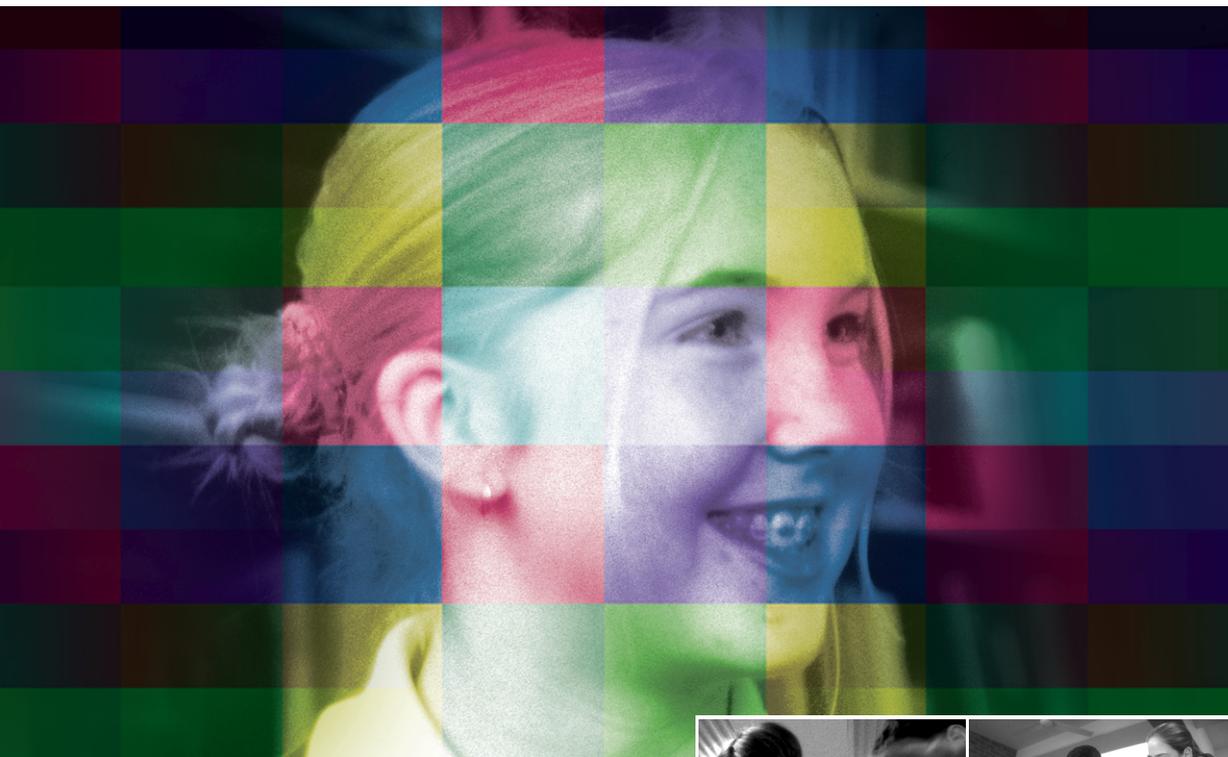


GIFTED AND TALENTED EDUCATION  
PROFESSIONAL DEVELOPMENT PACKAGE FOR TEACHERS

# Module 5



Secondary



Bronwyn MacLeod



**Australian Government**  
Department of Education,  
Science and Training

THE UNIVERSITY OF  
NEW SOUTH WALES



**GERRIC**

Gifted Education Research, Resource and Information Centre

ISBN 0 642 77487 0

© 2004 Department of Education, Science and Training

© 2004 Gifted Education Research, Resource and Information Centre (GERRIC), The University of New South Wales (UNSW)

#### **Production Information and Credits**

This package was initiated and funded by the Australian Government Department of Education, Science and Training (DEST), and designed and produced at UNSW.

This material is permitted to be copied for use in licensed educational institutions in Australia. Material must be appropriately acknowledged, and not edited or used out of context without the prior permission of the authors. Please contact GERRIC at UNSW for more information:

GERRIC

School of Education, UNSW

Sydney, NSW, Australia 2052

Phone: +61 2 9385 1972

Fax: +61 2 9385 1973

Email: [gerric@unsw.edu.au](mailto:gerric@unsw.edu.au)

#### **Writers:**

Modules 1 & 3:

Module 2:

Module 4:

Modules 5A & 5B:

Module 6:

Package Editor:

Photographs:

Administrative Assistance:

GERRIC Project Officer:

Assistance with Navigational Package:

Package Content Design & Production:

CD-ROM Production & Graphic Design:

Professor Miraca U.M. Gross

Caroline Merrick & Ruth Targett

Dr Graham Chaffey

Bronwyn MacLeod

Stan Bailey

Stan Bailey

Steve Walsh & Bronwyn MacLeod

Donna Sobanski

Rosalind Walsh

Dr Katherine Hoekman

GERRIC at the UNSW

Belinda Allen & Teresa Atfield, EDTeC (Educational Development & Technology Centre) UNSW

# Welcome!

You are about to start a Professional Development Course which will help you identify the gifted and talented students in your class or your school, and differentiate the curriculum to respond to their individual learning needs. You'll also be able to decide which of your students may benefit from various forms of ability or interest grouping and which may possibly be candidates for one or more of the many forms of academic acceleration.

## About the Package

### **The course consists of six Modules**

Each Module consists of three levels: Core, Extension and Specialisation. The Core levels of the six Modules are the heart of this course. The Core Modules contain essential information and practical advice and strategies to assist you to identify and respond to your gifted and talented students.

**We strongly suggest that you complete the Core level of each Module.**

### **Pre-tests**

We are aware that teachers and school administrators will enter this course with a wide range of existing knowledge of gifted and talented education. To accommodate this range of knowledge and experience, we have started each Core Module, from Module 2 onwards, with a pre-test. We encourage you to take these pre-tests and, if you 'test out' on any Module at Core level, simply move on to the next Module. For example, if you 'test out' of Core Module 2 you will pass over that Module and move on to Core Module 3.

### **Extension and Specialisation Levels**

Extension and Specialisation levels for each Module. Material covered in the Extension and Specialisation levels builds on the knowledge you will have gained from the Core level in each Module. Key issues are examined in greater depth and participants explore a wider range of issues in the cognitive and social-emotional development of gifted students. New identification, curriculum differentiation and program development techniques are introduced.

The Extension and Specialisation levels require teachers, counsellors and administrators to undertake further reading and practical activities to reflect on classroom practice, school practice and policy. They encourage participants to focus on their specific role in the school and prepare a brief action plan to demonstrate application or mastery of outcomes.

**Schools may decide that completion of the course at Specialisation level would be a useful prerequisite for becoming the school's Gifted Education Coordinator.**

# What will you learn in this course?

The course consists of six Modules:

## **Module One: Understanding Giftedness**

Understanding the nature of giftedness and talent; what the terms mean; levels and types of giftedness. Cognitive and affective characteristics of gifted and talented students; ways in which these students may differ from their classmates - even if at first we don't observe this.

## **Module Two: The Identification of Gifted Students**

A range of practical identification procedures, with particular attention to procedures which are effective in identifying gifted students from culturally diverse and disadvantaged groups. We'll be emphasising the use of a combination of approaches rather than a single measure such as IQ testing or teacher nomination used in isolation.

## **Module Three: Social and Emotional Development of Gifted Students**

Understanding the social and emotional characteristics and needs of gifted students. Ways in which gifted students may differ somewhat from their classmates in their social and emotional development. Supporting gifted students and their parents. Teaching strategies and class structures which foster the development of positive social attitudes and supportive peer relationships in gifted students.

## **Module Four: Understanding Underachievement in Gifted Students**

Understanding the causes of underachievement in gifted students. Identifying gifted underachievers and planning interventions designed to prevent and reverse cycles of underachievement.

## **Module Five: Curriculum Differentiation for Gifted Students**

Teaching strategies and methods of curriculum differentiation which enhance the learning of gifted students in the regular classroom. Appropriate use of different enrichment models that international research has found to be effective with gifted and talented students. Practical applications of pre-testing, curriculum compacting and individualised programming.

## **Module Six: Developing Programs and Provisions for Gifted Students**

Practical strategies for the establishment and monitoring of ability, achievement or interest grouping, and the many forms of accelerated progression. Particular attention will be paid to the effects of various strategies on students' academic and social development.

# Using the package

Much of the material is suitable across teaching and learning contexts. This content is not specifically marked. However, content that may be applicable to your particular context is identified as follows:

<b>Role</b>	Classroom Teacher 	Executive Staff 	Principal 
<b>Location</b>	Urban 	Rural 	
<b>Mode</b>	Self Study 	Small Group 	Whole Staff 

## Follow these symbols through the content to customise your learning path.

Each Module comes in two parts, each concluding with a practical exercise. We suggest that you complete the first and second parts a few days apart - unless this is not workable in your particular learning context. This will give you a chance to digest the information in Part 1 and work through the Reflective/Practical component.



# Core Module 5: Curriculum Differentiation for Gifted Students

## Contents

### Core Module 5A

<b>Pre-Test</b>	<b>2</b>
<b>Pre-Test Answers</b>	<b>5</b>
Choosing a pathway	6
<i>Content areas of Core Module 5: Part A and Part B</i>	6
<b>5A Outcomes</b>	<b>7</b>
<b>Core Module 5A - Part 1</b>	<b>8</b>
What is curriculum differentiation?	8
Who is curriculum differentiation for, and why use it?	9
What are some of the strategies you can utilise to design differentiated curriculum?	10
<b>Reflective/Practical Component</b>	<b>13</b>
<b>Core Module 5A - Part 2</b>	<b>15</b>
What does the term 'compacting the curriculum' mean?	15
How do you incorporate curriculum compacting into unit planning?	15
<i>Method One</i>	16
<i>Method Two</i>	17
What content outcomes do your students already know before beginning the unit of work? What skills outcomes have your students already achieved prior to this unit of work?	22
<i>Important points to remember</i>	23
<b>Self Assessment</b>	<b>24</b>
<b>References</b>	<b>24</b>
<b>Resources</b>	<b>51</b>

## Core Module 5B

<b>Pre-Test</b>	<b>25</b>
<i>Bloom's Taxonomy</i>	25
<i>The Williams model</i>	26
<b>Pre-Test Answers</b>	<b>27</b>
<i>Bloom's Taxonomy</i>	27
<i>The Williams Model</i>	28
Choosing a pathway	29
<i>Content areas of Core Module 5: Part B</i>	29
<b>5B Outcomes</b>	<b>29</b>
<b>Core Module 5B - Part 1</b>	<b>30</b>
How do you extend students who have demonstrated competency in the outcomes based pre-tests?	30
How do we extend students' critical thinking skills?	30
How do the six different levels of Bloom's Taxonomy develop thinking skills?	32
How does this apply to classroom practice?	34
What are some of the strategies you can use to develop students' creative and divergent thinking skills?	35
<b>Reflective/Practical Component</b>	<b>40</b>
<b>Core Module 5B - Part 2</b>	<b>41</b>
What are some ways that curriculum differentiation can be implemented in the classroom?	41
How do you develop Independent Study or Research projects for gifted students?	42
<b>Self Assessment</b>	<b>48</b>
<b>Further References</b>	<b>49</b>
<b>Resources</b>	<b>51</b>



# Module 5

## Curriculum Differentiation for Gifted Students

Welcome to the fifth Module for this Professional Development Course.

Module 5 is divided into two main sections, Module 5A and Module 5B, which in combination examine the key core issues of curriculum differentiation. You will find a pre-test at the beginning of each section which you are invited to complete before deciding the pathway you will take through each section. You are also encouraged to modify a unit of work that you currently teach as you work through the activities within this Module.

When working through this Module it is strongly advised that the most appropriate mode for professional development in all activities within the Module, is that of individual or small group. The small groups may be organised as faculty or grade teams. This will ensure that appropriate opportunities are provided for professional dialogue and reflection on the content of this Module.

# Core Module 5A

Pre-Test



What do the terms 'differentiation' and 'curriculum compacting' mean to you? Spend a few moments to write your definitions below:

A large, empty rectangular box with a thin black border, intended for students to write their definitions.

Briefly look at the examples of unit planning appropriate to your stage of teaching. Choose which one you think best depicts differentiated curriculum. Where can you see evidence of curriculum compacting occurring in these examples?

### **Example One**

Ms Kobe is an English/History teacher in a large metropolitan selective co-educational senior secondary college (the college caters for Year 11 and 12 only) and Ms Kobe is teaching the top English class in Year 11.

In planning for the Term 3 units which involve a Shakespeare study and work on post-modernism, Ms Kobe has decided that she will assess her students' prior learnings and skills to best address their needs in her teaching program. Her colleagues feel that this is unnecessary as she already has the top group but her experiences from the two previous terms have told her that this is still a mixed ability group.

Ms Kobe pre-tests them by asking the students to respond to two passages in a writing task. After analysing the results of the students' writing, she decides to plan a unit which allows her students to choose pathways dependent on their confidence level, and their strengths and weaknesses as shown in the pre-test.

### **Example Two**

Mr Wolfer's Year 8 Science class is a mixed ability group in a boys' high school in an inner city area. The school has experienced problems in the past with high levels of truancy but there has been an active program in place to address this situation and encourage the boys to set realistic goals and expectations for themselves.

The next unit Mr Wolfer has to teach the boys is a physics-based unit on energy, specifically looking at forces and motion. Many of the boys in his class have not engaged in the subject matter of the science teaching so far as they tell him that they can't see the point of it to their lives. Mr Wolfer decides to set a real-world problem solving scenario as the assessment for the unit and gives the boys the option of working in small groups or by themselves to complete the task.

### **Example Three**

For the last three years, Ms Manglick has been the only Visual Arts teacher in a small rural high school. Last year, she decided to visit a number of the primary schools that send students to her high school to observe the art being taught in the classrooms and to attempt to make seamless the transition from Primary level art to High School art.

Based on her observations, Ms Manglick decided to ask all of the primary teachers if they would allow their students to participate in a pre-test activity during the last weeks of their final primary year, so that she could better plan for the first Visual Arts unit the students would encounter in High School. The

Primary teachers were willing to help and from the information Ms Manglick gained from the pre-tests she planned a unit of work on the theme of 'Change' which allowed for two levels of activities using Bloom's Taxonomy and in which students produced works for an exhibition held towards the end of their first year in secondary schooling.

Each of the examples described show elements of differentiation and while more information would be needed on each example to make a definite judgement on the level of differentiation and curriculum compacting, the scenario in the box (below) is the most exemplary instance of best practice in differentiation and curriculum compacting.

The criteria for judging your understanding of differentiated curriculum and compacting are:

**Strong understanding:** Identified the example which has three or more elements of differentiation, including the use of a theme, pre-testing, the use of a curriculum model such as Bloom's Taxonomy and the compacting of unit outcomes. Identified at least two areas of omission from the other two examples, such as lack of theme, pre-testing, curriculum model or compacting;

**Some understanding:** Identified an example with at least two or more elements of differentiation, including the use of a theme, pre-testing, the use of a curriculum model such as Bloom's Taxonomy and the compacting of unit outcomes. Identified at least two areas of omission from one other example, such as lack of theme, pre-testing, curriculum model or compacting;

**Little or no understanding:** identified an example with one element of differentiation, such as the use of a theme, pre-testing, the use of a curriculum model such as Bloom's Taxonomy and the compacting of unit outcomes. Unable to identify any areas of omission from any of the examples.

