcomes of the consecutive levels or stages and not simply a rewrite of the next level or stage outcome.

- **Students who have achieved the core outcome from the stage or level in which they are currently placed, work on the corresponding outcome from the next stage or level.** An example of this might be:
    - Core outcome from level three moves to core outcome from level four.

This then needs to be taken into account in future planning and in the following Year of schooling. A problem may arise in some situations if this information is not passed on to teachers in subsequent Years of schooling, resulting in the student who has achieved the stage/level outcome early revisiting these outcomes at the same level again. **Acceleration of any outcome must be documented and tracked** to prevent repetition of the same outcome in later years. This is particularly crucial at the major transition points of schooling, such as primary to middle school or secondary school.

- **Benchmarks or criteria of achievement are developed to describe the differing levels of achievement at each stage or level of outcomes.** The highest levels of these benchmarks involve higher order Bloom's Taxonomy descriptors with high complexity. Expectations would be that the students who have achieved the core level of the benchmarks or criteria at pre-assessment would now work towards the higher benchmarks or criteria for the outcome. This strategy would also apply in those states and territories using essential learnings or competencies.

How do you differentiate the curriculum in the areas of content, process, product and learning environment?

Strategies often recommended for the implementation of curriculum differentiation for gifted students are generally based on the principles of constructivism (Bruner, 1966; 1986; 1990; Brooks & Brooks, 1993; Biggs, 1996; Steffe & Gale, 1995) and so many of these recommendations may also be appropriate for most students. In a constructivist-based pedagogy, learners are seen as being active in the construction of their own knowledge through their individual activity and their social interactions. Teachers no longer transmit information but rather encourage and facilitate knowledge formation and metacognitive processes for judging, organising and acquiring new information (Bruning, Schraw & Ronning, 1999).

The Maker Model (1982) was developed to address the specific needs of gifted students by providing qualitatively different learning experiences through the integration of content, process and product modifications in specific learning environments. Most importantly, curriculum differentiated by the use of the Maker Model will:

- build upon the characteristics unique to gifted students.
- include concepts at higher levels of abstraction or greater complexity.
- emphasise the development of varied, complex thinking processes and methods of inquiry.
- provide administrative or other arrangements necessary to enable gifted students to realise their potential (Maker & Nielson, 1996, p. 23).

The following tables provide an outline of each of the Maker strategies under the headings of Content, Process, Product and Learning Environment:

Content modifications

Curriculum content includes all that is presented to students: concepts, ideas, strategies, images, data and information. This content can be in the form of (1) concrete objects, shapes, pictures, diagrams (figural), (2) letters, numbers, symbols, representations (symbolic), (3) words and abstract ideas (semantic), or (4) perceptions, emotive behaviours, actions or intentions (behavioural). For this content to be more appropriate for gifted students it should be presented in a way that is more abstract, more complex, more varied, and organised differently using broad themes or concepts (Maker & Nielson, 1996).

Strategy	Definition	Examples
Abstraction	Concrete objects, shapes and noises can be seen or heard. Abstract concepts, generalisations or theories require a learner to go beyond the facts and examine underlying ideas, symbolism, meaning of the content.	• Communication: when is it healthy and when is it toxic? Justify your response with examples from at least two different texts. • When are drugs a preferred option? • When we give a person a chance to 'prove themselves', how do we know what criteria to use for proof?
Complexity	Closely related to abstractness. Complex ideas are made up of many interconnected or interrelated parts. Complexity introduces greater breadth and depth and provides opportunities for students to recognise connections and deeper meanings of content.	• Find examples of Japanese characters in which the symbol actually looks like the object it describes. • Create two different ways to carry a design through to production. • What sports are linked with performance-enhancing drugs and hence have associated athletes with the drug and its desired effect?
Variety	More than simple enrichment. Opportunities to explore and manipulate different learning strategies, sample different fields of endeavour, different problem solving scenarios and tools, different areas of strength and interest.	• Collect and study examples of music, art and costume or dress from two different cultural groups. How do these examples affect our understanding of these groups? • Read other versions of Romeo and Juliet in literature and mythology, such as Hermann and Dorothea by Johann Wolfgang von Goethe and West Side Story by Arthur Laurents.

