



Developing Differentiated Units of Work



Unleashing Gifted Potential | 10 April 2011

Manoj Chandra Handa, Professional Learning and Leadership Coordinator | Northern Sydney Region | New South Wales

manoj.chandrahanda@det.nsw.edu.au

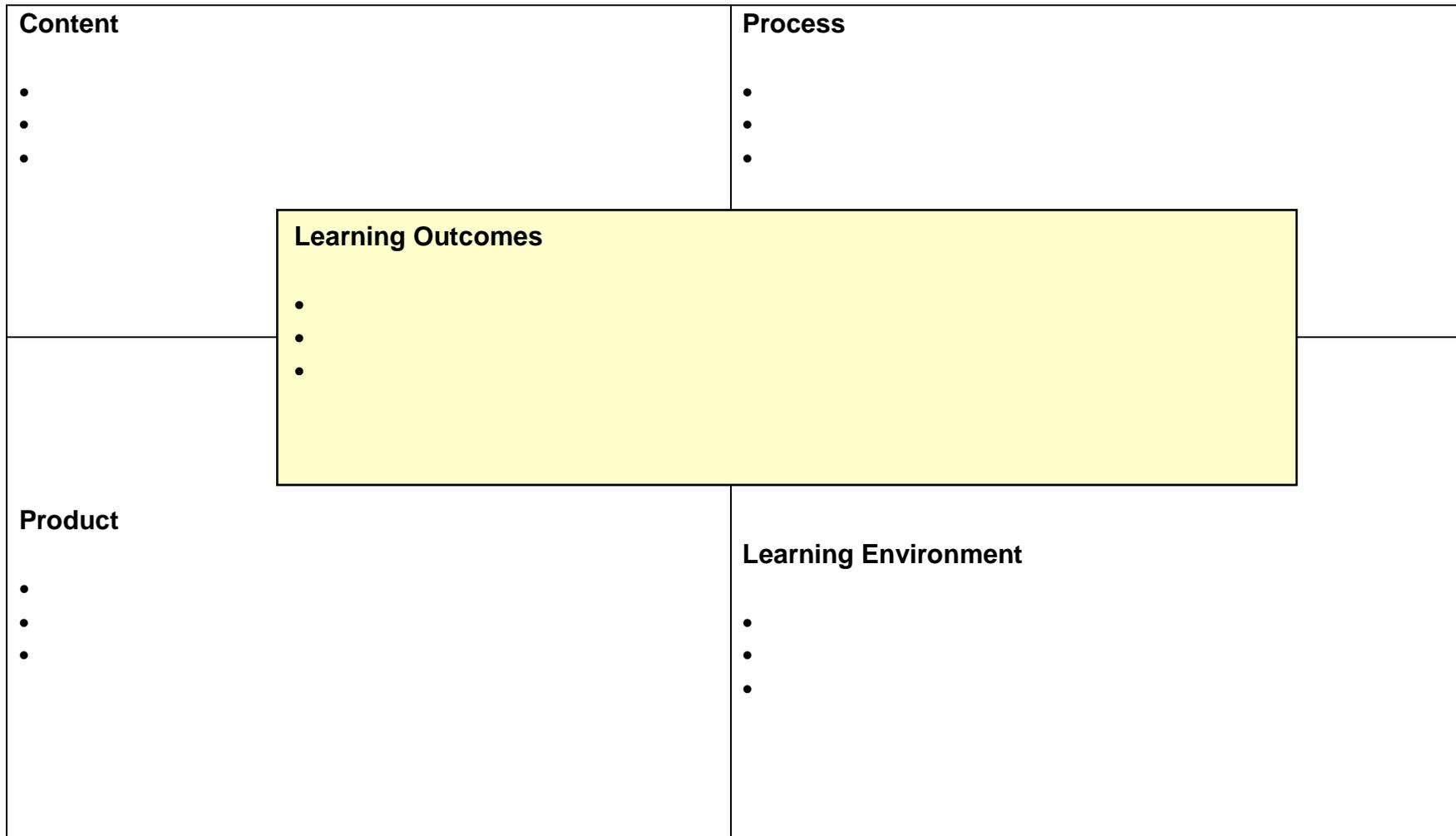
Fostering Excellence Among Learners



| | Contents | Page |
|---|--|--|
| 1 | Curriculum Differentiation – An Overview What does Curriculum Differentiation look like in a classroom? How do you differentiate teaching and learning? Elements of a differentiated classroom | 3-5 3 4 5 |
| 2 | Learning Outcomes Differentiation Bloom’s Taxonomy: Useful verbs for differentiating learning outcomes | 6-7 7 |
| 3 | Content Differentiation Structure of Knowledge – Example Structure of Knowledge – Template Enduring Understandings and Guiding Questions The Power of Conceptual Lens | 8-14 9 10 11 12-14 |
| 4 | Process Differentiation Fostering thinking skills to promote excellence Williams Model by Frank Williams Maker Model Modifications Metacognition | 15-21 16 17-18 19 20-21 |
| 5 | Product Differentiation Differentiated products | 22-23 23 |
| 6 | Learning Environment Differentiation Elements of learning environment | 24-25 25 |
| 7 | Learner-centred Differentiation Template Framework | 26-27 26 27 |



What Does Differentiated Learning Look Like In A Classroom?





How do you Differentiate Learning and Teaching?

Questions to foster your reflection

| Element | Questions |
|-----------------------------|--|
| Learning Outcomes | <ul style="list-style-type: none"> ➤ Are the outcomes modified to meet diverse needs of students? ➤ Do the differentiated content, processes and product emerge from the differentiated learning outcomes? |