The following points about each example can be highlighted:

In **Example One**, Ms Kobe has demonstrated some elements of both curriculum differentiation and compacting in her planning for these units of work. Ms Kobe was correct in her understanding that even in a 'top' class there will be a variety of ability levels. She individually **pre-tests** her students skills in the writing response task and offers some **compacting** opportunities by allowing students to choose pathways of varying **levels of activities** dependent on their needs. While the pre-test appears to target skills outcomes, it is unclear whether students were also pre-tested on the knowledge outcomes associated with the Shakespeare study or post-modernism. Additionally, student confidence is not always correlated with student ability and/or performance and students may choose the easier pathway due to a lack of confidence but not to a lack of ability.

In **Example Two**, the use of a **problem solving scenario** is an excellent way to engage reticent learners in the unit topic and offering a **choice** of working individually or in small groups helps to differentiate the learning environment. It would also have been useful in this case, however, to pre-test the boys' skills and understandings of the core unit outcomes prior to beginning the unit, to allow for some curriculum compacting where appropriate, and also to design a choice of activities at different levels of difficulty throughout the unit. There is **no evidence of curriculum compacting** in this example, as no pre-testing was conducted.

In **Example Three**, Ms Manglick initiated a process of communication with the local primary schools which allowed her to assess her students' needs prior to their entry to the high school. It is important to note that this **pre-testing** activity might have also have been conducted on an orientation day or during the first week of high school. In doing this, Ms Manglick was able to plan a differentiated unit of work based on a **theme, two levels** of difficulty planned with **Bloom's Taxonomy** and with a **real world audience** culminating activity. From the information given it is not clear if the pre-test was based on both content and skills outcomes for the unit, nor whether any curriculum compacting was undertaken.

## Choosing a Pathway

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

- validate your current understandings of curriculum differentiation and compacting, if you identified the example of best practice.
- delineate the strengths or weaknesses of your understandings of curriculum differentiation and compacting, if you identified the majority of points.
- clarify the areas on which you need to focus while working through Module 5 Parts A and B, if you did not identify the features of differentiated curriculum such as pre-testing and curriculum compacting.

### Content Areas of Core Module 5: Part A and Part B

**Core Module 5A** is divided into Parts 1 and 2 (NB If you feel you have a firm understanding of the basic tenets of differentiation following your responses to the pre-test, you may wish to omit Part 1 and move to Part 2 instead):

- Part 1 (page 8) examines definitions, issues and strategies of differentiation.
- Part 2 (page 15) examines compacting the curriculum through unit planning and pre-testing.

**Core Module 5B** is also divided into Parts 1 and 2 (NB Pretests at the beginning of this module will help you choose a pathway through both parts of the module):

- Part 1 continues the process of differentiation by examining two curriculum models - Bloom's Taxonomy and the Williams Model.
- Part 2 examines additional strategies that can useful to implement differentiation and the use of the Kaplan Model as a scaffold to develop independent research tasks.

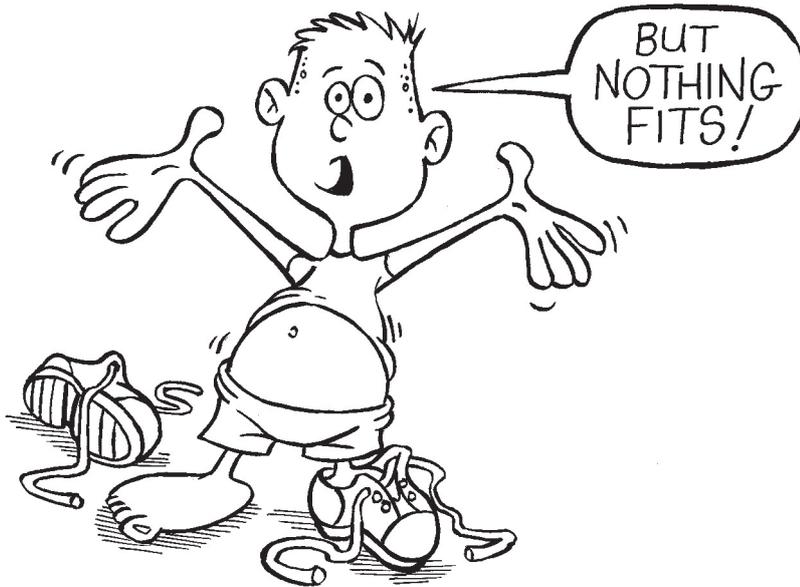
## **Outcomes**

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

- explain the definition and purpose of differentiation, in relation to gifted students specifically.
- analyse the elements of differentiation present in a unit of work.
- describe the process of curriculum compacting.
- develop an outcomes-based pre-test for a unit of work you teach.

This Module introduces the concept of differentiation, and appropriate planning and teaching strategies to achieve differentiation in a classroom environment. Part 1 examines some definitions, and the purpose and need for planning a differentiated unit of work.

## What is curriculum differentiation?



A 'one size fits all' syllabus rarely delivers what provisions it claims. Most state and territory syllabus documents are designed to meet the learning needs of the majority of students in any classroom. Some documents suggest that the 'special learning needs' students, as well as gifted students, may necessitate curriculum modification; however, the reality of initiating such modifications in classrooms of 30 or more students is often overwhelming to classroom teachers who may have no previous experience in planning a multi-layered program.

Curriculum differentiation can address this issue and help to cater for the different learning needs of students in any classroom structure. A number of definitions of curriculum differentiation exist, all of which highlight the same main issue:

**Differentiated curriculum addresses the different learning styles and rates of learning of students in both mixed ability and self contained gifted classrooms.**

Classroom structures at any level of schooling are rarely homogeneous and therefore a teacher-directed program set to only one style of learning or one pace of learning will generally fail to meet the needs of the majority of the students in the class.

“Essentially, the aim of differentiating instruction is to maximize each student's growth by meeting each student where he or she is and helping the student to progress. In practice, it involves offering several different learning experiences in response to students' varied needs.

Learning activities and materials may be varied by difficulty to challenge students at different readiness levels, by topic in response to students' interests, and by students' preferred ways of learning or expressing themselves.

This is not the individual education program (IEP) approach where there are different experiences for all 20-30 students in the class. Typically two to four different learning experience are offered by the teacher, or students are given opportunities to make their own choices.”

Kiernan, L. (1996). *Differentiating Instruction*. (Lesson One. pgs 3 – 4). Alexandria, VA: Association for Supervision and Curriculum Development. Also found at: <http://www.ascd.org>

## Who is curriculum differentiation for, and why use it?

Meeting the needs of all students in the variety of educational settings teachers may find themselves in, such as mixed ability and self-contained gifted classrooms, poses some interesting challenges for educators.

The often resorted to 'teach to the middle' approach may in many cases result in frustration for both students and teachers. Some students, often the gifted, experience the frustration of a curriculum that is lacking in challenge and moves too slowly, whilst other students, usually those with special learning needs, experience the frustration of a curriculum that moves too quickly and which lacks the scaffolding and structure on which they need to frame their learning.



Such frustration sometimes leads to behaviours which are undesirable and non-productive. These behaviours are not always outwardly visible and disruptive. For some students their frustration is more evident in the level to which they become passive and withdrawn from the learning process.

Curriculum differentiation provides a framework that is better able to address the needs of all learners in the classroom and thus reduce some of the frustrations being experienced by both teacher and students. All students need to regularly experience that moment in their learning where they achieve a 'personal best - a PB'. In the sporting arena, the achievement of a 'PB' is greeted with applause and accolade, and so should it be in the academic arena as well.

When specifically looking at the needs of gifted learners, three important issues of curriculum arise:

- Gifted students need a challenging curriculum that addresses their needs for pace and complexity.
- Gifted students require instruction and scaffolding for their learning but may not require the level of repetition and support needed by other less able students.

- Gifted students who have not experienced a differentiated curriculum previously may challenge the process with the ‘it’s not fair that I have to do something that is different/harder/ has higher expectations’.

It is very important to establish with all students in your classrooms the understanding that they each have different learning needs and that in a differentiated classroom it is common for students to be using different thinking processes and creating different levels of products. This is not a matter of ‘unfair’ distribution of tasks but rather a system which is fair to all learners in terms of their respective needs.



## What are some of the strategies you can utilise to design differentiated curriculum?

So, what are some of the strategies you can use to begin designing differentiated curriculum? Maker (1982) describes curriculum modifications for gifted students as encompassing four areas:

**Content modifications** for gifted students should:

- be abstract, complex, varied
- involve issues of organisation, study of people, methods of inquiry.

**Process modifications** for gifted students should:

- involve higher order thinking processes
- promote creative and critical thinking
- require problem solving
- involve group interaction
- have variable levels of pacing

- allow for debriefing of the process
- involve open-endedness
- allow for freedom of choice.

**Product modifications** for gifted students should:

- involve real world problems
- be for real world audiences
- require real deadlines
- require transformation of learning
- involve appropriate assessment and evaluation
- involve extended or accelerated outcomes.

**Learning environment modifications** for gifted students should:

- be flexible and open
- encourage independent and intrinsic learning
- be accepting and non judgemental
- encourage complex and abstract thought.



Commonsense dictates that the areas of content, process, product and learning environment are where curriculum may also need to be modified for students with special learning needs. However, it is important to note that **teachers new to differentiation may choose to begin by differentiating content or process or product, rather than all of them, until they are both familiar and comfortable with the strategies.**

Additionally, the following strategies will also assist the process of differentiation:

- Assessing students' prior skills and understandings (see Part 2 of Module 5A).
- Using pre-assessment to compact the curriculum for students who have already mastered the core (see Part 2 of Module 5A).
- Using tiered assignments and/or assessment tasks (see Part 2 of Module 5B).
- Accelerating the pace for gifted students to allow for independent study on student interest (see the Extension level of this Module).
- Flexibly grouping to allow gifted students to work with like-minded peers (see Module 6).
- Designing independent research tasks (see Part 2 of Module 5B) where students learn how to develop and manage their independent learning skills. The degree of complexity of the project will depend on student readiness and independent research may begin as a paired project.

- Negotiating learning contracts where a written agreement between teacher and student results in students working independently. The contract helps students to set daily and weekly work goals and develop management skills. It also helps the teacher keep track of student progress (see Part 2 of Module 5B).
- Creating learning centres, particularly in early childhood and primary classrooms. It is important to note that a learning centre is not necessarily differentiated unless the activities are varied by complexity, taking into account different student ability and readiness. It is also important that students understand what is expected of them in any task they choose from the learning centre and that they are encouraged to develop time management skills to complete these tasks.
- Becoming a teacher as a facilitator rather than a director of learning.

## Reflective/Practical Component

Having worked through Part 1 of this Module, how would you now define the terms compacting and differentiation? Do you need to modify your original definition? If so, re-work your definition in the space below.

Which aspects of differentiated curriculum would you find most difficult to implement?



Compare your responses.

Now evaluate the level of differentiation in a unit of work you have taught previously, or alternatively, a unit of work you want to teach. Use the questions below to guide you and note down some of your thoughts in the spaces provided.

Was/Is the content appropriate for the class?

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

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

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

Were/Are the products required appropriate for the unit outcomes?

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

Was/Is the learning environment appropriate for the class?

- Did/Will any of the ability groups in your class require modifications to the learning environment?
- Did/Will you make any changes to the learning environment from your original program? Why?
- Might you change any aspects of the learning environments in any future teaching of the unit? Why or why not?

### What does the term ‘compacting the curriculum’ mean?

There are six key steps to curriculum compacting:

- identifying the outcomes
- pre-testing the outcomes
- eliminating the areas of repetition
- streamlining the learning experiences
- offering enrichment, extension and/or acceleration - matching student need to intervention
- documenting the process.

### How do you incorporate curriculum compacting into unit planning?

In this section, you are encouraged to begin the process of curriculum differentiation and curriculum compacting by mapping a unit of work that you will teach in the near future.

Examples of unit planning for different levels of schooling can be found in the resource section of this Module and it is suggested that these may be useful as a model when mapping a differentiated unit for the first time.

