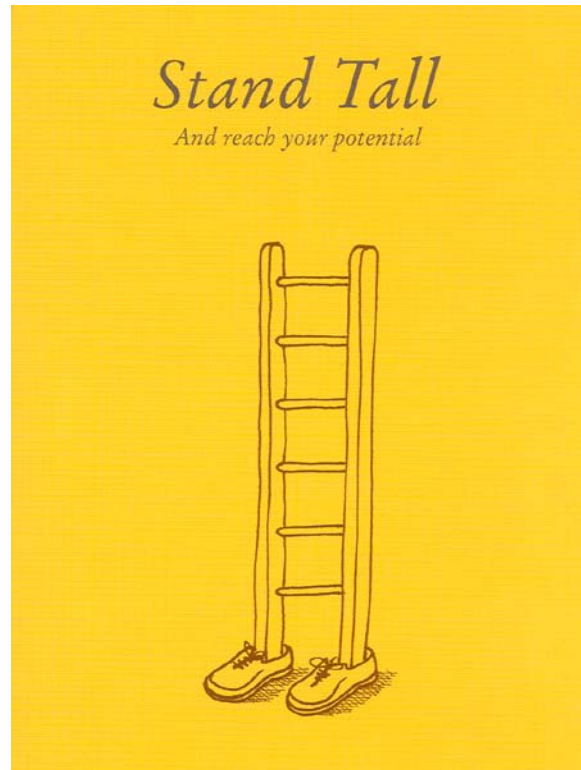




Learner-Centred Differentiation



Unleashing the Gifted Potential | 9 April 2011

Manoj Chandra Handa, Professional Learning and Leadership Coordinator,
Northern Sydney Region, New South Wales | manoj.chandrahanda@det.nsw.edu.au



Fostering Excellence among Gifted Learners

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Ten Foundations of a Sound Curriculum Model

	Key Elements	Explanation
1	Emphasises key concepts and principles	The key concepts and principles of a discipline represent the enduring knowledge of mankind. They are durable and have broad applicability. Further, concepts and principles are powerful in helping students understand what they study and in helping them organise, retrieve, transfer, and apply information. The curriculum emphasises depth over breadth, concepts over facts and is grounded in real-world issues and problems that students care about or need to know.
2	Focuses on learner outcomes of significance	The units address differentiated learner outcomes that advance higher level skills and conceptual understandings.
3	Employs higher order thinking and reasoning	The units provide students opportunities to demonstrate their understanding of advanced content and interdisciplinary ideas through strategies such as concept mapping, persuasive writing and designing experiments.
4	Promotes inquiry-based learning and problem solving	Students take charge of their own learning in order to problem solve real world issues.
5	Employs multiple resources and materials	The resources allow flexibility, variety and sophistication in delivery patterns.
6	Uses various technologies	The emphasis is using learning technologies as tools for the learning process, from doing background research via the Internet, to creating digital written and visual products to be shared with authentic audiences.
7	Is sensitive to multicultural and global concerns	Focus is on strong representation pattern of multicultural readings and materials.
8	Employs authentic assessment	The authentic assessments tap into what students know as a result of meaningful instruction.
9	Provides opportunities for metacognition	Students are involved in consciously planning, monitoring and assessing their own learning for efficient and effective use of time and resources.
10	Develops habits of mind by promoting expertise	Students develop modes of thinking that resemble those of professional in various fields with respect to skills, predispositions and attitudes.

Adapted from VanTassel-Baska, J., & Little, C. (2011). *Content-based Curriculum for High-ability Learners*. Texas: Prufrock Press.