| Content | <ul style="list-style-type: none"> ➤ Has the content been selected for abstractness, complexity and variety? ➤ Does the content promote conceptual understanding? ➤ Does the content encourage students to focus on enduring understandings/"big ideas"? ➤ Does the pacing of instruction allow more advanced students to move more quickly to allow more time to apply understandings? |
| Process | <ul style="list-style-type: none"> ➤ Do the learning activities emphasise higher order thinking processes such as application, analysis, evaluation and synthesis? ➤ Do students transform and synthesise rather than merely summarise? ➤ Are students given the opportunity to pursue extended projects and in-depth investigations? ➤ Are students encouraged to take a metacognitive (blue hat) approach to learning – a step back to understand the purpose and process? Are they encouraged to see the "big picture" and the details? Do they defer judgment? |
| Product | <ul style="list-style-type: none"> ➤ Do proposed student products reflect and address real problems? ➤ Are they directed towards a real audience with an identified purpose and, if not, can this be stimulated? ➤ Do assessment procedures take into account risk taking and recognize relative difficulties for grappling with new ideas? ➤ Are students required to monitor, evaluate and reflect on products in terms of original goals? |
| Learning Environment | <ul style="list-style-type: none"> ➤ Are there opportunities for choice and negotiation? For example: Can students choose to go on a tangent from a set topic so they will be more motivated? ➤ Are student groupings flexible? ➤ Is there a sense of community in the classroom where students can freely express ideas and value each other's opinions? ➤ Are students encouraged to take risks in exploring ideas and directions? |