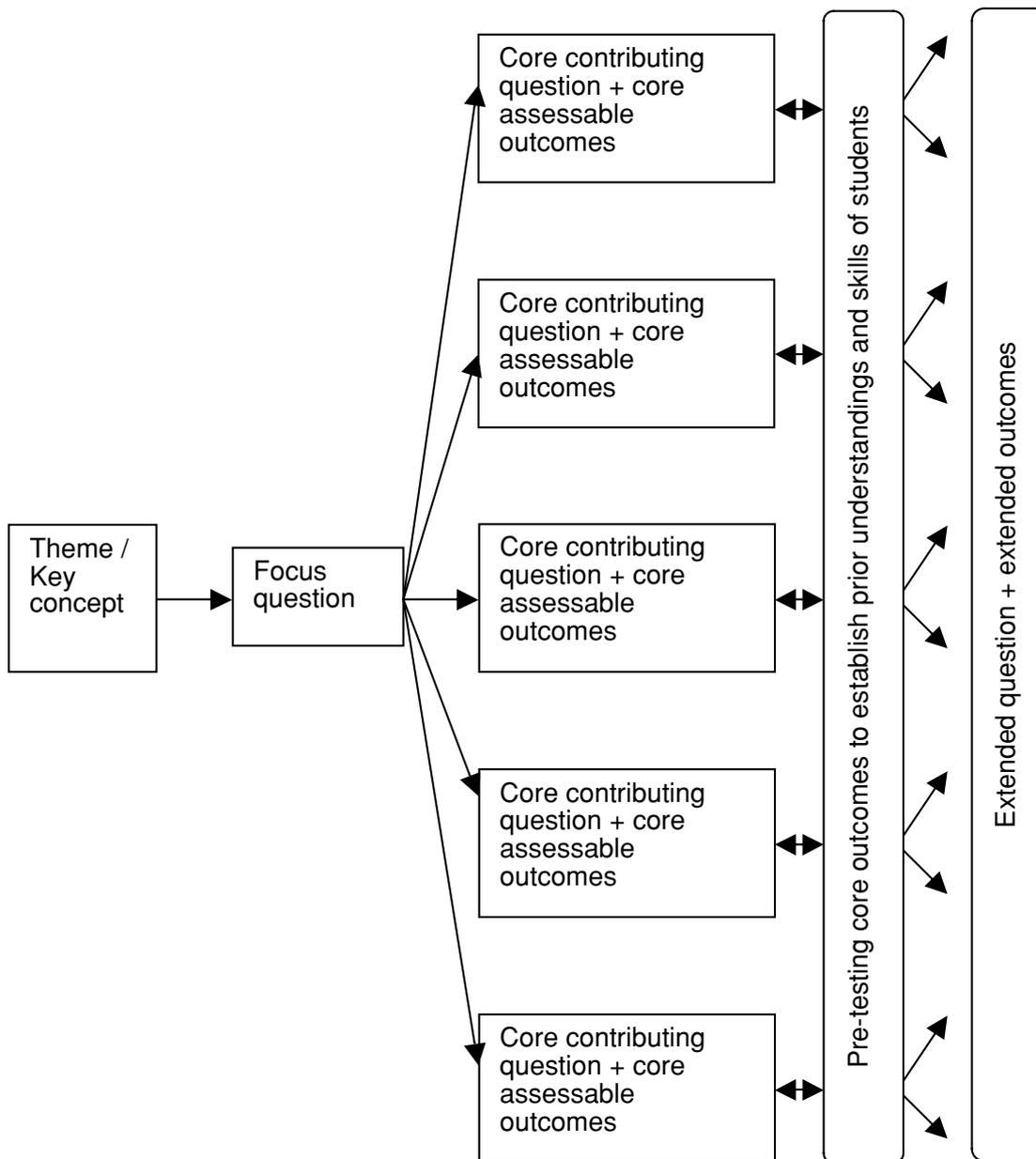


**Resource section:**

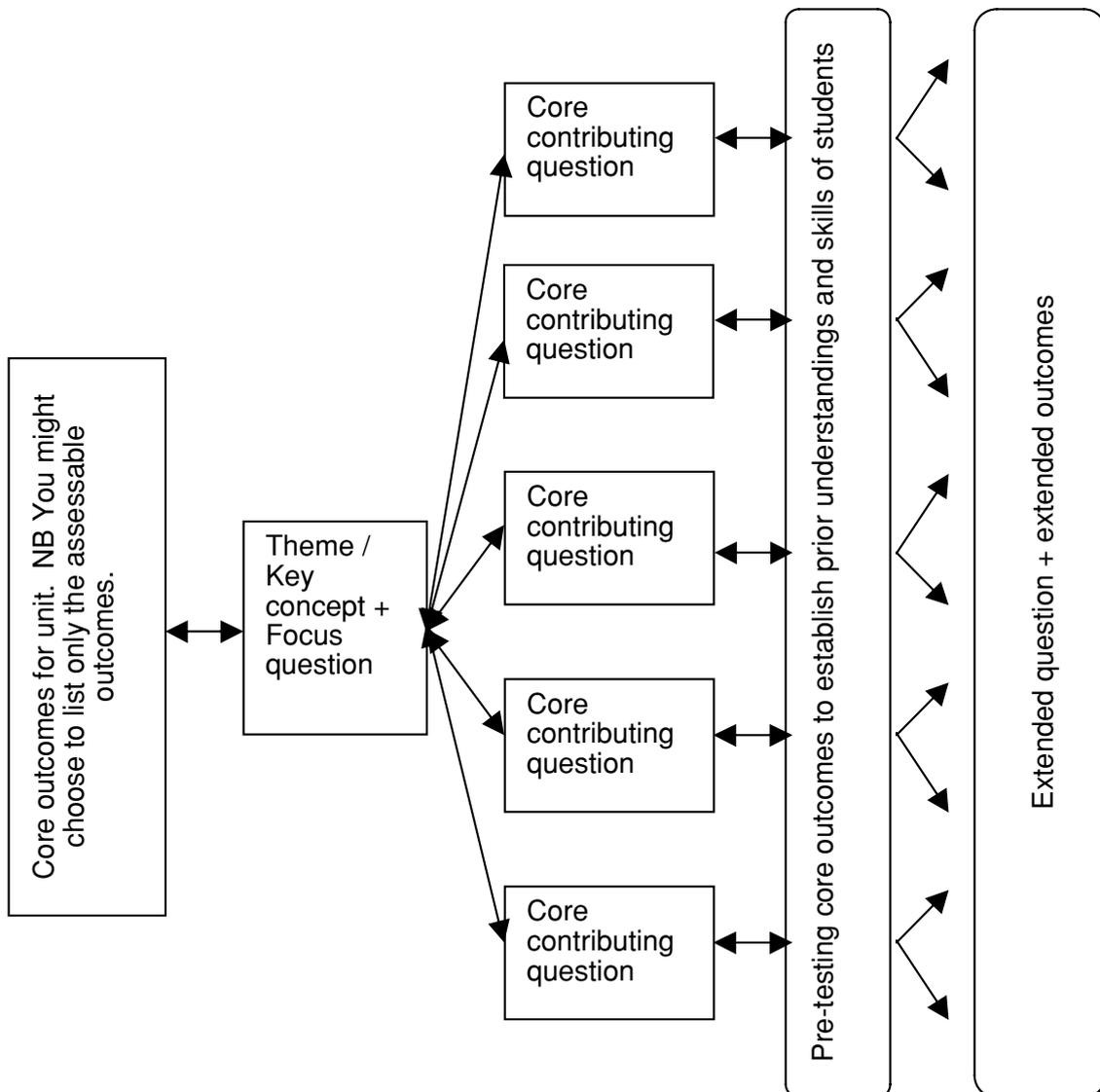
Example of Secondary unit planning (page 52)

Two alternative methods might be used in this process, dependent on preference of planning as shown in the following flowcharts. NB: The examples show five contributing questions but this may vary from three to five depending on the time frame of the unit:

## Method One



## Method Two



These methods differ only in the point at which the outcomes are involved in the planning process. Curriculum compacting occurs in the planning that follows the pre-testing and may involve extended outcomes, independent research projects and/or acceleration of outcomes. In **Module 6**, acceleration and grouping will be addressed in detail.

**Method One** is useful for units where the theme, or the 'big idea', is the first point in the planning process. In states where mandatory content outcomes must be addressed in the teaching and learning process, it may be more appropriate to use **Method Two**.

The following pages step out the two different methods of unit planning:

## Method One

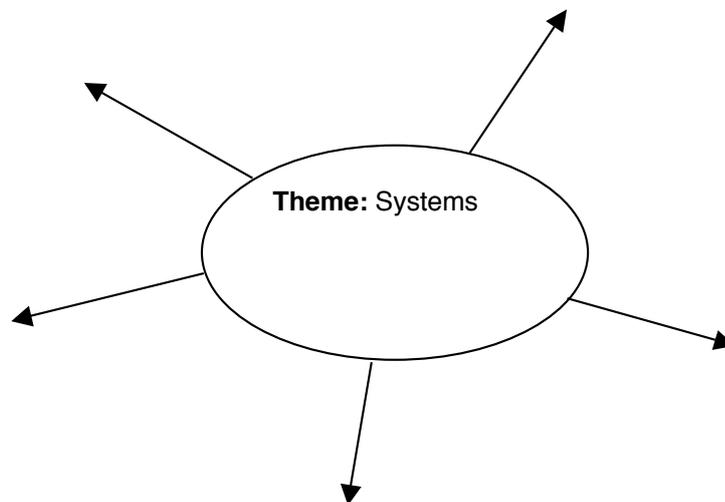


Using a concept map (page x), flowchart (page x) or a list (page x) from the resource section, work through the following steps (NB the given example is a generic unit of work for teachers which is based on the topic of curriculum differentiation):

**Step One:** Choose a theme which incorporates the basis of the unit. For example abstract nouns often serve as useful themes:

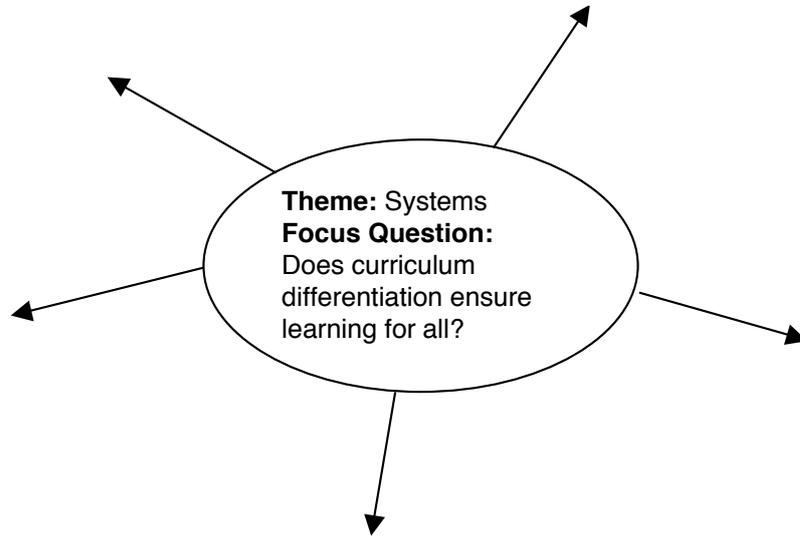
- Change
- Systems
- Growth
- Power
- Freedom
- Democracy
- Tolerance
- Persecution
- Traditions
- Survival
- Communication
- Justice
- Time
- Truth, and so on.

NB: Be careful not to mistake a topic for a theme; eg, 'Electricity' is a topic, 'Systems' is a theme.



**Step Two:** Construct a focus question which links to the theme. This question should set the focus for all students working on this unit, regardless of their ability level, and should require substantial thinking or study to answer it.

For example, on the theme of 'Systems', the focus question might be: 'Does curriculum differentiation ensure learning for all?' or 'How and why is curriculum differentiation important?'



**Step Three:** The core contributing questions for the unit are constructed next. The number of questions needed depends on the length of the unit and the age group being taught.

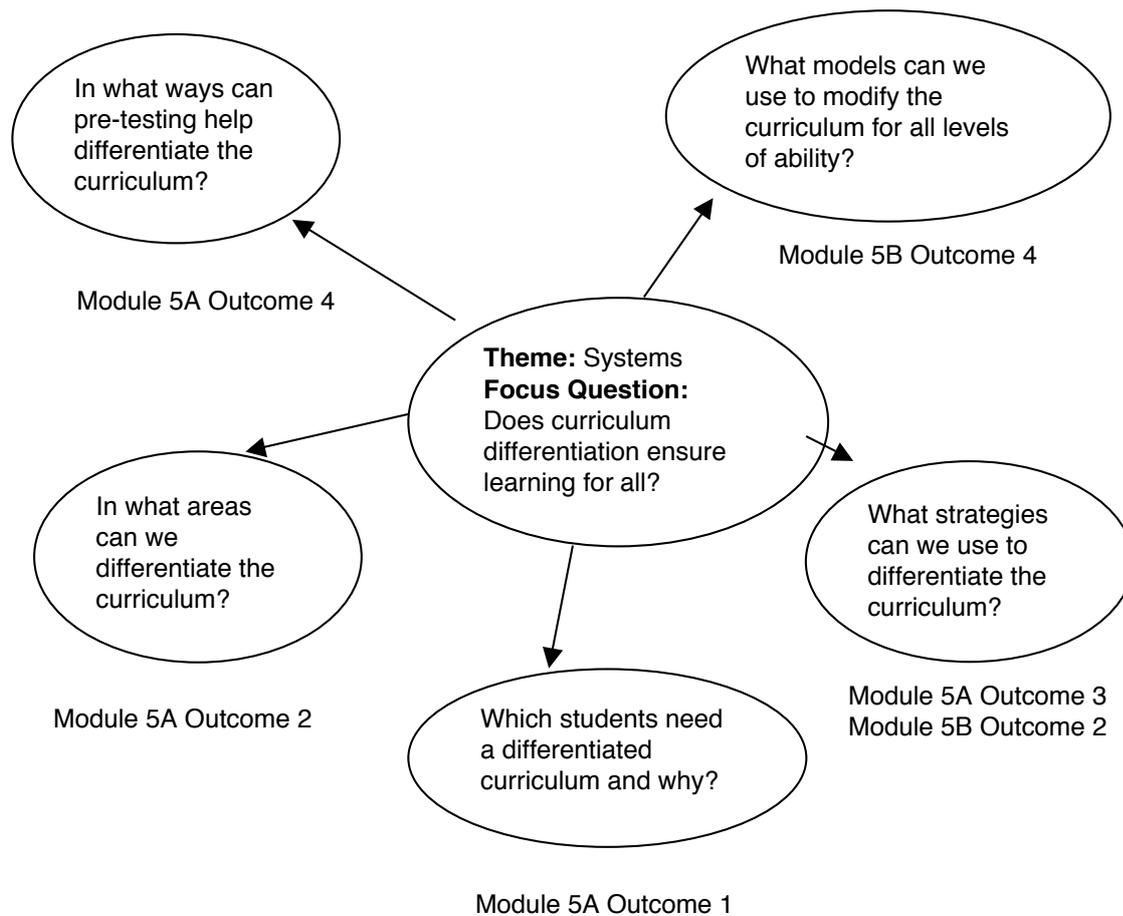
For example, in an early childhood unit of work, teachers may decide that three questions are enough to address in a term's unit of work, whereas teachers in primary classrooms may extend that to four or five questions throughout a term. One contributing question may take two to three weeks to address in early childhood or primary classrooms.

In secondary classrooms, where units may only be taught for half a term or less, contributing questions may be addressed in shorter time periods.

The contributing questions should be designed to support the theme and the focus question.

The key or assessable core outcomes are then matched to the core contributing questions. In some states, the core outcomes are also the assessable outcomes; however, in other cases there is a difference between assessable and indicative outcomes and teachers may choose to match only the assessable outcomes in the planning stage.

The following example illustrates the planning of the theme, focus question, contributing questions and outcomes for this Module of the Professional Development course on curriculum differentiation:



**Step Four:** Once the contributing questions have been established, a set of extended questions should be developed from the core contributing questions. These questions will be the framework for the extension activities designed for gifted students. NB: If differentiating for all levels in a mixed ability classroom, a set of support or structured questions may also be designed for students with special learning needs.

**Theme:** Systems

**Focus Question:** Does curriculum differentiation ensure learning for all?

**Contributing Question One:** Which students need a differentiated curriculum and why?

**Extended Question:** Is differentiation the only choice available to cater for student differences?

**Extended Question:** How do we measure the impact of curriculum differentiation on students?

**Contributing Question Two:** In what areas can we differentiate the curriculum?

**Extended Question:** Is differentiation only effective if used in all areas of the curriculum?

**Extended Question:** Are process modifications the most important part of curriculum differentiation?

**Contributing Question Three:** In what ways can pre-testing help differentiate the curriculum?

**Extended Question:** Is pre-testing only effective when there are objective criteria to judge performance?

**Extended Question:** Should pre-testing be matched with post-testing to judge learning gain?

**Contributing Question Four:** What models can we use to modify the curriculum for all levels of ability?

**Extended Question:** Is any one curriculum model better than the others for differentiation and why?

**Extended Question:** Are some models more appropriate for different levels of schooling and different subjects?

**Contributing Question Five:** What strategies can we use to differentiate the curriculum?

**Extended Question:** Can freedom of choice be the best option for curriculum differentiation?

**Extended Question:** Do students always choose appropriately difficult tasks?



**What content outcomes do your students already know before beginning the unit of work?**

**What skills outcomes have your students already achieved prior to this unit of work?**



Once the unit has been mapped out, the next step is to design ways to assess prior learning. In this design, it is important to:

- take into account the variety of student learning styles, so that all students have the opportunity to demonstrate what they understand and what skills they already possess.
- pre-test the key or assessable outcomes.
- pre-test students individually and not as a group or a class, to allow all students a chance to respond.
- make sure that students have encountered the style of pre-test previously, eg, if students have not used a Venn diagram before, teach them the skill first then use the strategy as a pre-test.



The following list of ideas may be helpful in the construction of pre-tests for your unit of work:

- Concept maps - Resource section page 53
- Venn diagrams - Resource section page 53
- Flow charts - Resource section page 54
- Draw a diagram, picture
- Written response
- Picture matching - Resource section page 54

- Experimental design
- Label a diagram - Resource section page 55
- Multiple choice
- Short answers
- Essay response
- Problem solving
- Hypothesis-based responses
- Cloze passage
- Make a model
- Hands-on activities
- Bloom's Taxonomy questions (one from each level)

### Important points to remember

- Pre-tests can, and should, be administered well in advance of the start of the unit of work to allow time to differentiate the unit activities appropriately.
- Some students suffer from test anxiety and may not be able to respond to the pre-test activity to the best of their ability if they perceive that the pre-test will be reportable. It is often better to explain to your students that you are planning the next unit you will be teaching them and would like to find out if they know any of the content or if they can do any of the skills prior to beginning the unit. This way you can reassure the students that the purpose of the activity is to help with planning rather than to assess and report on them.
- Pre-tests should not be displayed in the classroom nor added to portfolios, as their purpose is for diagnosis of content and skills needs only.
- Students do not need to achieve 100% accuracy on a pre-test activity to demonstrate mastery of an outcome. **Accuracy or competency equating to 85% or greater demonstrates a mastery level for which extension is essential.**
- To evaluate student mastery of an outcome, objective criteria for each outcome being pre-tested should be developed. For example, what does a student need to include in a pre-test to be evaluated as 'working at grade level' and therefore a candidate for extension?