Bloom's Taxonomy: Useful Verbs for Differentiating Learning Outcomes

Higher Level Cognitive Processes:

6. Create	5. Evaluate	4. Analyse
add to, assemble, compose, combine, conceive, consolidate, construct, create, design, develop, devise, formulate, hypothesise, imagine, integrate, invent, manage, organise, plan, prepare, propose, produce, put together, rearrange, refine, set up, synthesise, transform, write	appraise, argue, assess, attack, choose, conclude, consider, critique, debate, decide, defend, determine, estimate, evaluate, forecast, indicate, judge, justify, most appropriate, prioritise, rate, recommend, score, select, value, verify, weigh	analyse, ascertain, assume, calculate, categorise, classify, compare, contrast, critique, deduce, determine, differentiate, discriminate, distinguish, examine, experiment, infer, investigate, point out, question, relate, separate, solve, support, why

Lower Level Cognitive Processes:

3. Apply	2. Understand	1. Remember
apply, classify, construct, covert, demonstrate, display, dramatise, illustrate, interpret, incorporate, implement, make, manipulate, model, operate, practise, present, report, reformat, research, sequence, show, sketch, solve, use	describe, distinguish, explain, express, generalise, give, identify, indicate, locate, paraphrase, predict, restate, sort, translate, what	arrange, cite, define, discover, duplicate, label, list, match, memorise, name, order, recall, recite, recognise, relate, repeat, reproduce, tell, who, which, where

WILLIAMS MODEL



	Teacher Strategy	Explanation	Learning Activities
1	Paradox	Situations opposed to common sense; self-contradictory statements or observations that may contain an inherent truth.	The greatest good and the greatest evil have come from speeches. How can this be true?
2	Attribute Listing	Identification of inherent properties or qualities by examining them in a new light.	Identify individual characteristics of satire and how they might be used creatively.
3	Analogy	Comparisons of very unlike things; forced associations or connections.	How is Othello like a puppet? How is lever like a friend?
4	Discrepancy	Focus on gaps and missing links in knowledge, often deliberately set up for the students to discover themselves.	What might have happened if the Aboriginal people had engaged in a greater level of trade with Asian nations prior to the European settlement?
5	Provocative Question	Any inquiry of students to incite exploration and curiosity.	Antarctica is rich in minerals. Should we mine it?
6	Examples of change	Two ways to do this: [1] Show dynamics of how something has changed; or [2] Make one's own modifications, alterations, substitutions.	How did the invention of scissors change our lives? Which figures in history fought against prejudice and succeeded in bringing about change because of their beliefs?
7	Examples of habit	Examine examples that demonstrate rigidity and inflexibility.	Examine stereotypical portrayal of people, places and ideas in the media such as politicians or cultures.
8	Organised random search	Knowledge of a known structure allows the development of random new solutions.	Compose an appropriation of text that takes students from what is known to allowing them to create their own interpretations.
9	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.
10	Tolerance for ambiguity	Posing of a "what if" or "what would happen if" open-ended scenarios that challenge thinking within problem situations.	What if there were no differences in people's skin colour? Which events of the past may have been avoided? What would happen if the Earth's orbit moved closer to the Sun?

WILLIAMS MODEL



	Teacher Strategy	Explanation	Learning Activities
11	Intuitive Expression	Placing oneself in the shoes of another person, situation, problem, setting and exploring with all one's senses how one would feel and what one would do.	Write a poem or paint a picture that depicts the emotions you feel about being lonely and isolated. You have been unjustly convicted of a crime. How do you feel about the legal system, the magistrate, your lawyer, the police?
12	Adjustment to development	Examine what happens when one makes mistakes or fails – how one adjusts and ultimately succeeds; examine failures for growth.	As a civilisation, what have we learnt 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.
13	Study creative development	Analyse traits of creative people, creative processes, or creative product.	Research the life of Leonardo da Vinci, with a specific focus on the role as an inventor. What processes did he undertake to design, test and record his inventions?
14	Evaluate situations	Analyse implications, or consequences, extrapolate from ideas or actions.	The spice trade, coffee trade and now the drug trade – how have plants altered the course of history?
15	Creative reading skills	Generate new ideas by reading, rather than just reading for meaning.	Read about the times and times of the female Impressionists. What was there about this time that allowed some of them to achieve recognition?
16	Creative listening skills	Generate new ideas by training students' aural skills to make connections and to listen for inference and ideas as well as for information.	Interview an inventor to discover when he or she became interested in inventing new things or ideas.
17	Creative writing skills	Generate new ideas in writing.	Write a fairytale in which there is no reference to numbers.
18	Visualisation	Express ideas in 3D, nontraditional or visual forms.	Compose a short film about the life of a prominent Australian woman. Make a 3D model of the Roman Forum or the Athenian Acropolis.