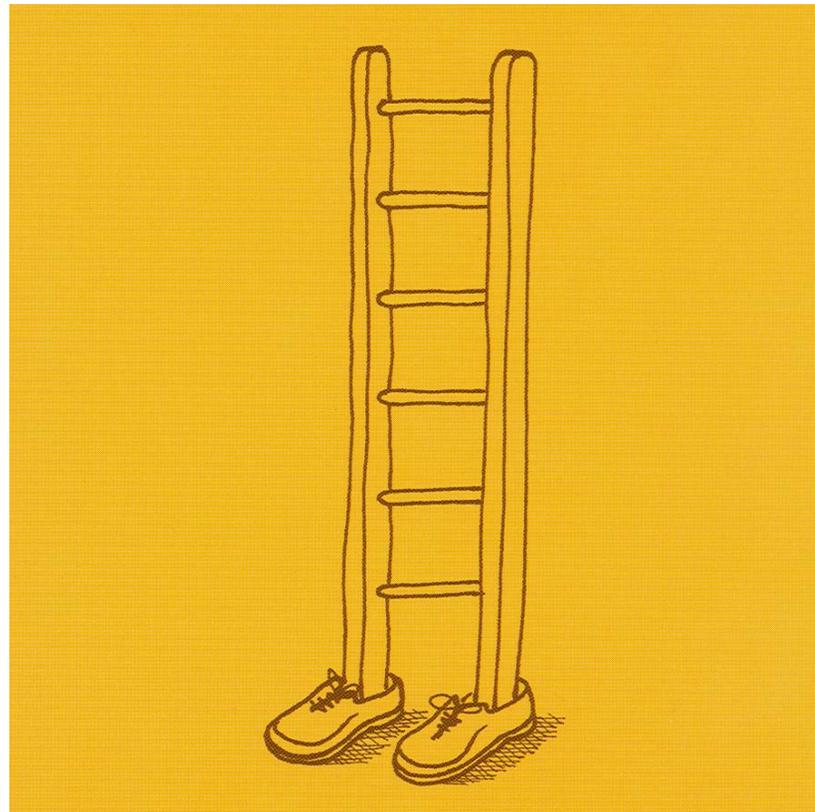
Elements of a Differentiated Classroom



| | ELEMENTS | CHARACTERISTICS |
|----|---------------------------------------|---|
| 1 | Learning differences | Learning differences are acknowledged: <ul style="list-style-type: none"> • Interests • Learning styles • Readiness |
| 2 | Pacing | The pace of learning is modified within the classroom to meet the learning differences |
| 3 | Curriculum | The curriculum is grounded in factual, procedural and conceptual knowledge: <ul style="list-style-type: none"> • Know: Factual knowledge • Able to do: Procedural knowledge • Understand: Conceptual knowledge |
| 4 | Content modification | The content is modified to increase complexity of depth and breadth |
| 5 | Tiered activities | Tiered assignments and activities respond to learning needs and differences |
| 6 | 21st century skills | Learners develop 21 st century skills: <ul style="list-style-type: none"> • Higher order thinking skills • Creative thinking • Critical reasoning • Self-regulation |
| 7 | Active learning | The classroom environment respects active learning: <ul style="list-style-type: none"> • Allows challenge through discussion with intellectual peers • Encourages learners to make meaning • Encourages questioning among students • Provides many problem-solving activities |
| 8 | Flexible grouping | Flexible grouping is used to achieve optimal learning |
| 9 | Self-reflection | The learning activities foster self-reflection (metacognition) |
| 10 | Learning environment | The learning environment is challenging and choice-filled for all students |
| 11 | Developing expertise | The learners are encouraged to think like experts in a field |
| 12 | Autonomy | Students developing learning autonomy |



Learning Outcomes Differentiation





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:

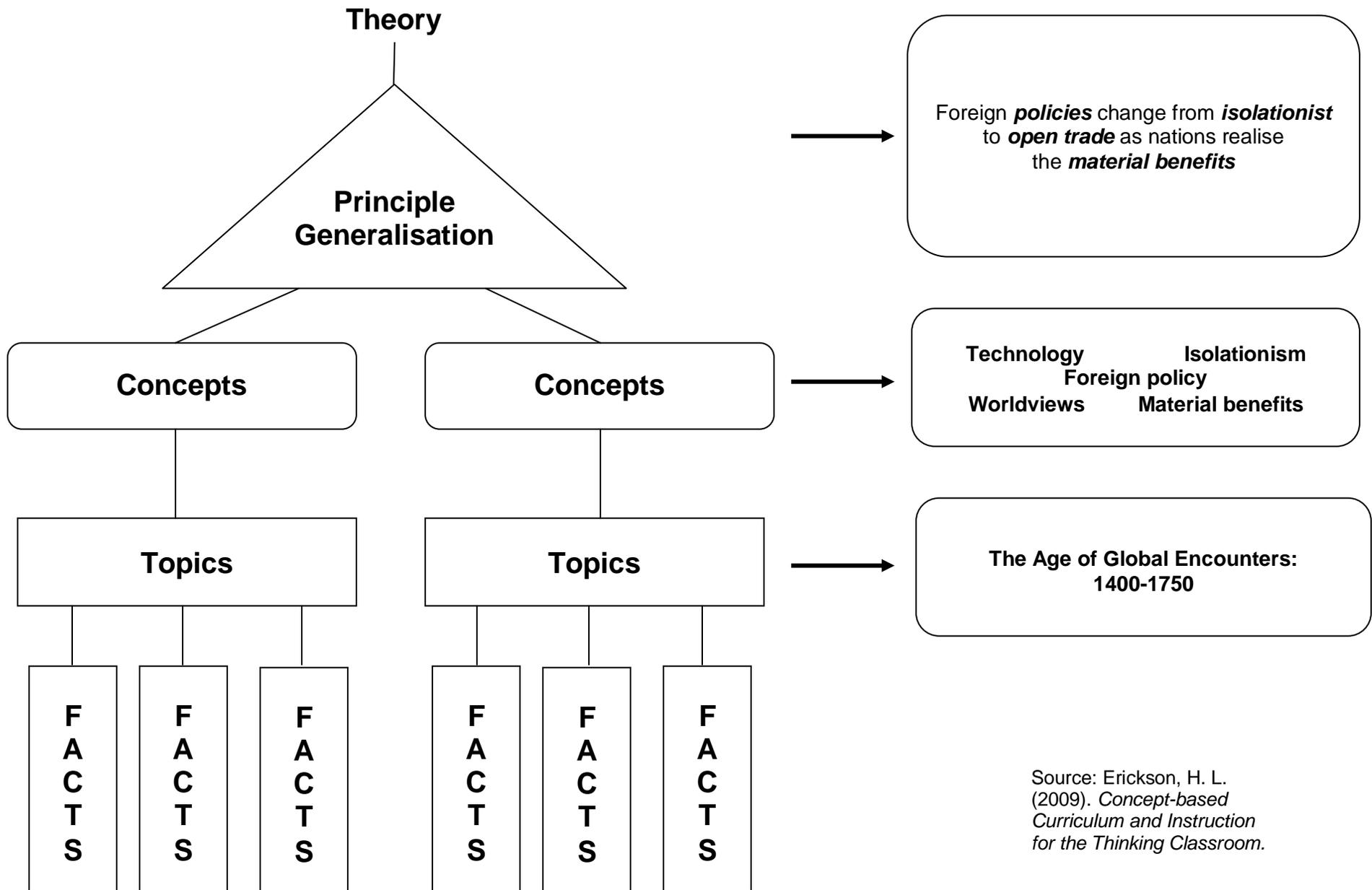
| 3. Apply | 2. Understand | 1. Remember |
|--|---|---|
| apply, classify, construct, covert, demonstrate, display, dramatise, illustrate, interpret, incorporate, implement, make, manipulate, model, operate, practise, present, report, reformat, research, sequence, show, sketch, solve, use | describe, 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 |