Pre-testing should not be a lengthy process:

For example, in secondary classrooms, where time is at a premium, it is important to ensure that pre-testing targets the assessable outcomes in an accurate way. In KLA's where two to three units may be taught in a term, it is time-efficient to pre-test all units at the same time, in the term prior to their implementation, using one lesson to do so and thus avoiding the disruption of having short pre-test activities in later lessons.

Choose at least two different styles from the suggested list (or any which are not mentioned) and design two outcomes-based pre-tests for the unit of work you have been mapping.

Trial your pre-tests with your class and collect work samples representing each level of the reporting descriptors, or grades, you use in your school.

For example:

- working towards grade, working at grade, working beyond grade
- experiencing difficulty, developing, competent, highly developed
- band one, band two, band three.

Module 5B Parts 1 and 2 will discuss ways of differentiating the curriculum for those students who have demonstrated some or all mastery of the outcomes you have pre-tested and who should subsequently work on the extended questions from the unit concept map.

### Why use a curriculum model when differentiating the curriculum?

It is important that curriculum differentiation is based on the application of one or more models to carry out the instructional outcomes of the proposed program or unit of work. The model or models chosen should have research to support that they produce 'substantial' gains in the areas of academic, social, or emotional development. The models explained in Module 5B have been chosen because they meet these parameters.

#### References

- Bloom, B. S. (Ed.), Englehart, M. D., Furst, E.J., Hill, W.H., & Krathwohl, D. R. (Eds.) (1956) *Taxonomy of educational objectives: Handbook I: Cognitive domain*. New York: Longmans Green.
- Gardner, H. (1983). *Frames of mind: The theory of Multiple Intelligences*. New York: Basic.
- Gardner, H. (1993) *Multiple Intelligences: The theory in practice*. New York: Basic.
- Maker, J. (1982). *Curriculum development for the gifted*. Austin, TX: PRO-ED.
- Tomlinson, C. (1996). *Differentiating instruction for mixed ability classrooms: A professional inquiry kit*. Alexandria, VA: Association for Supervision and Curriculum Development.

#### Websites

Inspiration Software, Inc - Visual learning tools:  
[www.inspiration.com](http://www.inspiration.com)

Houghton Mifflin: Education Place - graphic organisers in .pdf format to download:  
<http://www.eduplace.com/graphicorganizer/>

# Core Module 5B

## Pre-Test

How familiar are you with the strategies of Bloom's Taxonomy and the Williams Model? By completing the following pre-tests you will have the opportunity to decide which pathway you need to take through this part of Module 5:

### **Bloom's Taxonomy**

Read through the activities for your level of teaching and identify which of Bloom's strategies is represented by each.

1. In your own words, describe the physical and emotional attributes of adolescence.
2. Create a multimedia presentation that exposes the prevalent stereotypes of adolescence.
3. List the different methods scientists might use to study adolescence.
4. Adolescence is the most important stage of development. Do you agree or disagree? Why or why not?
5. Use a flowchart or other graphic organiser to model the changes, which occur during adolescence.
6. Examine the ways in which two different cultural groups view adolescence. How are these views similar or different?

## The Williams Model

Read through the activities for your level of teaching and identify which Williams Model strategies are represented by each.

(Note that while the model offers 18 different teaching strategies, the pre-test targets a selection of 6 of these strategies.)

1. How is adolescence like a storm?
2. List the most important issues facing adolescents today.
3. How do scientists study adolescence? Investigate some of the different issues of adolescence currently being investigated by scientists.
4. Imagine you are an adolescent living in ancient times. Describe how your daily activities may have been.
  5. A 'rite of passage' marks the transition from one stage of life to another. How important is this for adolescence?
  6. Adolescence is only a state of mind promulgated by the media for commercial gain. Do you agree? Why or why not?

## Bloom's Taxonomy

Please note that the first answer for each question is from the original version of Bloom's Taxonomy and the second from the revised version of the model.

The criteria for judging your understanding of Bloom's Taxonomy are:

**Strong understanding:** Accurately identified five or six examples of Bloom's strategies.

**Some understanding:** Accurately identified three or four examples of Bloom's strategies.

**Little or no understanding:** Accurately identified two or fewer examples of Bloom's strategies.

Should you have found from your pre-test results that you had some, or a strong understanding of Bloom's Taxonomy, you may choose to omit the section on Bloom's Taxonomy and attempt the Williams Model pretest (page 26).

1. In your own words, describe the physical and emotional attributes of adolescence.

COMPREHENSION / UNDERSTAND

2. Create a multimedia presentation that exposes the prevalent stereotypes of adolescence.

SYNTHESIS / CREATE

3. List the different methods scientists might use to study adolescence.

KNOWLEDGE / REMEMBER

4. Adolescence is the most important stage of development. Do you agree or disagree? Why or why not?

EVALUATION / EVALUATE

5. Use a flowchart or other graphic organiser to model the changes, which occur during adolescence.

APPLICATION / APPLY

6. Examine the ways in which two different cultural groups view adolescence. How are these views similar or different?

ANALYSIS / ANALYSE

## Williams Model

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

**Strong understanding:** Accurately identified five or six examples of the Williams strategies.

**Some understanding:** Accurately identified three or four examples of the Williams strategies.

**Little or no understanding:** Accurately identified two or fewer examples of the Williams strategies.

Should you have found from your pre-test results that you had some, or a strong understanding of the Williams Model, you may choose to omit the section on the Williams Model and attempt Module 5B Part 2 (page 41).

1. How is adolescence like a storm?

ANALOGY

2. List the most important issues facing adolescents today.

ATTRIBUTE LISTING

3. How do scientists study adolescence? Investigate some of the different issues of adolescence currently being investigated by scientists.

ORGANISED RANDOM SEARCH

4. Imagine you are an adolescent living in ancient times. Describe how your daily activities may have been.

INTUITIVE EXPRESSION

5. A 'rite of passage' marks the transition from one stage of life to another. How important is this for adolescence?

EVALUATE SITUATIONS

6. Adolescence is only a state of mind promulgated by the media for commercial gain. Do you agree? Why or why not?

PROVOCATIVE QUESTION

## Choosing a Pathway

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

- validate your current understandings of Bloom’s Taxonomy and the Williams Model if you correctly identified all of the activities.
- delineate the strengths or weaknesses of your understandings of Bloom’s Taxonomy and the Williams Model, if you correctly identified the majority of the activities.
- clarify the areas on which you need to focus whilst working through Module 5 PartB.

## Content Areas of Core Module 5: Part B

Core Module 5B is divided into Parts 1 and 2:

- Part 1 continues the process of differentiation by examining the curriculum models of Bloom’s Taxonomy and the Williams Model.
- Part 2 examines strategies that can be useful to implement differentiation and the use of the Kaplan Model as a scaffold to develop independent research tasks.

## Outcomes

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

- develop differentiated activities for gifted students using Bloom’s Taxonomy or the Williams Model.
- develop an independent study project using the Kaplan Model.
- select and apply appropriate strategies for implementing differentiation in your specific area of teaching.

This Module continues the process of differentiation by developing appropriate planning and teaching strategies using the curriculum models of Bloom's Taxonomy, the Williams Model and the Kaplan Model.

## How do you extend students who have demonstrated competency in the outcomes based pre-tests?

Passow (1988) proposed the following criteria to gauge whether the curriculum presented to gifted students is appropriate:

**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 is important to understand that all students benefit from enrichment opportunities and they should not be denied these opportunities. However, gifted students need to experience curriculum that is beyond this level of enrichment and extends their understandings and skills in complex and challenging ways.

## How do you extend students' critical thinking skills?

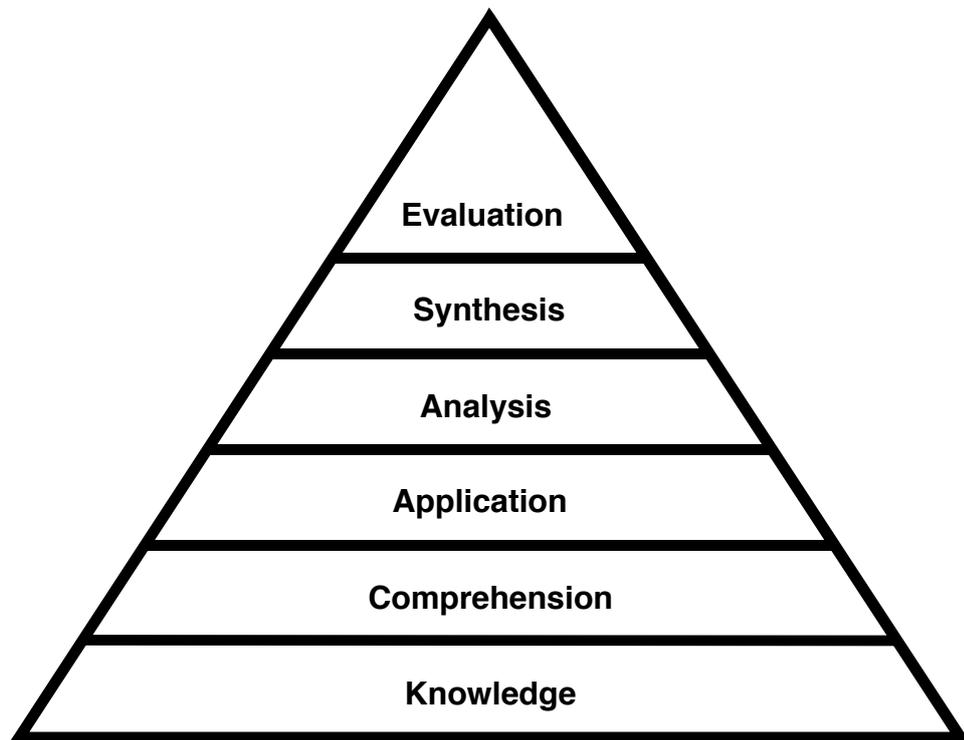
*Judge a man by his questions rather than his answers. Voltaire*

Bloom's Taxonomy (1956) was constructed as a means to develop the higher order thinking skills of students by taking them through a sequential hierarchical progression. Bloom intended the taxonomy to be applicable to all age groups, subject areas and ability levels, so you will also find the strategies he developed used in adult training.

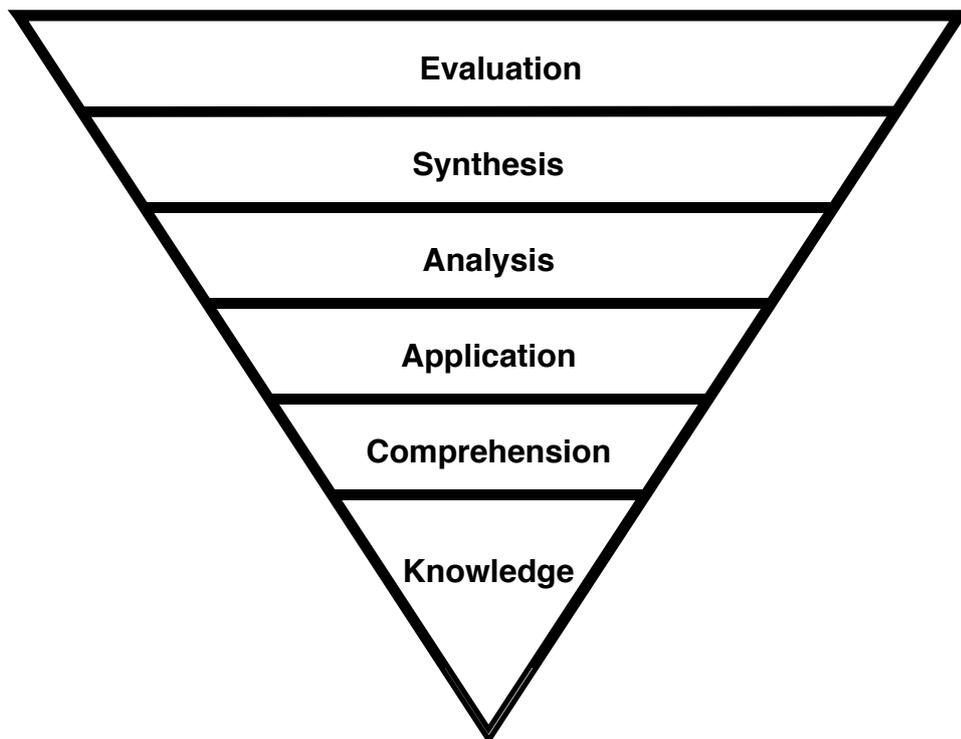
However, it is also important to note that the amount of time that should be spent on the strategies at each level of the hierarchy differs in relation to the ability level and prior knowledge of students.

For example, the following diagrams, developed by Davis and Rimm (2004), illustrate the difference between the way Bloom's Taxonomy should be used for core students and for gifted students.





This first version of the model is suitable for students working at the core level of the curriculum. Students working at the core level of the curriculum should have access to all levels of the taxonomy but should spend more learning time using the lower order strategies of knowledge, comprehension and application, as they work towards the higher order thinking skills.



While gifted students need to acquire, comprehend and apply the knowledge relating to any discipline, they may come with, or rapidly acquire, the knowledge base and it is more important for them to spend a greater proportion of their time analysing, synthesising and evaluating this knowledge.

## **How do the six different levels of Bloom's Taxonomy develop thinking skills?**

As Bloom's Taxonomy is hierarchical, each level builds on the skills of the level before it. For example, in order for a student to apply the knowledge they have acquired, they must first be able to comprehend it. The following table provides a definition and examples of each level.

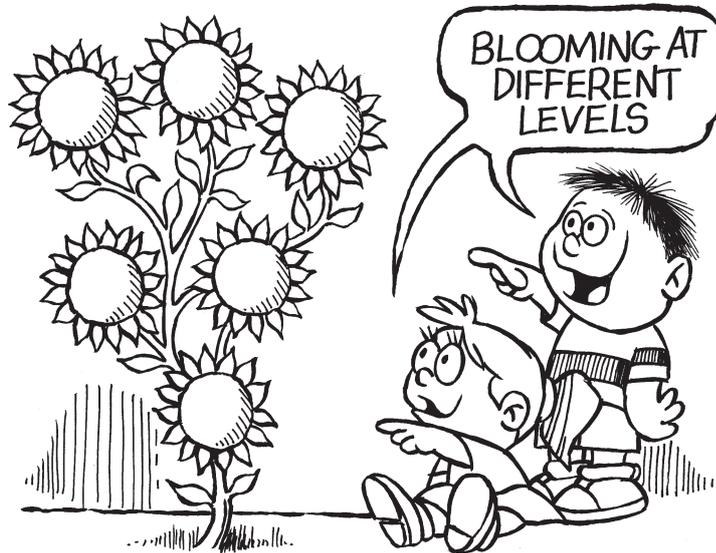
Note that the revised version of Bloom's Taxonomy, by Anderson and Krathwohl (2001), is included in the brackets.