Organisation	Integrated or multidisciplinary content. Built on the concept that gifted students gain more from richly connected content in which they can examine similarities and differences, whole to part structures and categorical groupings.	• Conduct a traffic survey from your school gate for at least ten minutes. Focus on specific areas such as types of vehicles, number of vehicles, number of passengers, etc and use a table to organise your findings. • Having studied the history of drug use in sport, use a timeline to indicate the sequence and evolution of drugs used in sport, with the Olympic Games as reference points.
Study of people	Relation of content to people, the human situation, human problems and conflicts through in-depth study of individuals and groups of people.	• Study a well-known mathematician from the past and then compare that person's life with that of a well-known contemporary mathematician such as Benoit Mandelbrot. • Investigate people who have improved the effectiveness of air travel.
Methods of inquiry	The development of understandings as to how knowledge is constructed and classified from data and information, how research is conducted, analysed and evaluated and the conventions, strategies and methodologies which are unique to specific fields of study.	• What is a sociologist? Give examples of two well-known sociologists, discussing their work in comparison to that of an historian. • How do scientists and environmentalists decide which animals should be placed on the endangered species list? • Study three to five pieces by the same composer. Describe the composer's style. What did he or she do that was the same in each piece?

Process modifications

Process is the way content is presented to students and the ways in which students use and manipulate this content. This modification includes the questions asked of the students and the mental and physical activities expected of them.

The skills of higher order thinking, creative and divergent thinking, problem solving, decision making, forecasting and planning are all recommended strategies not only for gifted students but for all students. For these modifications to be specifically appropriate for gifted learners, content modifications are also recommended.

In Core Module 5B, we addressed the process modifications from Bloom's Taxonomy (analysis, synthesis and evaluation) and the Williams Model (paradox, analogy, intuitive expression, and tolerance for ambiguity) which are included in the Maker Model. The following are the additional process modifications not covered in Core Module 5B:

Strategy	**Definition**	**Examples**
Discovery	Inductive thinking - an active learning approach, which increases intellectual effort, the expectancy of autonomy and allows more latitude and freedom of thought. Students learn through doing, rather than listening - they see patterns among items, events or phenomena and discern reasons for their occurrence. Teachers often implement 'guided' discovery as a structured strategy for teaching discovery learning.	• Keep a journal for a week listing all of the different cultural groups with which you come into contact. Decide which cultural group has had the strongest influence on your life and explain why. • Find patterns of symbolism in allusions to nature in the play Romeo and Juliet. • Experiment with watercolours to discover how to make a 'restful' landscape in the traditional Japanese style.

Proof and reasoning	Students are required not only to express their conclusions and to cite the sources of their reasons, but also to provide the logic or the reasoning process they used to reach the conclusions.	• Develop a plant classification/ identification guide. Ask another student to use it to identify the plants you have included in your guide. Evaluate its effectiveness. • Write a persuasive essay, using your own research, arguing against the use of one performance-enhancing drug.
Freedom of choice	Providing opportunities for self-directed, independent study. In some cases, (particularly with students unfamiliar with a self-directed approach) gifted students should be guided to progress to a high level of self-direction. Freedom of choice can be part of in-class activities or independent study.	• Select one 20th century art 'school' or 'style' and become an expert on its most famous artists, their philosophy of art, etc. Share at least two of your favourite examples of this art style. • Choose one type of public transport and design an advertisement to attract the general public to use it more often.
Group interactions and simulations	Should be an integral part of curriculum for gifted students to provide opportunities for the development of social and leadership skills, interpersonal skills and higher levels of empathy.	• In small groups, role playing as Japanese teenagers, discuss in Japanese how you will spend your time when school is over. • Create a sonata form composition in a group, with the first person composing the first 'theme', the second person composing the second 'theme', the third person composing the first part of the 'development', and so on.