Content Differentiation

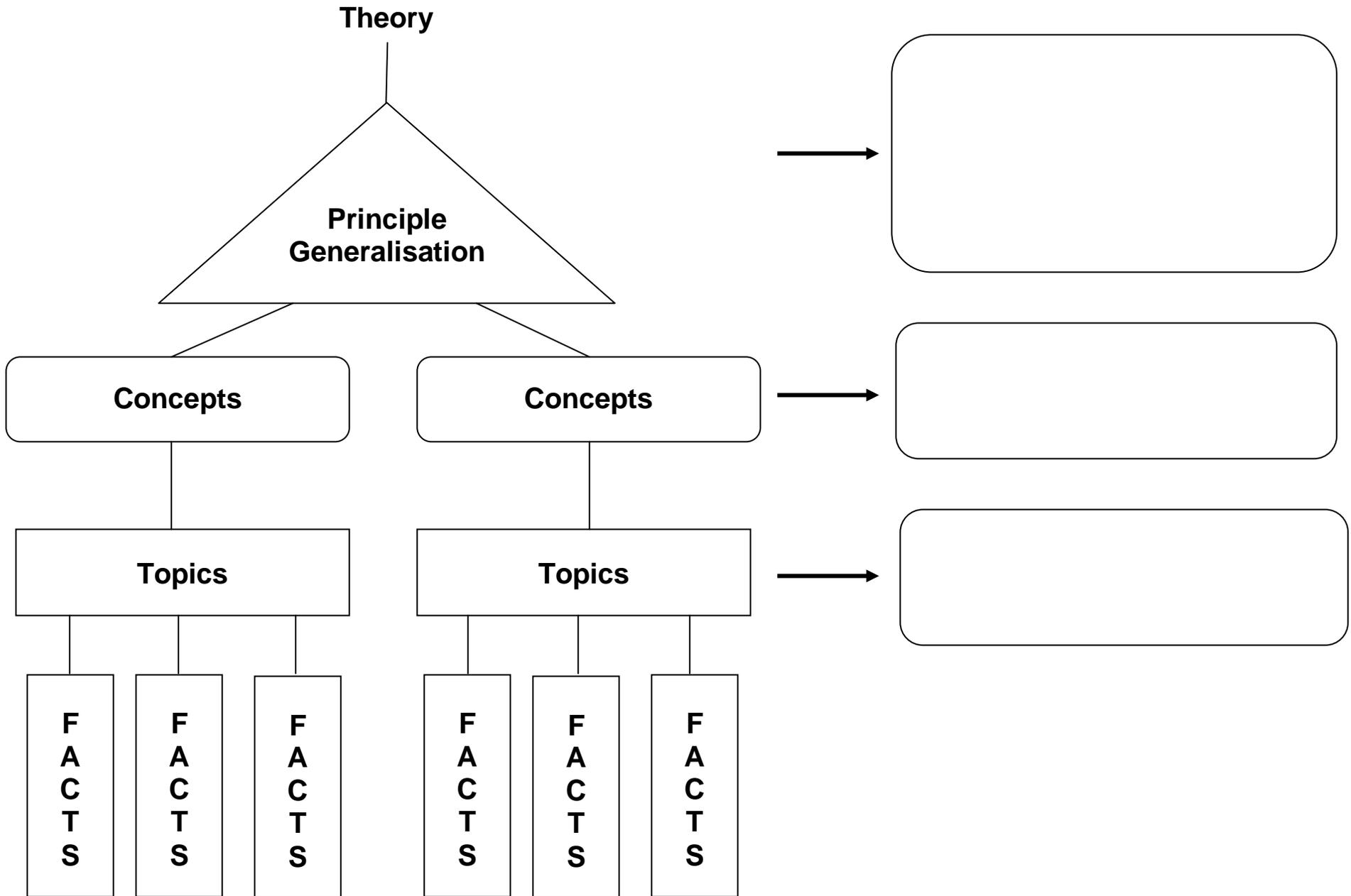


Structure of Knowledge



Source: Erickson, H. L. (2009). *Concept-based Curriculum and Instruction for the Thinking Classroom*.