Bloom's strategy and definition	Examples of question stems
<p>Knowledge (Remember): Mastery of facts, terminologies, conventions, trends, classifications, categories, methodologies, principles, generalisations, theories and structures. Retrieval of knowledge from long-term memory.</p>	<p>What did the _____ say about _____?</p> <p>Who invented _____?</p> <p>When did _____ discover _____?</p> <p>Which _____ decided _____?</p>
<p>Comprehension (Understand): Translation, interpretation and extrapolation of knowledge. Construction of meaning from oral, written and graphical communication.</p>	<p>Who do you think _____?</p> <p>What was the main idea _____?</p> <p>Can you briefly outline _____?</p> <p>What does _____ show us?</p>
<p>Application (Apply): Application of previously encountered rules or concepts to new situations and the transfer of understanding to other concrete, real-life and hypothetical situations.</p>	<p>How could you illustrate _____?</p> <p>What questions would you ask _____?</p> <p>How could you model _____?</p> <p>Which factors would you change?</p>
<p>Analysis (Analyse): Deconstruction of knowledge to be able to infer assumptions and points of view; distinguish fact from opinion and relative importance of details; identify underlying motives, frameworks of ideas, problems, tone and mood; recognise fallacies, bias and purpose; relate cause and effect.</p>	<p>How is _____ similar to _____?</p> <p>What must you know for _____ to be true?</p> <p>What was the underlying theme of _____?</p> <p>How did _____ compare with _____?</p>
<p>Synthesis (Create): Creation of new and unique products by combining elements of understanding; recognition of elements in new patterns or structures. Product may result from hypothesising, designing and constructing unique communications, plans, abstract relationships.</p>	<p>What would happen if _____?</p> <p>Can you design a _____ to _____?</p> <p>How many ways can you _____?</p> <p>Can you see a possible solution to _____?</p>
<p>Evaluation (Evaluate): Ability to make judgements, choices or decisions based on predetermined standards or criteria from internal and/or external evidence.</p>	<p>How effective is _____?</p> <p>Do you believe _____? Why or why not?</p> <p>What do you think about _____? Justify your position.</p> <p>What changes to _____ would you recommend?</p>

Adapted from Gross, MacLeod, Drummond & Merrick (2001); Anderson & Krathwohl (2001).

## How does this apply to classroom practice?

*The important thing is to not stop questioning. Albert Einstein*



Bloom's Taxonomy strategies can be used in a variety of ways in the classroom and do not always need to lead to a physical product. For example, questions framed from the taxonomy might be used as discussion starters and the taxonomy itself may be taught to the students to provide them with a greater understanding of the requirements of each level within it.

The following strategies are suggested as some possible ways of implementing Bloom's Taxonomy in the classroom:

- Discussion starters
- Small group activities
- Independent research tasks
- Contract sheets which allocate a different proportion of questions at different levels
- Pre-tests
- Post-tests
- Assessments
- Learning centres

Examples of Bloom's Taxonomy activities for a variety of 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: Secondary selected examples of Bloom's Taxonomy activities.

English: - Resource section page 58

Computing: - Resource section page 59

Geography: - Resource section page 60

History: - Resource section page 61

LOTE: - Resource section page 62

Mathematics: - Resource section page 63

Science: - Resource section page 64

## What are some of the strategies you can use to develop students' creative and divergent thinking skills?

An excellent model to develop creative and divergent thinking skills with students is the Williams Model (1993). This three-dimensional model focuses on:

**Dimension One:** the subject matter of the curriculum;

**Dimension Two:** the teaching strategies that stimulate positive learning behaviours;

**Dimension Three:** the development of cognitive-intellective and affective-temperament behaviours of students, using the following strategies:

- Fluency - measured by number of responses to a theme
- Flexibility - measured by the variety of changes or categories
- Originality - measured by degree of unusual or uncommon responses
- Elaboration - embellishment or expansion of the idea
- Risk-taking - willingness to try different or difficult things
- Curiosity - ability to seek many alternatives, depth of study
- Complexity - capacity to explore or discover
- Imagination - power to visualise, dream or conceive forms of action symbolically



The following table lists the 18 teaching strategies from Dimension Two of the model:

<b>Strategy</b>	<b>Definiton</b>	<b>Examples</b>
Paradox	A statement that appears to contradict itself, but that may be true.	Discuss the statement: 'Necessity is the mother of invention'.  When can performance-enhancing drugs limit performance?
Attribute Listing	Inherent open-ended properties or identities	List your earliest memories.  Who were the true 'geniuses' of the Renaissance period in Italy?
Analogy	Finding similarities between things or situations that might otherwise be different	How is a lever like a friend?  How is Othello like a puppet?
Discrepancy	Gaps or missing links in knowledge	Why did the 'Brotherhood' use the five-pointed star as their symbol of recognition?  If Vashti had not been a part of this story, would the series of events recounted in the book have unfolded?
Provocative Question	Inquiry to incite exploration and curiosity	Antarctica is rich in minerals; should we mine it?  What does a 'Renaissance man' have to be able to do, to get such a title? Are there any modern 'Renaissance men or women'?
Examples of Change	Show the dynamics of things, modifications, alterations or substitutions of things	How did the invention of scissors change our lives?  Trace how family structure has changed during the 20th and 21st centuries.
Examples of Habit	Recognition of habit-bound thinking	Study and explain alternative sources of energy to drive machines. Who invented them and are they widely used?  Were the Impressionists right in protesting the dictates of the Academy?

Organised Random Search	Structured case study for new courses of action	Who were the members of the Pythagorean 'Brotherhood'?  Create a means for collecting and displaying all the centres, agencies and organisations in your state which deal in one way or another with the circulatory system.
Skills of Search	Research on something done before; trial and error on new ways	How do we remember things? Design an experiment to test the memory of the other people in your family.  Set up an experiment to detect acid rain effects on granite monuments.
Tolerance for Ambiguity	Open-ended questions – 'what if...?'	What if Scott had made it to the South Pole first?  What would happen if the Earth's orbit moved closer to the Sun?
Intuitive Expression	Expressing emotion through the senses; guided imagery; role-playing	Write a poem or paint a picture that depicts the emotions you feel with a particular type of weather.  You have been unjustly convicted of a crime. How do you feel about the legal system, the magistrate, your lawyer, the police?
Adjustment to Development	Examine or playback mistakes or failures	As a civilisation, what have we learned from the past that has meant that Antarctica has remained relatively untouched?  Study the various theories of how the pyramids were built or engineered and look for evidence that initial wrong thinking led to ultimate success.
Study Creative Process	Analyse the traits of creative people, creative processes or creative products	Research the life of Leonardo da Vinci, with a specific focus on his role as an inventor. What processes did he undertake to design, test and record his inventions?  Learn about the work of one of the female artists attached to the 'Heidelberg School'.

Evaluate Situations	Analyse implications or consequences, extrapolate from ideas or actions	A new law has been passed which restricts all households to the use of three electrical appliances, apart from lighting. What three machines would you choose and why?  The spice trade, coffee trade and now the drug trade – how have plants altered the course of history?
Creative Reading Skill	Generate novel ideas by reading	Read Journey to Antarctica by Meredith Hooper. Do you think this journey is the last challenge left in the exploration of this continent?  Read about the lives and times of the female Impressionists. What was there about this time that allowed some of them to achieve recognition?
Creative Listening Skill	Generate novel ideas by listening	Interview an inventor to discover when he or she became interested in inventing new things or ideas.  Listen to music composed during the Renaissance. Does this music seem to coincide with or complement the art work of the time?
Creative Writing Skill	Generate novel ideas in writing	Rewrite a fairytale so there is no reference to numbers.  Write a short story for Louisa Lawson's magazine, The Dawn.
Visualisation	Express ideas in three-dimensional or non-traditional formats	Help to plan and create a mural for your class based on the book.  Construct a scale model of the Roman Forum or the Athenian Acropolis.

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

Examples of Williams Model activities for a variety of 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: Secondary selected examples of Williams Model activities.

English: - Resource section page 65

History:- Resource section page 65

Geography:- Resource section page 66

Mathematics:- Resource section page 66

Science:- Resource section page 67

Technics:- Resource section page 67

PD and Health:- Resource section page 68

Music:- Resource section page 68

## Reflective/Practical Component

Using as models examples of either Bloom's Taxonomy or the Williams Model from the support materials, develop differentiated activities for gifted students in your classroom. These activities should relate to the extension questions you developed for the concept mapping of your unit.

Use the Bloom's Taxonomy (page 69) or Williams Model blank matrix (page 70) 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.**

Part 2 examines some of the ways of implementing differentiation in the classroom and introduces the Kaplan Model as a scaffold for developing independent research projects for gifted students.

## What are some ways that curriculum differentiation can be implemented in the classroom?



A variety of strategies may be used to implement curriculum differentiation in the classrooms:

- **Pre-testing** (see Module 5A).
- **Compacting** (see Module 5A).
- **Developing tiered instruction** - the teacher develops a series of activities based on the same area of study but hierarchical in nature and complexity. Students begin activities at a level appropriate to their ability.
- **Negotiating contracts** - an agreement between the student, teacher and sometimes parent that results in the student working independently with varying levels of guidance.
- **Designing independent study or research projects** - a research project where students learn how to develop the skills for independent learning. The degree of help and structure will vary between students and depend on their ability to manage ideas, time and productivity.
- **Utilising paired and small group work** - expectations that the students work together in the collection, analysis and organisation of information but that each student prepares an individual product to demonstrate that learning has taken place.

- **Introducing future studies** - predicting, hypothesising, problem solving, finding possible solutions and hindsight.
- **Initiating negotiated curriculum** - students set their own topic, time span, and ways of presenting work.

## How do you develop Independent Study or Research Projects for gifted students?

Kaplan (1979) listed the following principles as a guide in making curriculum decisions for gifted students:

1. Focus on major issues and concepts.
2. Emphasis on a large knowledge base.
3. Use of activities that show how subjects relate.
4. Emphasis on in-depth research.
5. Teaching of thinking skills.
6. Higher order thinking incorporated into all instruction.
7. Increased complexity and pace.
8. Focus on student self-direction.



The Kaplan Model (1986) examines curriculum differentiation in the areas of content, process, product and learning environment and the model provides an excellent scaffold for developing theme-based independent research or study projects.

**In an independent investigation:**

1. Students are attempting to answer a question through research.
2. Students need to use a variety of resources.
3. Students need to communicate their findings in an effective manner.

**To do so, students must:**

- review the literature to find out what is already known about the topic.
- generate questions about a self-selected or teacher-selected topic.
- select one question.
- formulate one or more hypotheses about the question.
- design a way to answer the question or assess whether or not the hypothesis is true.
- collect and analyse information.
- form conclusions about the question or hypothesis.
- present conclusions to an appropriate audience.
- present questions for further research.

The following are the steps of development of such projects. (NB the given example is a generic independent research task for teachers which is based on the topic of curriculum differentiation, introduced in Module 5A). You may like to use the blank Kaplan Grid (pg \_\_) from the Resource Section to develop an independent research project for your unit of work as you work through this section.

**Step One:** Choose a key word, theme and discipline/s on which to base the project. Note that it is often appropriate to use the theme of the core unit of work being implemented. It may be necessary to choose two key words to create more complex projects.

**Key Words**

Kinds	Relationship	Types	Function
Changes	Purpose	Style	Conditions
Effect	Value	Importance	Characteristics

## Themes

Power	Death	Leisure	Change
Ownership	Work	Courage	Life
Freedom	Peace	Commitment	Conflict
Family	Responsibility	Violence	Love
Invincibility	Sound	System	Religion
Hate	Creation	Silence	Invention
Wisdom	Morality	Evaluation	Energy
Friendship	Fairness	Infinity	Emotion
Conservation	Pollution	Tradition	Happiness
Destruction	Law&Order	Happiness	Suffering
Truth	Knowledge	Beauty	Ignorance
Spirituality	Justice	Survival	Equality
Loyalty	Healing	Tolerance	Growth
Values	Education	Time	

For example:

Theme	Outcomes	Research Skill/s	Productive Skills	Product
Purpose and Effect of Systems				

**Step Two:** Choose the core or extended outcomes to be addressed by the project from the appropriate syllabus documents.

For example:

Theme	Outcomes	Research Skill/s	Productive Skills	Product
Purpose and Effect of Systems	Module 5A Outcome 1 Module 5B Outcome 2			

**Step Three:** Determine the research skills to be developed by this project.

**Research Skills**

- Taking notes
- Using a classification key
- Interviewing
- Using reference resources
- Computerised bibliographic research
- Reporting research
- Designing a research method
- Establishing criteria to judge
- Using a retrieval system
- Using a card catalogue
- Taking a survey
- Observing detail through verbal/visual description
- Using journals, magazines, newspapers
- Writing abstracts
- Analysing, interpreting data
- Outlining
- Substantiating with evidence
- Using fiction and non-fiction



For example:

Theme	Outcomes	Research Skill/s	Productive Skills	Product
Purpose and Effect of Systems	Module 5A Outcome 1 Module 5B Outcome 2	Designing a research method; Establishing criteria to judge		

**Step Four:** Choose a critical and creative thinking skill to be developed through the project. These skills may be selected from Bloom’s Taxonomy and the Williams Model (see Module 5B Part 1):

For example:

Theme	Outcomes	Research Skill/s	Productive Skills	Product
Purpose and Effect of Systems	Module 5A Outcome 1	Designing a research method	Analysis	
	Module 5B Outcome 2	Establishing criteria to judge	Evaluate situations	

**Step Five:** Choose a product or choice of products, which will reflect the outcomes, and skills of the project. The following list may be useful but is by no means exhaustive:

Self-evaluation	Editorial	Opinion
Debate	Story	Written report
Diagram	News article	Chart
Advertisement	Cartoon	Model
Recipe	Illustration	Invention
Mobile	Television show	Map
Structure	Diorama	Puppet show
Sculpture	Pantomime	Puzzle
Set of photographs	Magazine	Simulation
Newspaper	Play	Book
Demonstration	Tape	Teaching lesson
Filmstrip	Computer program	Recommendation
Scrapbook	Letter	Research report
Journal	Bulletin board	Panel discussion
Exhibit	Poem	Oral presentation
Value statement	Graphic representation	
Survey questionnaire	New game	

**Step Six:** Develop an implementation sequence for the project in consultation with the student or students involved.

For example:

<b>Theme</b>	<b>Outcomes</b>	<b>Research Skill/s</b>	<b>Productive Skills</b>	<b>Product</b>
Purpose and Effect of Systems	Module 5A Outcome 1 Module 5B Outcome 2	Designing a research method Establishing criteria to judge	Analysis Evaluate situations	Research report - multimedia format
<p>Implementation Sequence:</p> <ol style="list-style-type: none"> <li>1. Students will develop a differentiated unit of work to implement with their class in order to answer the question: How do we measure the impact of curriculum differentiation on students?</li> <li>2. Students will design a research method.</li> <li>3. Students will develop criteria for measuring curriculum differentiation's impact on students.</li> <li>4. Students will collect data to analyse.</li> <li>5. Students will analyse data and draw conclusions.</li> <li>6. Students will create a multimedia presentation as a synthesis of their findings.</li> </ol>				



Resource section: Secondary example of Kaplan Model independent research projects.

Resource section page 73

If you have not yet done so, continue the modification of your unit of work by adding an independent research task for gifted students, using the blank Kaplan Model Grid (page 72) in the Resource section.

Alternatively, develop an implementation plan which maps out the timeline of the unit (as shown in the Kaplan grid example (page 73).