Differentiated Products



The students may choose from a **combination** of the following products or **invent** product/s of their own:

Auditory	Audiotape recording, choral reading, class discussion, commentary, conference presentation, debate, description/show and tell, discussion, documentary, "how to" talk, informative speech, mock interview, newscast, oral report, oral book report, persuasive speech, panel discussion, reading to the class, roundtable group lecture, seminar, speech, trial
Visual	Advertisement, blueprint, book jacket, bullet chart, bulletin board, brochure, cartoon, carving, coat of arms, collage, comic strip, commercial, concept costume, cube, 3-D model, diorama, drawing, film, flowchart, graph, illustration, map, multimedia project, mural, origami, painting, photograph, photo journalism, pointillism, pictorial essay, plaque, poster, pop-up book, sculpture, self-portrait, stained glass, storyboard, story map, tree chart, Venn diagram, wall hanging, web
Performance	Comedy sketch, dance, demonstration, dramatization, experiment, magic show, monologue, musical performance, play, puppet show, reenactment skit, simulation
Written	Advertisement, book, book review, biography, business letter, classified advertisement, creative writing, critique, diary, editorial, eulogy, essay, explanation, fractal, journal, hypothesis, literary analysis, logic puzzle, newspaper, persuasive essay, magazine article, motto, musical composition, mystery, newsletter, poem, personal letter, paper, play, puppet show, report, research riddle, satire, story, script, song, science fiction story, theory, travelogue
Multi-categorical (products that require the use of two or more of the above product types)	animation, broadcast, computer program, exhibit, fabric, game, game show, geometric model, geodesics, illuminated manuscript, illusion, Internet search engine, invention, kit, law, multimedia slide show, matrix, museum, musical instrument, oral history, ornament, prototype, scavenger hunt, television show, time capsule, video, Web site, woodworking

Adapted from Karnes, F., & Stephens, K. R. (2000). *Student Product Development and Evaluation*. Wacko, TX: Prufrock Press.



Year _____ Subject _____ Differentiated Unit Title: _____ Conceptual Focus: _____

Resources	Learning Outcomes	Learner Content	Learning Strategies	Learning Products	Evaluation
	Core Outcomes	Core Content		Core Tasks	
	Extended Outcomes	Extended Content		Extended Tasks	