Pacing	Pace of instruction is how slowly or how rapidly information is presented and students are asked to process the information. Curriculum compacting and acceleration are often responses to gifted students' pace of acquisition (as we discussed in Core Module 6).	It is important to facilitate complex thought processes by allowing 'wait time'. Pace does not mean rapid questioning, rather rapid progression from concrete thinking to abstract thinking. Interdisciplinary content organised around themes or broad concepts facilitates more rapid connections in complex thinking. Pace can be increased for gifted students by allowing them to attempt the most complex questions first and thereby eliminating 'drill' and 'review'.
Variety of process	Refers to the number and types of learning procedures used. Teachers use lectures, video, DVD, TV, demonstrations, excursions, computer-assisted and online instruction, learning centres, etc. Students participate in discussions, learning games, simulations, committee work, independent research, small group activities and discovery activities, etc.	Teachers discard the idea that all students should be doing the same thing at the same time. Students are able to choose from many options and design their thinking processes. Provides the opportunity for students to solve problems in their preferred process style and to take advantage of their strengths. Students need to compare and contrast different problem solving methods and higher level thinking skills to discover the appropriateness of different strategies.

Product modifications

The aim is to facilitate opportunities for gifted students to produce a product that reflects their potential. Often students create products which approximate to some extent those developed by professionals, in the following ways:

- The proposed product addresses a real problem or concern.
- The product has a real rather than a contrived purpose.
- The intent of the producer is to please, inform, convince, impress, or otherwise have an effect on a real audience.
- The product is a transformation or synthesis, rather than a recapitulation or summary, of existing information.
- The product is evaluated by someone other than the teacher, using criteria appropriate to the field.
- The format has been selected by the producer as appropriate to the proposed audience and to the talents of its creator (Maker & Nielson, 1996, p. 136).

Strategy	Definition	Examples
Real world problems	Learners investigate the kinds of questions and problems investigated by professionals, 'real-life' problems. Problems should not be viewed as negative situations to be faced, rather as catalysts for creative production. Real problems may be faced in the adult arena as well as in their own context.	• Issues of 'cultural diversity' often bring with them conflict and resistance to change. Choose a present-day example of such a conflict and examine some of the responses to the problems that have been, or are being, tried. Suggest some further ways to bring about a solution to this situation. • Study the dilemmas in the movie Mr Holland's Opus. How true are these for a musician or a music teacher? What might be possible solutions to make music a more viable career for those who are musically gifted?

Real audiences	Student products are developed for the expected evaluation by professionals or experts in that field or discipline. Real audiences may be classmates, other students in the school, members of the local community, parents, senior teachers, university lecturers, etc. Students must present their information in a way that shows a genuine understanding of their audience.	• Make a presentation of a finished product and its marketing plan to a business leader in a related field. • Produce your group created sonata for a composer. • After creating your own version of a photo-realist portrait, ask a gallery owner to evaluate whether your version is marketable.
Evaluation	Teacher assessment using pre-established criteria combined with student self-evaluation. Students should be taught objective and subjective methods of evaluation and have a variety of experiences in different styles of evaluation. This should be a metacognitive process for students.	• After learning a variety of graphing techniques using a computer, decide which is the most appropriate to display a set of statistics on the prevalence of illnesses at various ages, for different audiences: a group of medical doctors, medical staff at a hospital, a group of business people, a parent group and a group of Year 7 students.

Transformation	Changes of known information - changes in meaning, significance, use, interpretation, mood or sensory qualities. Transforming raw data may involve: • viewing information from a different perspective • reinterpreting information • elaboration of information • extending or going beyond raw data • combining information.	• Write or paint scenes of your created myth. • Design a method to teach Year 4 students how to solve 'x' in an algebraic equation. • Be the judge in a mock trial. Justify your ruling and summarise your closing remarks.