For further reading – An interesting article on differentiation by Sandra Berger may be found after the Resource Section should you like to further explore the elements of differentiating the curriculum.

### Further References

- Anderson, L. W., & Krathwohl (Eds.). (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*. New York: Longman.
- Bloom, B. S. (Ed.), Englehart, M. D., Furst, E.J., Hill, W.H., & Krathwohl, D. R. (Eds.) (1956) *Taxonomy of educational objectives: Handbook I: Cognitive domain*. New York: Longmans Green.
- Davis, G. A., & Rimm, S. B. (2004). *Education of the gifted and talented* (5th edition). Needham Heights, MA: Allyn and Bacon.
- Gross, M. U. M., MacLeod, B., & Pretorius, M. (1999). *Gifted students in secondary schools: Differentiating the curriculum*. Sydney: GERRIC, UNSW.
- Gross, M. U. M., MacLeod, B., Drummond, D., & Merrick, C. (2001). *Gifted students in primary schools: Differentiating the curriculum*. Sydney: GERRIC, UNSW.
- Kaplan, S. (1986). The grid: A model to construct differentiated curriculum for the gifted. In J. S. Renzulli (Ed.) *Systems and models for developing programs for the gifted and talented* (pp. 180-193). Mansfield Center, CT: Creative Learning Press.
- Maker, J. C. (1982). *Curriculum development for the gifted*. Rockville, MD: Aspen.
- Passow, A. H. (1982). *Differentiated curricula for the gifted and talented*. Committee Report to the National/State Leadership Training Institute on the Gifted and Talented. Ventura County, CA: Office of the Superintendent of Schools.
- Passow, A. H. (1989a). The educating and schooling of the community of artisans in science. In P. F. Brandwein & A. H. Passow (Eds.), (1989). *Gifted young in science: Potential to performance* (pp. 27-38). Washington, DC: National Science Teachers Association.
- Passow, A. H. (1989b). School, university, laboratory, and museum cooperation in identifying and nurturing potential scientists. In P. F. Brandwein & A. H. Passow (Eds.), *Gifted young in science: Potential through performance* (pp. 245-253). Washington, DC: National Science Teachers Association.
- VanTassel-Baska, J. (1993). *Comprehensive curriculum planning for gifted learners*. Boston, MA: Allyn and Bacon.
- Williams, F. E. (1970). *Classroom ideas for encouraging thinking and feeling* (2nd edition). Buffalo, New York: D.O.K. Publishers.
- Williams, F. E. (1993). The cognitive-affective interaction model for enriching gifted programs. In J. S. Renzulli (Ed.) *Systems and models for developing programs for the gifted and talented*. Melbourne: Hawker Brownlow.

### Websites

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

<http://www.curriculumsupport.nsw.edu.au/gats/index.cfm?u=3&i=34>

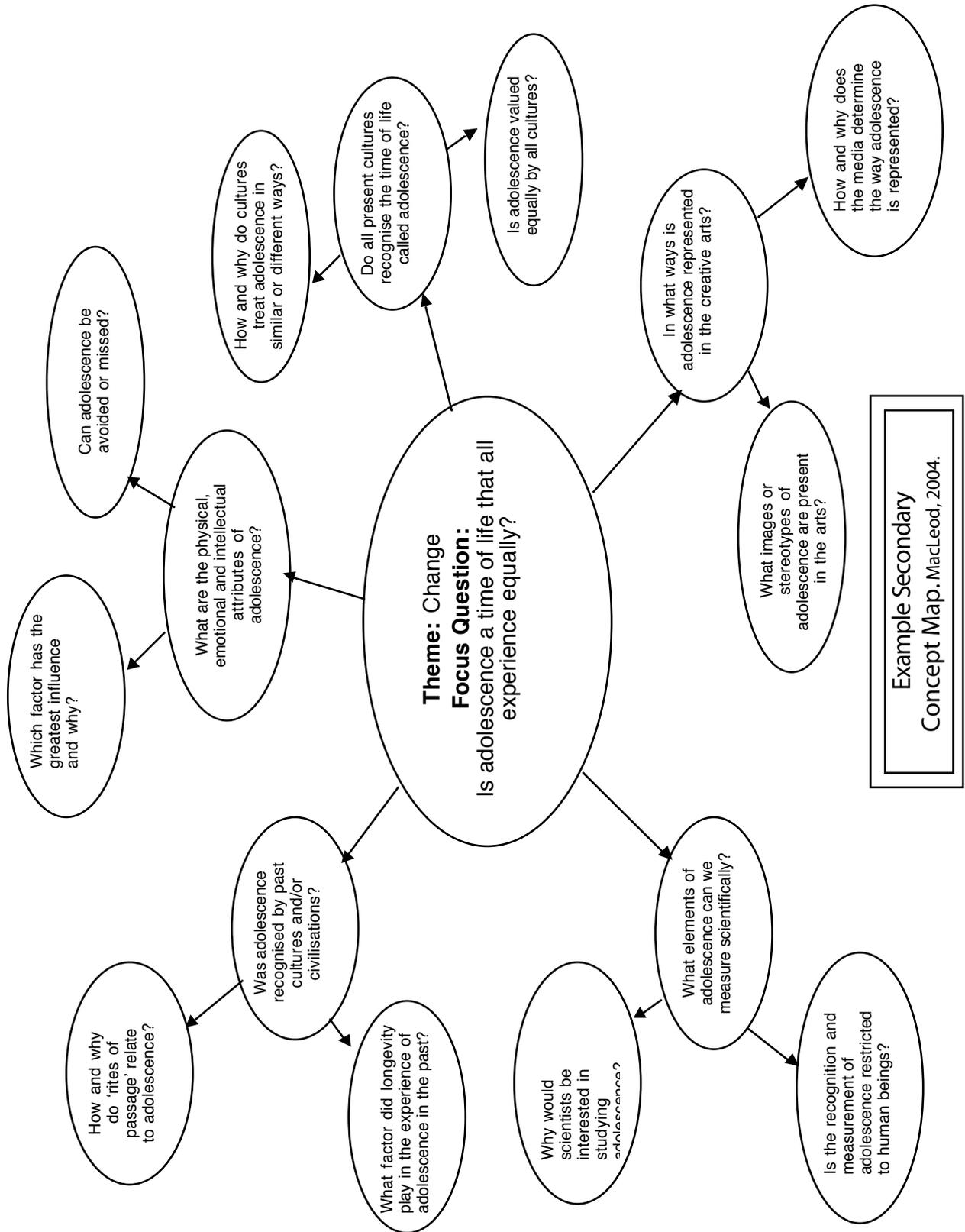
The Learning Place: EQ Gifted and Talented Education:

[http://www.thelearningplace.com.au/default\\_suborg.asp?orgid=23&suborgid=158](http://www.thelearningplace.com.au/default_suborg.asp?orgid=23&suborgid=158)



# Resources

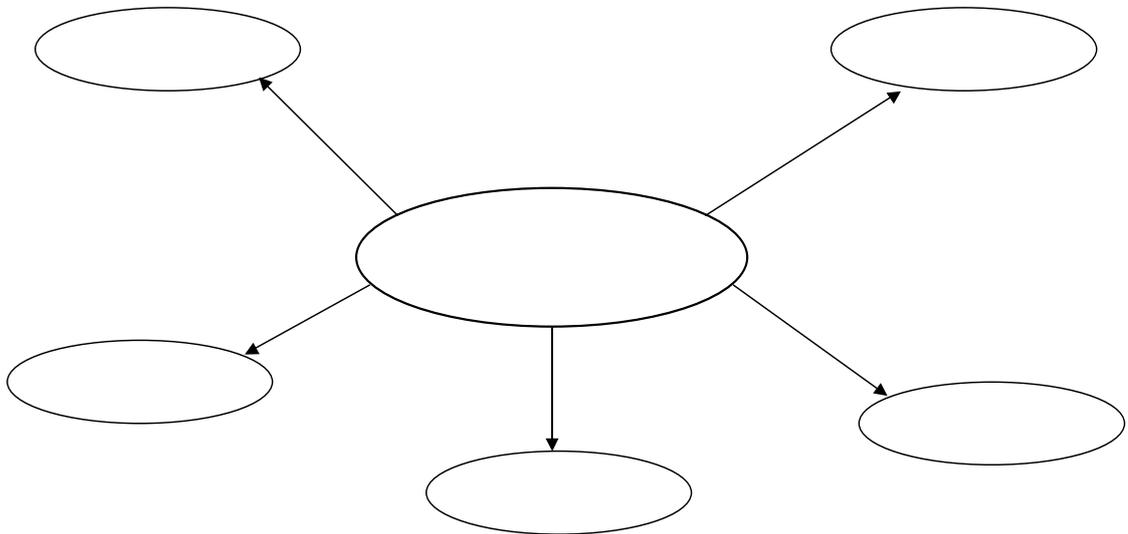
Example of Secondary unit planning



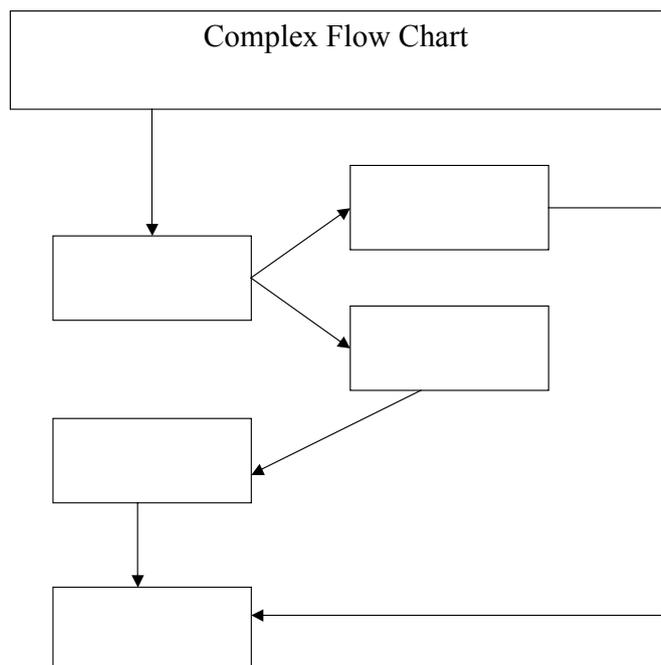
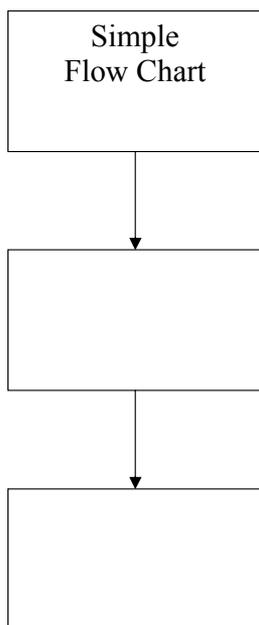
Example Secondary  
Concept Map. MacLeod, 2004.

## Method One

### Concept Map



### Flow chart



## List

**Theme:**

**Focus Question:**

**Contributing Question One:**

**Extended Question:**

**Extended Question:**

**Contributing Question Two:**

**Extended Question:**

**Extended Question:**

**Contributing Question Three:**

**Extended Question:**

**Extended Question:**

**Contributing Question Four:**

**Extended Question:**

**Extended Question:**

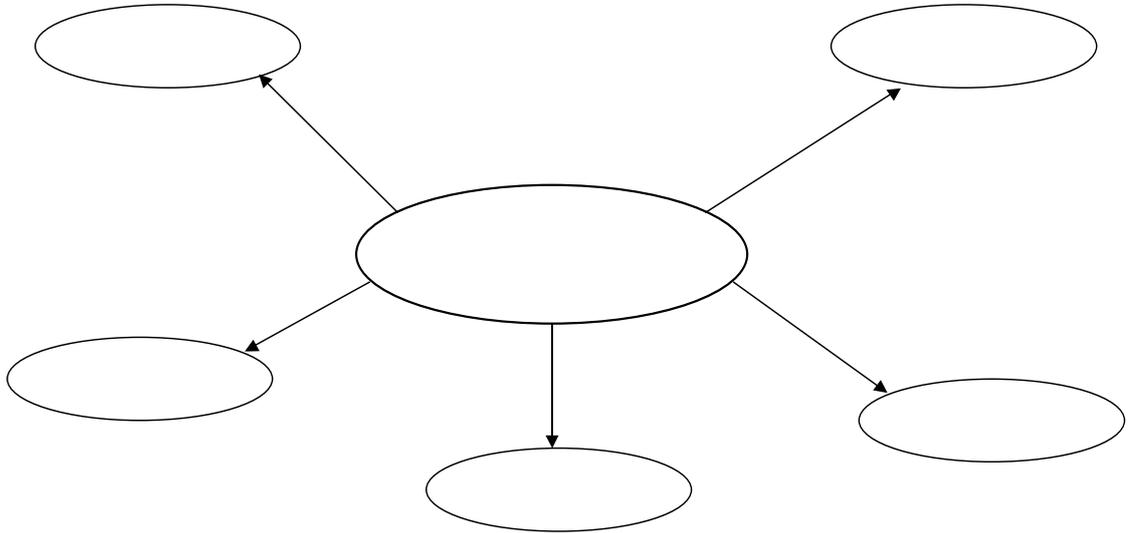
**Contributing Question Five:**

**Extended Question:**

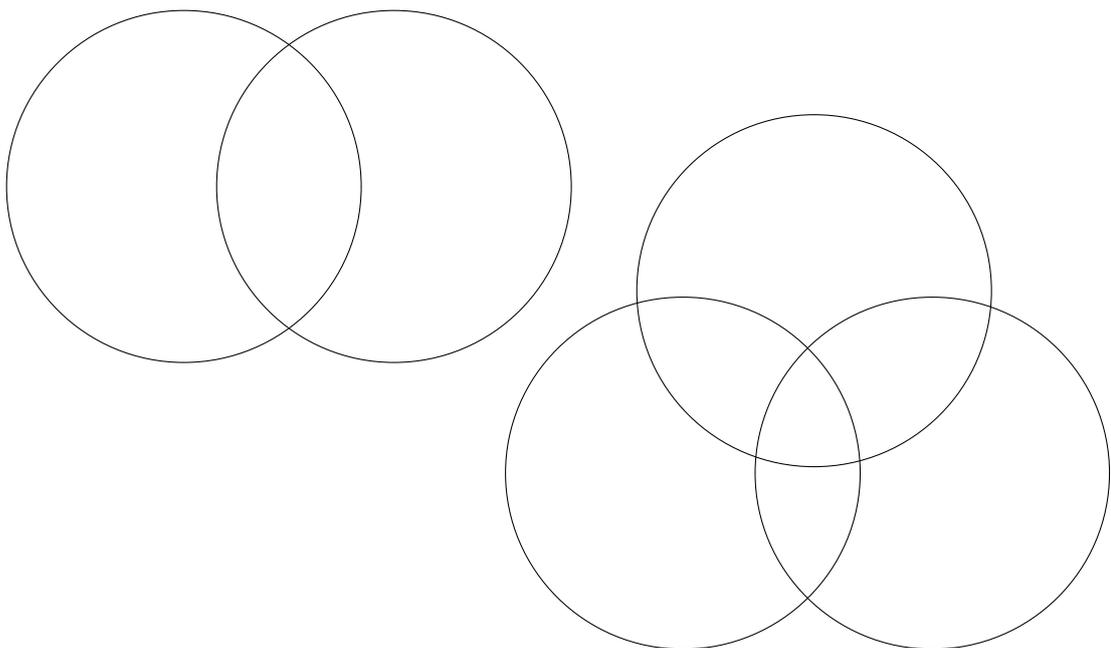
**Extended Question:**

## Construction of pre-tests for your unit of work

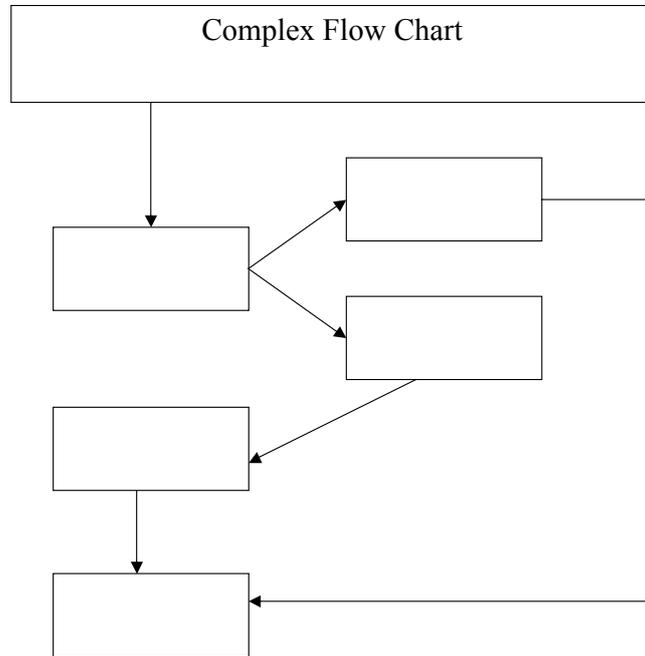
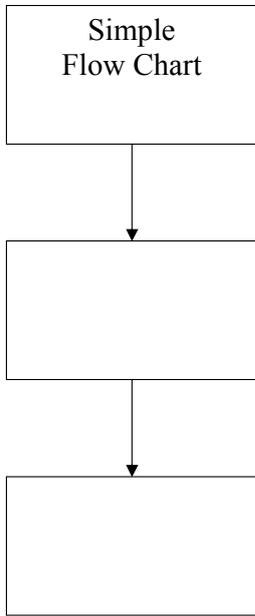
### Concept Map