Resources	Learning Outcomes	Learner Content	Learning Strategies	Learning Products	Evaluation
SCIENCE AND TECHNOLOGY					
<p>Print Texts Our Solar System The Sun The Moon Interesting facts about planets</p> <p>Visual Texts Painting Graphics Symbols of planets</p> <p>Spoken Texts Soundtrack from <i>The Coming of the Martians</i></p>	<p>Core Outcome</p> <ul style="list-style-type: none"> Locates and uses information obtained from space exploration to clarify, challenge, and extend ideas about the general nature of the Earth, its moon, and the other planets in our solar system. <p>Extended Outcome</p> <ul style="list-style-type: none"> Critically assesses the process of investigation in order to predict outcomes and assess own understanding in relation to the general nature of the Earth, its moon, and the other planets in our solar system. 	<p>Core Content</p> <ul style="list-style-type: none"> Learn about the solar system. Investigate the sun, its energy and its effect on earth. Understand the causes of solar eclipses. Develop a design proposal by selecting and refining ideas and justifying choices. Explore various attempts by the human beings to explore the space. <p>Extended Content</p> <ul style="list-style-type: none"> Examine conditions necessary for life on Earth and adaptation to environment. Conduct independent research into various aspects of the solar system. Evaluate the significance of various voyages into space by human beings. 	<p>Discovery [Maker]</p> <p>Comprehension [Bloom]</p> <p>Application [Bloom]</p> <p>Research skills [Kaplan]</p> <p>Deep understanding [QT]</p> <p>Analysis [Bloom]</p> <p>Evaluation [Bloom]</p> <p>Evaluation [Bloom]</p> <p>Self-management [AC]</p>	<p>Core Tasks</p> <ul style="list-style-type: none"> Study the solar system. Design and make a model of the solar system. How does our Sun compare to other suns? Explain using diagrams, graphs and written descriptions. View the video on solar eclipse. Investigate the Sun, its energy and its effects on earth. Make a poster in which you illustrate your findings. Research the history of space walks. Develop a timeline that shows each space walk and what was accomplished. <p>Extended Tasks</p> <ul style="list-style-type: none"> Compare and contrast the atmosphere of the Earth and the Moon. Research the moons of Saturn and Jupiter. Describe each moon, comparing them to the Earth’s moon. Evaluate the Voyager travels. Explain how they have changed our perceptions of, and added to our knowledge of, our solar system. http://www.nasa.gov/mission_pages/voyager/index.html Investigate and evaluate the contribution Australia has made to the exploration of space. 	<p>Self/Peer</p> <p>Peer</p> <p>Teacher</p> <p>Self</p> <p>Peer/Teacher</p> <p>Self/Teacher</p> <p>Teacher</p> <p>Peer</p>
ENGLISH					
<p>Soundtrack from <i>Star Wars</i></p> <p>Students’ speeches</p> <p>Media/Multimedia</p> <p><i>Video clips:</i> Rocket Launch Solar Eclipse Animations of Rotating Planets</p> <p>Websites</p> <p>www.nasa.gov www.stsci.edu</p>	<p>Core Outcome</p> <ul style="list-style-type: none"> Discusses and conveys meanings in written texts, exploring relevant experiences and other points of view. <p>Extended Outcome</p> <ul style="list-style-type: none"> Composes and analyses a wide range of texts (written, visual and spoken) for a wide variety of purposes and audiences and uses metacognition to evaluate own work. 	<p>Core Content</p> <ul style="list-style-type: none"> Learn about conditions that characterise/ sustain life on earth (including gravity), and recognise the importance of oxygen, water and food for life. Learn about conditions on other planets. Learn more about recent technological developments. <p>Extended Content</p> <ul style="list-style-type: none"> Apply the knowledge gained to creative problem-solving. Appreciate the limits of space travel and consider the problems of communicating with other forms of “intelligent life”. Consider the implications for society of finding “intelligent life” elsewhere in the universe. 	<p>Variety [Maker]</p> <p>Creative thinking [AC]</p> <p>Comprehension [Bloom]</p> <p>Metalinguage [QT]</p> <p>Application [Bloom]</p> <p>Connectedness [QT]</p> <p>Creative thinking [AC]</p> <p>Metacognitive thinking [AC]</p> <p>Synthesis [Bloom]</p> <p>Tolerance for ambiguity [Williams]</p> <p>Conceptual understanding [AC]</p>	<p>Core Tasks</p> <ul style="list-style-type: none"> Read a part of the fictional account of <i>The Coming of the Martians</i>, view an illustration, and listen to the soundtrack of this account. Imagine you are one of the characters in the story. Complete the story as “you saw it happen”. Read the poem, <i>Geography Lesson</i>, by Zulfikar Ghose, and answer the questions that follow. View a video clip on rocket launch. Listen to the sound track of <i>Star Wars</i>. Study a picture of the rocket launch. Write the Astronaut’s log both at the beginning and at the end of the journey. <p>Extended Tasks</p> <ul style="list-style-type: none"> Design a tourist campaign for another planet or galaxy, based on scientific facts as we know them. The campaign should include advertising in the form of posters and short radio advertisements. Study the picture and compose your own fantasy story. View the video clip, Launch of the Spirit. Following the <i>Spirit</i> Rover’s mission to Mars, present a speech as an astronaut to primary students reliving your experiences. View the video clip, ET and debate the topic: “We should attempt to contact alien life if we find it.” 	<p>Self/Peer</p> <p>Peer</p> <p>Peer</p> <p>Self/Peer</p> <p>Self/Teacher</p> <p>Teacher</p> <p>Peer/Teacher</p>

Learner-centred Curriculum Differentiation – A Practical Framework