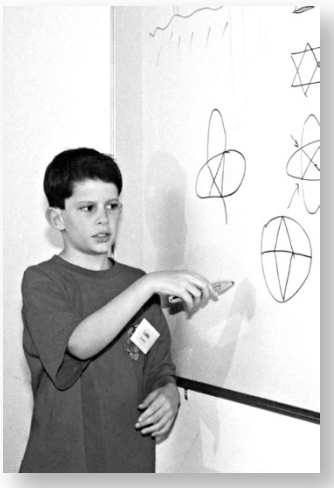
Learning environment modifications

Strategy	Definition
Student-centred	Learning experiences based on student talents or interests. Students and teachers form a learning community in which a balance is achieved between syllabus outcomes and student ideas and interest. In a student-centred discussion, for example, the teacher is not the centre of attention and facilitates, rather than directs, the discussion. The teacher only intervenes to redirect or refocus the discussion or to offer comments when necessary. Students move from seeking teacher approval to actually thinking about the relevance and importance of their response.
Independence	Tolerance for student initiative. Regular access to activities which promote decision making, planning, problem solving, and self management. Helps to counter issues of 'learned helplessness' which develop when students feel that they are powerless and have no control over their own lives in school.
Openness	Tolerance for many ideas; removing of restrictions on learning environments. This strategy is closely linked to the student centredness of a classroom, along with the number of independent activities available for students. Transformation of data as a result of investigating real world problems requires that students operate in an environment with opportunities for choice, divergence and a variety of teaching styles.
Accepting	Suspension of judgement about ideas, tolerance for divergence, focus on understanding ideas. Use of phrases with students such as: 'Yes, I can understand that'; 'That seems reasonable to me'; 'I see what you mean'; 'I think I see the idea you are getting at'; 'You are developing some interesting ideas.' Teachers also allow students to clarify or offer further explanation of abstract ideas, with questions such as: 'What is an example of what you are talking about?' 'Please explain that in a different way.'

Complexity	Stimulating physical setting, complex intellectual tasks, variety of materials, support. Inclusion of varied learning spaces, informational media, reference books, audiovisual materials, computers, manipulatives, wall and bulletin boards, examples of student work, materials and tools for construction work.
Varied groupings	Students are given the opportunity to work in a variety of groupings: like-minded/ability groups, interest groups, mixed ability groups. Groups should be small - gifted students benefit from working in groups no bigger than three people. Experience working in groups helps to develop gifted students' interpersonal skills - but it is essential that grouping is based on like-mindedness when academic gain is required.
Flexibility	Flexible classroom organisation requires the ability to move the physical structures of the classroom. For example, movable furniture allows for a classroom to be arranged with an area for teacher-directed group work, areas for small group work, areas for independent work and areas for learning centres. Time structures may need to be more flexible. In secondary settings, more flexible time arrangements may be organised by different subject teachers negotiating combined outcomes and concepts.
High mobility	Flexible movement in and out of classrooms. This modification is often the key to the success of the other learning environment modifications. Careful planning is necessary to allow for this modification and in some schools high mobility may only be possible within the classroom environment. For some students, high mobility may mean access to research facilities, practice rooms, rehearsal space and so on.

Adapted from: Gross, MacLeod, Drummond & Merrick (2001), Gross, MacLeod & Pretorius (1999) and Maker & Nielson (1996).

It is important to remember that the Maker Model recommends ways to structure and differentiate curriculum that will enhance and extend the specific learning characteristics found among the gifted population. However, as with the general population, gifted students vary in their strengths, interests and needs, so not all of the modifications suggested will be necessary for all gifted students all of the time. A balanced, well-articulated program should include a variety of these modifications to provide opportunities for challenge for each individual gifted student.



Examples of the Maker Model strategies for a variety of subjects/ KLAs may be found in the Resource section under each level of schooling. While these will not apply directly to all subject areas, the style of questioning should be applicable to most teaching situations.

Resource section:
Primary selected examples of Maker Model activities.

Individually, or in small groups, guided by the examples of content, process and product modifications from the Maker Model in the support materials, develop differentiated activities for gifted students in your classroom in each of these areas.

You may wish to modify activities in each of the individual areas or through a combination of the areas, such as a content and process modification, or a process and product modification.

These activities might relate to the extension questions you developed for the concept mapping of your unit in Core Module 5A or to another unit of work you are developing for implementation next term.

Use either of the Maker Model blank matrices found in the Resource section as a scaffold to construct these activities. **It is not necessary to write all strategies for each unit of work but it is important to ensure that your students access a variety of strategies throughout the unit.**

Work as a team to develop appropriate methods to accommodate the needs of gifted students who may demonstrate mastery of some or all of the outcomes at pre-assessment.

Consider the options suggested in Part 1 and their viability in your area of schooling.

Trial the method you develop in the next differentiated unit of work your team will implement. Document the process and the results.

Part 2

Part 2 of Extension Module 5 examines some of the ways to develop and implement strategies to evaluate your differentiated unit of work.

How can the effectiveness of curriculum differentiation be evaluated in the classroom?

The effectiveness of curriculum differentiation is defined as the extent to which its implementation produces positive and valid curriculum outcomes for students. When evaluating this effectiveness, the following points should be emphasised:

Evaluation (of any educational program, curriculum or issue) is:

- a form of disciplined enquiry
- structured
- reflective
- multi-layered
- informative
- proactive.