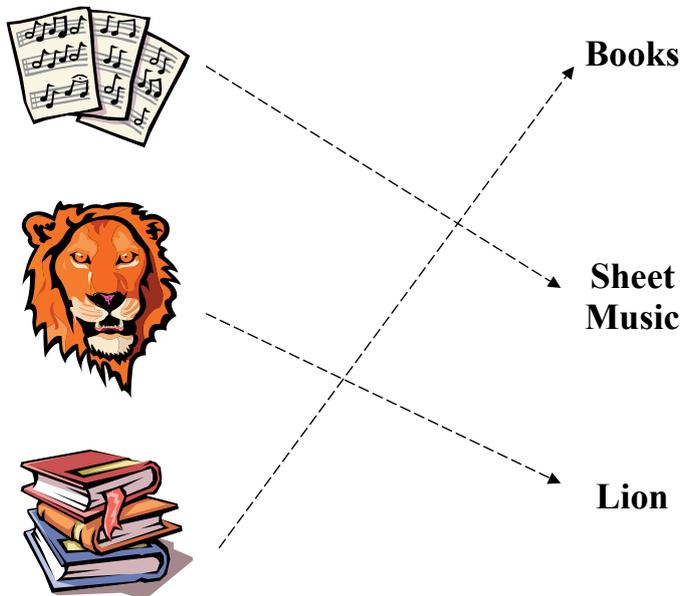
### Venn diagram



**Flow chart**



**Picture matching**



Label a diagram



## Secondary selected examples of Bloom's Taxonomy activities

### Secondary English: Shakespeare's World

**Theme: Power**

**Focus Question: How and why did the events and people of Shakespeare's world influence his writing?**

Bloom's Taxonomy Strategy	Example Activity or Task
Knowledge/ Remember	Develop a timeline of Shakespeare's life, highlighting important events, both personal and historical.
Comprehension/ Understand	Construct a database of Shakespeare's plays which includes a précis of the plot, the date it was written, the date it was first performed, and any the locations of professional performances in present times.
Application/ Apply	Develop and perform a modern day version of a scene from a Shakespearean play.
Analysis/ Analyse	Present day directors of Shakespeare's plays bring his work to life on the modern stage often using contemporary influences, whilst retaining the original text. What are some of these influences and how do they compare with the influences of Shakespeare's times?
Synthesis/ Create	Create a script for a new play to be based on the theme of 'Power', which appropriates scenes from a number of Shakespeare's plays.
Evaluation/ Evaluate	Shakespeare's writing is more powerful now than it was during his lifetime. Agree or disagree? Justify your response with supporting evidence from critical reviews of his work during his life and current times.

**Bronwyn MacLeod, 2004.**

**Secondary Computing Studies/ Information and Software Technology  
Spreadsheets**

**Theme: Systems**

**Focus Question: How do spreadsheets help to solve problems?**

<b>Bloom's Taxonomy Strategy</b>	<b>Example Activity or Task</b>
Knowledge/ Remember	Identify and name the relevant chunks of information on the provided charts relating to the time taken by individuals and small teams to complete a range of tasks.
Comprehension/ Understand	Define the mean, median, mode, and standard deviation of the data in the provided charts.
Application/ Apply	Using formulas and pivot tables to convert the given data into a chart.
Analysis/ Analyse	Compare the two sets of data on the charts. What trends can you predict from either? Which tasks are better completed by individuals? Which tasks are better completed by small teams? What additional data might change your predictions?
Synthesis/ Create	Design a predictive spreadsheet, using macros to decide task completion rates and individual and team effectiveness.
Evaluation/ Evaluate	How effective was the use of spreadsheets in solving these problems?

**Bronwyn MacLeod, 2004.**

## Secondary Geography/SOSE: Global Environments

Theme: Change Focus Question: How can we impact on global environments through local community projects?

Bloom's Taxonomy Strategy	Example Activity or Task
Knowledge/ Remember	Identify a local environment and find maps, photos, tables and any other relevant data which tell of the history and current use of this environment.
Comprehension/ Understand	Prepare a summary report on the current use and state of this local environment.
Application/ Apply	Construct 2D maps and diagrams, along with a topographic map, of this environment.
Analysis/ Analyse	Analyse the care and management of a local environment. How does the management of this environment compare on a national and/or global level?
Synthesis/ Create	Develop a proposal to undertake a local collaborative community environmental restoration project. Your proposal must take into account all stakeholders and be based on your own action research fieldwork.
Evaluation/ Evaluate	Evaluate the impact of local community environmental projects on global environments, by examining the case studies of at least two such projects.

Bronwyn MacLeod, 2004.

## Secondary History: World War I

Theme: Change Focus Question: How did World War I impact on Australians now and then?

Bloom's Taxonomy Strategy	Example Activity or Task
Knowledge/ Remember	Make a timeline of the key events of WWI, including those events that impacted directly on Australia and the Australian people.
Comprehension/ Understand	Develop a slideshow of images from WWI which illustrates the sequence of events leading up to, during, and immediately following WWI.
Application/ Apply	Construct a model of one of the WWI battlefields to demonstrate the strategies and outcome of the battle.
Analysis/ Analyse	Which event of World War I was the most important for Australia? Write a newspaper article which analyses Australia's involvement in this event.
Synthesis/ Create	With no more surviving Anzacs to tell the story of the Great War, how will future generations remember their contributions and sacrifices? Create a website to pay tribute to the Anzacs and to help future generations understand this time in Australia's history.
Evaluation/ Evaluate	In the decade following the Great War many had the firm conviction that it should be 'the war to end all wars'. Evaluate this conviction in the light of today's current global situations. Support your views with historical and current evidence.

**Bronwyn MacLeod, 2004.**

**Secondary: Languages other than English - French**

**Theme: Systems**

**Focus Question: How do French and English words and phrases compare**

<b>Bloom's Taxonomy Strategy</b>	<b>Example Activity or Task</b>
Knowledge/ Remember	Match the nouns and verbs to the correct illustrations.
Comprehension/ Understand	Match the sentences to the illustrations.
Application/ Apply	Write a phrase in French to complete the sentence.
Analysis/ Analyse	Translate the phrases or sentences into English.
Synthesis/ Create	Write a story in French to match the picture.
Evaluation/ Evaluate	Are there words or phrases in French which when translated into English do not hold the same meaning or intent? Why or why not?

**in meaning?**

**Bronwyn MacLeod, 2004.**

**Secondary Mathematics: Geometry**

**Theme: Systems Focus Question: How does an understanding of geometry assist in construction and design?**

<b>Bloom's Taxonomy Strategy</b>	<b>Example Activity or Task</b>
Knowledge/ Remember	What is the formula for the number of bars in a triangulated sphere, in terms of the number of vertices?
Comprehension/ Understand	How does this formula relate to other rigid frameworks in 3-space?
Application/ Apply	Build rigid and non-rigid geometric structures. Explore them. Where are rigid structures used? Find unusual applications.
Analysis/ Analyse	Are there plane frameworks (rigid bars and flexible joints) that are rigid but contain no triangles? Are all triangulated spheres rigid?
Synthesis/ Create	Consider a plane 'grid' composed of squares made of bars and joints. Which diagonals of squares will make this rigid? What is the minimum number? Can you give a recipe for deciding which diagonals will work?
Evaluation/ Evaluate	Are triangulated spheres the strongest framework for construction? Support your answer with examples from design and architecture.

**Adapted from: CMS – Canadian Mathematical Society**

<http://camel.math.ca/Education/mpsf/>

## Secondary Science: Chemistry

### Theme: Change

#### Focus Question: Can salt water save our planet?

<b>Bloom's Taxonomy Strategy</b>	<b>Example Activity or Task</b>
Knowledge/ Remember	List the effects of drinking sea water.
Comprehension/ Understand	Develop a flowchart to illustrate the changes that occur to cell walls in the human body when they come into contact with salt water.
Application/ Apply	Construct an experiment to turn salt water into fresh water.
Analysis/ Analyse	Compare the results of the experiment with other methods of converting salt water to fresh water. Which method is the most effective?
Synthesis/ Create	Imagine you have been stranded on a deserted island and you have only minimal amounts of fresh water with you. Propose a plan of action to create enough fresh water on which to survive whilst waiting for rescue.
Evaluation/ Evaluate	In a country where fresh water is a dwindling resource, what alternatives are there? Evaluate methods of salt water conversion being used in other countries of the world. Would any of these would work in Australia? Why or why not? Can salt water save our planet?

## Secondary selected examples of Williams Model activities.

### Secondary

#### Williams - English

Theme: Power

Focus Question: Is the power of a speech in the writer's hands or the speaker's voice?

Strategy	Activity
Paradox	The greatest good and the greatest evil have come from speeches. How can this be true?
Provocative question	The most powerful speeches in literature have been delivered by men. Do you agree or disagree? Use evidence from literature you have studied to support your response.
Evaluation of situations	Identify the five most important speeches you have read in literature. Which speech is the most important and why?
Tolerance for ambiguity	What if you could rewrite one of the speeches delivered in <i>To Kill a Mockingbird</i> ? Which one would you rewrite and why? How would this affect the telling of the story?
Skills of search	Construct an annotated bibliography of websites which focus on famous speeches from literature.
Creative reading skills	Read Atticus Finch's closing argument in <i>To Kill a Mockingbird</i> and then watch the speech as given in the film version of the play. Which has the greater impact and why?

### Secondary

#### Williams - History

Theme: Prejudice

Focus Question: Is prejudice a thing of the past?

Strategy	Activity
Creative listening skills	Listen to the speeches given by people such as Martin Luther King Jnr, Nelson Mandela, Malcolm X, and Eddie Mabo. What do these speeches have in common? In what ways do they differ?
Provocative question	Does prejudice have to be experienced in order to understand it? How can we learn from the past?
Tolerance for ambiguity	What if there were no differences in people's skin colour? Which events of the past may have been avoided?
Discrepancy	What would have happened if the European settlers in Australia had understood the Indigenous people and their way of life?
Examples of habit	Give three historical examples of prejudice. Do these examples exist in current times? Why or why not?
Examples of change	Which figures in history fought against prejudice and succeeded in bringing about change because of their beliefs?

## Secondary

### Williams - Geography

Theme: Multiculturalism

Focus Question: How does the proximity of Asia affect Australia and the Australian way of life?

Strategy	Activity
Paradox	Discuss the statement: 'Multiculturalism: can't live with it, can't live without it.'
Provocative question	Can we live without Asia? Why, or why not?
Examples of change	How have changes in political systems affected our relationships with and understanding of Asian cultures? Choose two different Asian countries to use as case studies.
Discrepancy	What might have happened if the Aboriginal people had engaged in a greater level of trade with Asian nations prior to the European settlement?
Analogy	How is Asia like a tapestry?
Creative writing skills	Develop an advertising campaign to develop a greater acceptance of multiculturalism among the Australian population.

## Secondary

### Williams - Mathematics

Theme: Systems

Focus Question: Probability

Strategy	Activity
Attribute listing	List the ten most important events in your life which you can describe using statements of probability.
Examples of habit	Many people read their horoscopes on a daily basis to find out what may happen to them during that day. What is the chance that these readings can be accurate? Test out your ideas.
Evaluation of situations	How many times do you have to repeat an experiment to be able to predict its results with accuracy? Design an experiment to test your idea.
Provocative question	If probability is always a matter of chance why do people develop systems of predicting results?
Visualisation	Develop a lesson plan to teach the idea of probability to younger students.
Analogy	How is probability like a recipe?

## Secondary

### Williams - Science

Theme: Change

Focus Question: Why do forces affect our lives?

Strategy	Activity
Attribute listing	Develop a list of the forces that you encounter in your everyday life.
Examples of habit	Can all forces be explained? Discuss the work of at least two scientists who investigated forces and motion.
Evaluate situations	Which of Newton's laws is the most important? Are the laws still important today?
Adjustment to development	Develop an hypothesis as to whether momentum is greater in linear or centrifugal motion. Test your hypothesis in an experiment you design. Discuss your findings.
Visualisation	Design a model which demonstrates one of the forces you encounter in your daily life.
Analogy	How is momentum like a light bulb?

## Secondary

### Williams - Technics

Theme: Systems

Focus Question: What systems ensure the success of design and construction?

Strategy	Activity
Attribute listing	List the most important elements of design under at least three appropriate headings.
Provocative question	A good design is always the result of creative teamwork. Discuss, with reference to designs from four different categories.
Analogy	How is construction like a following a road map?
Skills of search	Research the awards for innovation and design in Australia. What criteria are involved to win these awards? Who judges their success?
Creative writing	Develop a proposal to apply for funding to develop a design you would like to create.
Study the creative process	Investigate the work of a designer in a field of interest to you, eg, graphics, architecture, clothing, etc. Where does the designer get his/her motivation from? What skills does the designer need?

## Secondary

### Williams - PD/Health

Theme: Change

Focus Question: In what ways does alcohol change our bodies?

Strategy	Activity
Intuitive expression	Role play a discussion between your friends when it is discovered that someone you know is an alcoholic.
Visualisations	Develop an advertising campaign to raise awareness among teenagers of the issues of alcohol abuse.
Organised random search	Interview at least ten different adults about their opinions on the use of alcohol by teenagers. Do their opinions have any common elements?
Tolerance for ambiguity	What if the negative effects of alcohol could be controlled or even eliminated? What positive effects would remain?
Evaluate situations	How important is research into the impact of alcohol on our bodies? Explain, using one area of research as support.
Examples of habit	Is alcohol abuse an example of a bad habit or a disease?

## Secondary

### Williams - Music

Theme: Change

Focus Question: Is 'popular' music generation specific?

Strategy	Activity
Provocative question	Popular music cannot be separated from the popularity of the performer. Without the popularity of the performer, the music would not be heard. Do you agree or disagree? Why?
Adjustment to development	Examine the rhythm pattern of a popular song from a different era than your own. Compare this to a present day 'popular' song. What similarities and differences can you notice? Why might this be?
Analogy	How is 'popular music' like a recipe? Like a tessellation?
Tolerance for ambiguity	What if 'American Bandstand' had not been developed? Discuss the possible implications and alternatives.
Study creative process	What inspires the composers and lyricists of 'popular' music? Choose two composers or lyricists from different decades and compare their motivations for the creative process.
Attribute listing	List the key characteristics of 'popular music'. Use this list to identify the 'popular music' of at least three different decades. What music from these decades was therefore not categorised as 'popular'?

## Bloom's Taxonomy Blank Matrix

<b>Bloom Strategy</b>	<b>Activity or activities</b>
<b>Knowledge/ Remembering</b>	
<b>Comprehension/ Understanding</b>	
<b>Application/ Applying</b>	
<b>Analysis/ Analysing</b>	
<b>Synthesis/ Creating</b>	
<b>Evaluation/ Evaluating</b>	

## William's Model Blank Matrix

Strategy	Definition	Examples
Paradox	A statement that appears to contradict itself, but that may be true.	Discuss the statement: 'Necessity is the mother of invention'. When can performance-enhancing drugs limit performance?
Attribute Listing	Inherent open-ended properties or identities	List your earliest memories. Who were the true 'geniuses' of the Renaissance period in Italy?
Analogy	Finding similarities between things or situations that might otherwise be different	How is a lever like a friend? How is Othello like a puppet?
Discrepancy	Gaps or missing links in knowledge	Why did the 'Brotherhood' use the five-pointed star as their symbol of recognition? If Vashti had not been a part of this story, would the series of events recounted in the book have unfolded?
Provocative Question	Inquiry to incite exploration and curiosity	Antarctica is rich in minerals; should we mine it? What does a 'Renaissance man' have to be able to do, to get such a title? Are there any modern 'Renaissance men or women'?
Examples of Change	Show the dynamics of things, modifications, alterations or substitutions of things	How did the invention of scissors change our lives? Trace how family structure has changed during the 20th and 21st centuries.
Examples of Habit	Recognition of habit-bound thinking	Study and explain alternative sources of energy to drive machines. Who invented them and are they widely used? Were the Impressionists right in protesting the dictates of the Academy?
Organised Random Search	Structured case study for new courses of action	Who were the members of the Pythagorean 'Brotherhood'? Create a means for collecting and displaying all the centres, agencies and organisations in your state which deal in one way or another with the circulatory system.
Skills of Search	Research on something done before; trial and error on new ways	How do we remember things? Design an experiment to test the memory of the other people in your family. Set up an experiment to detect acid rain effects on granite monuments.
Tolerance for Ambiguity	Open-ended questions – 'what if...?'	What if Scott had made it to the South Pole first? What would happen if the Earth's orbit moved closer to the Sun?

Intuitive Expression	Expressing emotion through the senses; guided imagery; role-playing	Write a poem or paint a picture that depicts the emotions you feel with a particular type of weather.  You have been unjustly convicted of a crime. How do you feel about the legal system, the magistrate, your lawyer, the police?
Adjustment to Development	Examine or playback mistakes or failures	As a civilisation, what have we learned from the past that has meant that Antarctica has remained relatively untouched?  Study the various theories of how the pyramids were built or engineered and look for evidence that initial wrong thinking led to ultimate success.
Study Creative Process	Analyse the traits of creative people, creative processes or creative products	Research the life of Leonardo da Vinci, with a specific focus on his role as an inventor. What processes did he undertake to design, test and record his inventions?  Learn about the work of one of the female artists attached to the 'Heidelberg School'.
Evaluate Situations	Analyse implications or consequences, extrapolate from ideas or actions	A new law has been passed which restricts all households to the use of three electrical appliances, apart from lighting. What three machines would you choose and why?  The spice trade, coffee trade and now the drug trade – how have plants altered the course of history?
Creative Reading Skill	Generate novel ideas by reading	Read <i>Journey to Antarctica</i> by Meredith Hooper. Do you think this journey is the last challenge left in the exploration of this continent?  Read about the lives and times of the female Impressionists. What was there about this time that allowed some of them to achieve recognition?
Creative Listening Skill	Generate novel ideas by listening	Interview an inventor to discover when he or she became interested in inventing new things or ideas.  Listen to music composed during the Renaissance. Does this music seem to coincide with or complement the art work of the time?
Creative Writing Skill	Generate novel ideas in writing	Rewrite a fairytale so there is no reference to numbers.  Write a short story for Louisa Lawson's magazine, <i>The Dawn</i> .
Visualisation	Express ideas in three-dimensional or non-traditional formats	Help to plan and create a mural for your class based on the book.  Construct a scale model of the Roman Forum or the Athenian Acropolis.

**Kaplan Grid**

**KAPLAN MODEL Planning Grid**

<b>Theme/Concept</b>	<b>Outcome/s</b>	<b>Research Skills</b>	<b>Productive Skills</b>	<b>Product</b>
<b>Implementation Sequence</b>				

**Secondary example of Kaplan Model independent research projects.**

**KAPLAN MODEL Planning Grid – Secondary Example**

Theme/Concept	Outcome/s	Research Skills	Productive Skills	Product
Change	Appropriate state or territory outcome	Establishing criteria to judge Substantiating with evidence	Problem solving Analysis	Multimedia presentation and/or web page
<p style="text-align: center;"><b>Implementation Sequence</b></p> <p>Implementation Plan: For one period per week over one term, students whose curriculum has been compacted following pretesting work individually on this Independent Research Project.</p> <p>Activities: Students choose one of the following tasks and develop a multimedia presentation and/or web page which demonstrate(s) their research findings:</p> <ul style="list-style-type: none"> <li>• How and why do cultures treat adolescence in similar or different ways? Investigate at least two different cultural groups from a western and developing nation in your research.</li> <li>• Is adolescence valued equally by all cultures? Conduct a survey or questionnaire to research at least three different cultural perspectives. Develop criteria to judge the data produced by your survey. Present your conclusions.</li> <li>• How and why do the media determine the way adolescence is represented? Examine print, visual and auditory media in your research. Draw conclusions from your research and evaluate the causal attributes.</li> <li>• How and why do ‘rites of passage’ relate to adolescence? Define the term ‘rite of passage’. Research current and past examples of ‘rites of passage’ from at least three different cultural groups. Draw conclusions as to the ‘rites of passage’ experienced by today’s youth.</li> <li>• Which factor, physical, emotional or intellectual, has the greatest influence on the attributes of adolescence, and why? Investigate the research into the various attributes of adolescence in science and social science. Develop criteria to judge which factor has the greatest influence. Draw conclusions.</li> </ul> <p>Share your findings with your peers and the ‘expert’ panel, by presenting your multimedia product and/or web page, and responding to questions from the panel.</p>				



Reproduced by permission of the author.

# Differentiating Curriculum for Gifted Students

Author: Sandra L. Berger  
1991

---

Students who are gifted and talented are found in full-time self-contained classrooms, magnet schools, pull-out programs, resource rooms, regular classrooms, and every combination of these settings. No matter where they obtain their education, they need an appropriately differentiated curriculum designed to address their individual characteristics, needs, abilities, and interests.

## Developing an Effective Curriculum

An effective curriculum for students who are gifted is essentially a basic curriculum that has been modified to meet their needs. The unique characteristics of the students must serve as the basis for decisions on how the curriculum should be modified (Feldhusen, Hansen, & Kennedy, 1989; Maker 1982; TAG, 1989; VanTassel-Baska et al., 1988).

It is difficult to generalize about students who are gifted because their characteristics and needs are so personal and unique. However, as a group they comprehend complex ideas quickly, learn more rapidly and in greater depth than their age peers, and may exhibit interests that differ from those of their peers. They need time for in-depth exploration, they manipulate ideas and draw generalizations about seemingly unconnected concepts, and they ask provocative questions.

A program that builds on these characteristics may be viewed as qualitatively (rather than quantitatively) different from the basic curriculum; it results from appropriate modification of content, process, environment, and product (Maker, 1982).

## Modifying Content

Content consists of ideas, concepts, descriptive information, and facts. Content, as well as learning experiences, can be modified through acceleration, compacting, variety, reorganization, flexible pacing, and the use of more advanced or complex concepts, abstractions, and materials. When possible, students should be encouraged to move through content areas at their own pace. If they master a particular unit, they need to be provided with more advanced learning activities, not more of the same activity. Their learning characteristics are best served by thematic, broad-based, and integrative content, rather than just single-subject areas. An entire content area arranged and structured around a conceptual framework can be mastered in much less time than is traditionally allotted (VanTassel-Baska, 1989). In addition, such concept-based instruction expands opportunities to generalize and to integrate and apply ideas. (See Bruner, 1966, *Man: a Course of Study Macros* for an example of a thematic, integrated curriculum.)

Middle and secondary schools are generally organized to meet student needs within content areas. Providing an interdisciplinary approach is another way of modifying curriculum. Jacobs and Borland (1986) found that gifted students benefit greatly from curriculum experiences that cross or go beyond traditional content areas, particularly when they are encouraged to acquire an integrated understanding of knowledge and the structure of the disciplines.

## Modifying Process

To modify process, activities must be restructured to be more intellectually demanding. For example, students need to be challenged by questions that require a higher level of response or by open-ended

questions that stimulate inquiry, active exploration, and discovery. Although instructional strategies depend on the age of the students and the nature of the disciplines involved, the goal is always to encourage students to think about subjects in more abstract and complex ways. Activity selection should be based on student interests, and activities should be used in ways that encourage self-directed learning. Bloom's Taxonomy of Educational Objectives (1956) offers the most common approach to process modification. His classification system moves from more basic levels of thought, such as memory or recall, to more complex levels of analysis, synthesis, and evaluation. Parnes (1966), Taba (1962), and others have provided additional models for structuring thinking skills. Every teacher should know a variety of ways to stimulate and encourage higher level thinking skills. Group interaction and simulations, flexible pacing, and guided self-management are a few of the methods for managing class activities that support process modification.

### **Modifying Environment**

Gifted students learn best in a receptive, nonjudgmental, student-centered environment that encourages inquiry and independence, includes a wide variety of materials, provides some physical movement, is generally complex, and connects the school experience with the greater world. Although all students might appreciate such an environment, for students who are gifted it is essential that the teacher establish a climate that encourages them to question, exercise independence, and use their creativity in order to be all that they can be.

### **Modifying Product Expectation and Student Response**

Teachers can encourage students to demonstrate what they have learned in a wide variety of forms that reflect both knowledge and the ability to manipulate ideas. For example, instead of giving a written or oral book report, students might prefer to design a game around the theme and characters of a book. Products can be consistent with each student's preferred learning style. They should address real problems, concerns, and audiences; synthesize rather than summarize information; and include a self-evaluation process.

### **Assessing Curriculum Effectiveness**

In their synthesis of curriculum effectiveness studies and effective practice, VanTassel-Baska et al. (1988) suggested that differentiated curriculum would respond to diverse characteristics of gifted learners in the following three ways:

1. By accelerating the mastery of basic skills through testing-out procedures and reorganization of the curriculum according to higher level skills and concepts.
2. By engaging students in active problem-finding and problem-solving activities and research.
3. By providing students opportunities for making connections within and across systems of knowledge by focusing on issues, themes, and ideas.

Curriculum development is a dynamic, ongoing process. Special attention needs to be paid to articulation, scope, and sequence to avoid gaps and repetition through grade levels; ensure that the understandings and skills we expect children to develop fit together; and assure that children are provided with the knowledge and skills that will prepare them for the future. Periodic evaluations of curriculum effectiveness allow corrections to be made when needed, and they are essential if curriculum is to meet the long-term needs of gifted students for increasingly complex and challenging opportunities.

### **Conclusion**

The curriculum committee of the Leadership Training Institute (Passow, 1982) developed seven guiding principles for curriculum differentiation that reflect the considerations described in this Digest.

1. The content of curricula for gifted students should focus on and be organized to include more elaborate, complex, and in-depth study of major ideas, problems, and themes that integrate knowledge within and across systems of thought.

2. Curricula for gifted students should allow for the development and application of productive thinking skills to enable students to reconceptualize existing knowledge and/or generate new knowledge.
3. Curricula for gifted students should enable them to explore constantly changing knowledge and information and develop the attitude that knowledge is worth pursuing in an open world.
4. Curricula for gifted students should encourage exposure to, selection, and use of appropriate and specialized resources.
5. Curricula for gifted students should promote self-initiated and self-directed learning and growth.
6. Curricula for gifted students should provide for the development of self-understanding and the understanding of one's relationship to persons, societal institutions, nature, and culture.
7. Evaluations of curricula for gifted students should be conducted in accordance with the previously stated principles, stressing higher level thinking skills, creativity, and excellence in performance and products.

Developing curriculum that is sufficiently rigorous, challenging, and coherent for students who are gifted is a challenging task. The result, however, is well worth the effort. Appropriately differentiated curriculum produces well-educated, knowledgeable students who have had to work very hard, have mastered a substantial body of knowledge, and can think clearly and critically about that knowledge. Achieving such results for one or for a classroom full of students who are gifted will produce high levels of satisfaction, not only for the students who are beneficiaries, but also for every teacher who is willing to undertake the task.

## References

- Bloom, B.S. (1956). *Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain*. New York: Longmans, Green.
- Bruner, J.S. (1966). *Toward a theory of instruction*. New York: Norton.
- Feldhusen, J., Hansen, J., & Kennedy, D. (1989). Curriculum development for GCT teachers. *Gifted Child Today*, 12(6), 12-19.
- Jacobs, H., & Borland, J. (1986). The interdisciplinary concept model: Theory and practice. *Gifted Child Quarterly*, 30(4), 159-163.
- Maker, C.J. (1982). *Curriculum development for the gifted*. Rockville, MD: Aspen.
- Parnes, S.J. (1966). *Programming creative behavior*. Buffalo, NY: The State University of New York at Buffalo.
- Passow, A.H. (1982). Differentiated curricula for the gifted/talented. In *Curricula for the gifted: Selected proceedings for the First National Conference on Curricula for the Gifted/Talented* (pp. 4-20). Ventura, CA: National/State Leadership Training Institute on the Gifted and Talented.
- Taba, H. (1962). *Curriculum development: Theory and practice*. New York: Harcourt, Brace & World.
- The Association of the Gifted (TAG). (1989). *Standards for programs involving the gifted and talented*. Reston, VA: The Council for Exceptional Children.
- VanTassel-Baska, J., Feldhusen, J., Seeley, K., Wheatley, G., Silverman, L., & Foster, W. (1988). *Comprehensive curriculum for gifted learners*. Needham Heights, MA: Allyn & Bacon.
- VanTassel-Baska, J. (1989). Appropriate curriculum for the gifted. In J. Feldhusen, J. VanTassel-Baska, & K. Seeley (Eds.), *Excellence in educating the gifted* (pp. 175-191). Denver: Love.