The purpose of curriculum evaluation is to:

- document the process for professional records.
- demonstrate accountability to the syllabus outcomes or objectives and to the particular school scope and sequence or program.
- document the feasibility of the differentiated curriculum within the specific school context (Hunsaker, 2000).
- document the effect of differentiated curriculum in terms of student learning gain (Hunsaker, 2000).
- identify strengths and weaknesses to improve the differentiated curriculum (VanTassel-Baska et al, 1999).

- explain the process of differentiated curriculum development and implementation to the wider school community.
- increase support for the use of differentiated curriculum as an appropriate pedagogy for all learners.

Additionally, it is imperative that the evaluation of the effectiveness of curriculum differentiation is built into the curriculum implementation plan and this evaluation should involve formative and summative data collection:

Formative evaluation (usually conducted during implementation) can be used to make sure you are accomplishing the objectives of the program or curriculum. For example, formative evaluation might include:

- in-class assessment tasks
- anecdotal observations
- student research projects
- notation of class discussions.

Summative evaluation (conducted after the curriculum is fully implemented) should indicate the degree to which your curriculum is accomplishing, or has accomplished, its goals and objectives. For example, summative assessment might include:

- formal assessment tasks at the conclusion of the unit
- unit tests
- repeat of pre-assessment tasks as post-test tasks
- student unit evaluation form
- teacher unit evaluation form.

(Adapted from Council for Exceptional Children (2002) at: http://www.ericec.org/faq/gt-eval.html)

Who or what might be evaluated and why?

- The instructional strategies: to match chosen strategies to the stakeholders.
- Students: learning growth, attitude, self-esteem, academic achievement.
- Teachers: changes in attitude, teaching practice and pedagogies.
- Classroom conditions: modifications to learning environments.
- Community responses: parents, P & C perceptions of change.
- Implementation of curriculum.
- Content of curriculum.
- Unanticipated outcomes.

Evaluation tactics: Multiple tactics for triangulation

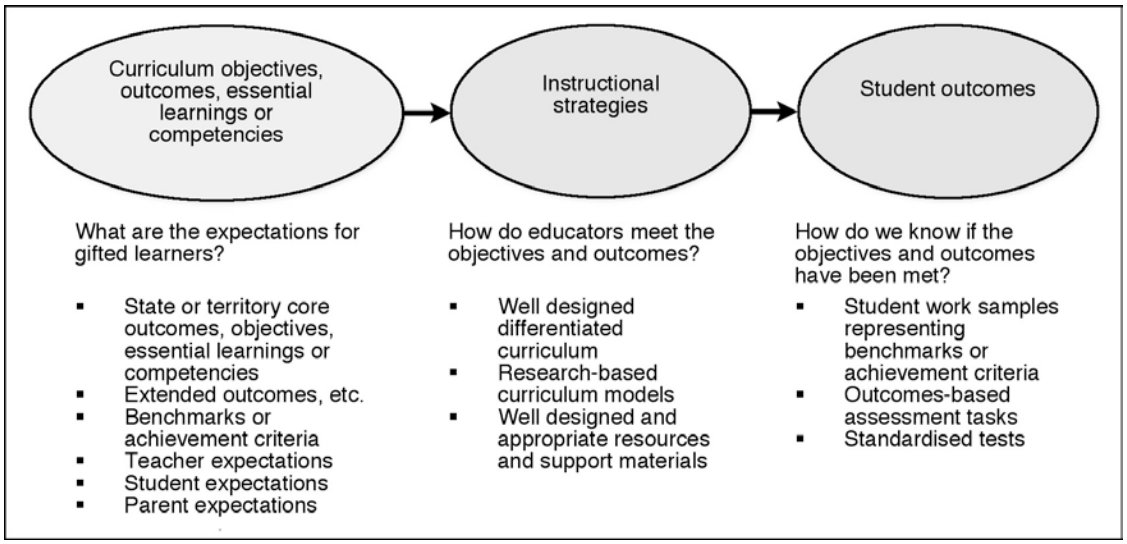
A combination of quantitative (objective, numerical or data based) and qualitative (subjective) methodologies should be used within the formative and summative evaluation process. These may include:

- test scores: formal standardised (quantitative); school-based (quantitative or qualitative)
- questionnaires (Likert style - quantitative, short answer responses; qualitative)
- interview/focus groups (qualitative)
- observations (qualitative)
- ratings (quantitative or qualitative)
- records (qualitative)
- social indicators (qualitative)
- expert opinion (qualitative)
- anecdotes (qualitative)
- outcomes-based achievement criteria (quantitative or qualitative).

Communicate results

- In the case of formative evaluation, a less formal report may be directed to the curriculum implementers, indicating possible directions for change, modification strategies and successes from the implementation of the differentiated curriculum.
- In the case of summative evaluation, a more formal report is often required. This may target all direct and indirect audiences.
- Additionally, it is important to highlight what elements of the trialled differentiated curriculum to keep, modify or eliminate.
- The publication of any formal evaluation process should include a public forum which includes all stakeholders (Hunsaker, 2000).

The following diagram (adapted from VanTassel-Baska & Feng, 2004) may assist in the development of curriculum differentiation evaluative tools:



Further examples of quantitative tools

- Post-test versions of pre-tests
- Standardised objective tests
- Moderated formal assessment based on benchmarks or achievement criteria.

Further examples of qualitative evaluation tools

Teacher Evaluation: In Core Module 5A, a series of questions was posed to guide your thinking as to the level of differentiation present in a unit of work you had taught previously or that you wanted to teach. These questions, based on the Maker Model, may now be used as a self reflection on the effectiveness of the curriculum differentiation in the unit of work you developed in Core Modules 5A and 5B.

Was the content appropriate for the class for which this unit was differentiated?

- Was the level of content offered suitable for each of the abilities within the range in your class?
- Did you pre-test the outcomes for the content of this unit?
- Did you make any changes to the content from your original program? Why, or why not?
- Might you change any of the content in any future teaching of the unit? Why, or why not?

Were the processes used in teaching toward the outcomes in this unit appropriate for the class?

- Was the pace of instruction offered suitable for each of the ability groups in your class?
- Did you pre-test the skills-based outcomes of the unit?
- Did you make any changes to the higher order thinking skills from your original program? Why, or why not?
- Might you change any of the process strategies in any future teaching of the unit? Why, or why not?

Were the products required appropriate for the unit outcomes?

- Were the types of products offered suitable for each of the ability groups in your class?
- Did you make any changes to the products required from your original program? Why, or why not?
- Might you change any of the products in any future teaching of the unit? Why, or why not?

Was the learning environment appropriate for the class?

- Did any of the ability groups in your class require modifications to the learning environment?
- Did you make any changes to the learning environment from your original program? Why, or why not?
- Might you change any aspects of the learning environments in any future teaching of the unit? Why, or why not? [EdTec: Indent these bullet points]

Student evaluation of the unit is also an important part of the evaluation process.

In **early childhood** classrooms, the children might respond to evaluation questions by colouring different faces to indicate their ideas. For example:

- Did you enjoy the unit on Transport?

  ☹ 😐 ☺

- Did you like the 'Design your new form of transport' task?

  ☹ 😐 ☺

The following questions might be used in a **primary** or **secondary** student evaluation form:

- What was your favourite part of the unit? Why?
- What was your least favourite part? Why?
- What was the activity you remember the most? Why?
- What was the most important thing you learned in this unit?
- If you could change anything in the unit, what would it be and why?

Develop an evaluation process for your differentiated unit of work which includes at least one quantitative and one qualitative method to use as formative and summative evaluation.

Share the results of your evaluation with your colleagues and discuss possible modifications of, or adjustments to, the unit that may be needed as a result of the evaluation.

Develop an evaluation process for the ongoing implementation of curriculum differentiation in your Year, level of schooling or whole school.

Ensure that this process includes quantitative and qualitative methods to use as formative and summative evaluation strategies.

Resources

References and Further Reading

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Websites

Professional Support and Curriculum. NSW Department of Education and Training:

http://www.curriculumsupport.nsw.edu.au/gats

The Learning Place: EQ Gifted and Talented Education:

http://www.learningplace.com.au

Resources

Primary Maker Grids

English - Fairytales

Theme: Patterns

Focus question: How do fairytales present patterns for our lives?

Strategy	Activity
Abstraction	How did the term 'fairytale' come to describe stories without fairies in them?
Complexity	Can all fairytales be 'fractured'? Choose one to demonstrate your ideas.
Variety	Are all fairytales stories of good and evil? Read at least three different fairytales to support your answer.
Organisation	Do all fairytales end with the words 'happily ever after'? What is the structure of a fairytale and does it have to include these words?
Study of people	Who has been the most important writer of fairytales, and why? Study his/her life to support your answer.
Methods of inquiry	What do fairytales teach us? Study at least three different fairytales to help answer this question.

Mathematics - Tessellations

Theme: Systems

Focus question: How and why do visual patterns help us in maths?

Strategy	Activity
Abstraction	Mathematically divide a space, With shape or pattern, body or face, Repeat it identically again and again, This is how tessellations begin! http://library.thinkquest.org/CR0213184/Tessellations.htm How does this explain M.C. Escher's work?
Complexity	Create a series of tessellated patterns based on the theme of nature, change, traditions or beliefs.
Variety	How many different mathematical patterns can be found in everyday life?
Organisation	What regular polygons can be tessellated? Create a way to show examples of these shapes in regular and semi-regular tessellations. Include the number patterns that relate to these.
Study of people	Who are most important to the study of tessellations: historians, mathematicians, or artists?
Methods of inquiry	How is symmetry connected to tessellations?

SOSE / HSIE

Theme: Systems

Focus question: How and why did the exploration of Australia ensure the future of the colony?

Strategy	Activity
Abstraction	'There are no new places to explore or discover in Australia.' Is there any truth to this statement?
Complexity	The geography of Australia both helped and inhibited its exploration. Develop a creative way to explain this statement.
Variety	What new systems did the Australian explorers have to develop to survive their journeys? Why did some not survive?
Organisation	How do we recognise and remember the men and women who explored Australia? Create a list to group the different ways of celebrating their lives.
Study of people	Who were the five most significant explorers of the Australian continent, and why? Analyse their lives to support your opinions.
Methods of inquiry	How was cartography important to the Australian explorers? What skills were needed to map their journeys?

Science / Science and Technology

Theme: Change

Focus question: How and why are simple machines the foundation of our modern lives?

Strategy	Activity
Abstraction	'Behind every form of modern technology is a simple machine.' How can this be true?
Complexity	A simple machine performs more than a simple task. Demonstrate this with at least one simple machine.
Variety	What simple machines can be found in nature? In our bodies?
Organisation	What simple machines could we live without? Develop a flow chart to show the consequences of removing one simple machine from our daily lives.
Study of people	Who was Archimedes? Why was he significant in relation to simple machines?
Methods of inquiry	Develop an exhibition of simple machines that can be used to teach younger students how they work.

CAPA – Creative and Performing Arts

Theme: Patterns

Focus question: How can the patterns found in nature be used in the creative arts?

Strategy	Activity
Abstraction	'Nature is the original artist, musician and performer, and all else is imitation.' How has nature been copied in the creative and practical arts? Create your own imitation of nature.
Complexity	How important is symmetry to the creative arts? Is this pattern found in nature the most important to the creative arts? Why, or why not?
Variety	Create a list of at least ten different patterns found in nature that can be used in either visual arts or music. Explain or demonstrate how these patterns can be used.
Organisation	Develop a visual catalogue of works of art depicting patterns in nature. Order the catalogue by date, artist, style or medium.
Study of people	Choose a well-known Australian artist, composer or choreographer who has used patterns found in nature as his/her inspiration. Research this person's work.
Methods of inquiry	How are patterns important to an artist, a musician, a dancer, a choreographer, or an actor? Choose one and develop a creative way to show your research findings.

Maker Model modifications: Blank matrix

Content Modifications	
Abstraction	
Complexity	
Variety	
Organisation	
Study of people	
Methods of inquiry	

Process Modifications: Higher order thinking skills	
Analysis	
Synthesis	
Evaluation	

Process Modifications: Open-ended processing	
Paradox	
Analogy	
Tolerance for ambiguity	
Intuitive expression	
Discovery	
Proof and reasoning	
Freedom of choice	
Group interactions, simulations	

Product Modifications	
Real world problems	
Real world audiences	
Evaluation	
Transformations	

Maker Model modifications:

Blank matrix - combined strategies

Content Process			