Structure of Knowledge





| Enduring Understandings (Generalisations / “Big Ideas”) | Guiding Questions F actual, C onceptual, P rovocative |
|--|---|
| 1. Limited natural resources lead to interdependence of populations. | a) What are natural resources? F b) How can natural resources be shared among populations? C c) Who should have the responsibility to provide water for everyone? Locally? Nationally? Globally? P |
| 2. | |
| 3. | |
| 4. | |
| 5. | |

The Power of a Conceptual Lens



Activity

1. Think of two specific topics from the curriculum you teach.
2. Choose potential lenses from the list in Figure 2 for each topic. Notice how the lens changes the focus for thinking about the topic. Which lens do you find most engaging (or challenging) for your topic?

Thinking reflectively (metacognitively), are you aware of how the lens invites you to bring your personal intellect to the study? Does the engagement of your personal intellect increase your motivation and interest in this study?

| Topics | Potential Conceptual Lenses |
|----------|-----------------------------|
| A. _____ | _____ |
| | _____ |
| | _____ |
| B. _____ | _____ |
| | _____ |
| | _____ |

Example:

Topic
Holocaust

Potential Conceptual Lenses
 Humanity
 Inhumanity
 Conflict
 Violence
 Survival



Sample Conceptual Lenses

| | |
|-----------------|-----------------|
| Conflict | Complexity |
| Beliefs/Values | Paradox |
| Interdependence | Interactions |
| Freedom | Transformations |
| Identity | Patterns |
| Relationships | Origins |
| Change | Revolution |
| Perspective | Reform |
| Power | Influence |
| System | Balance |
| Design | Innovation |
| Heroes | Genius |
| Force | Creativity |

Source: Erickson, L. H. (2009). *Concept-based Curriculum and Instruction*

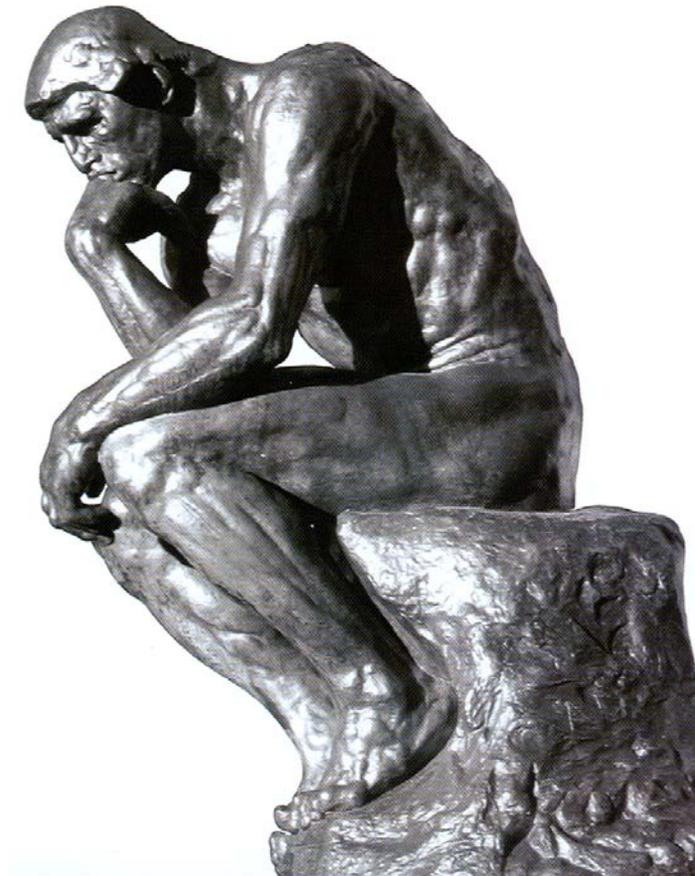
Using Conceptual Lens and Enduring Understandings for Guiding Questions



| Enduring Understandings (Generalisations / “Big Ideas”) | Guiding Questions Factual, Conceptual, Provocative |
|--|--|
| <p>1. Human beings have the capacity to be both humane and inhumane to the extreme.</p> <p>Topic: <i>Holocaust</i></p> <p>Conceptual Lens (dual): <i>Humanity/Inhumanity</i></p> | <p>Factual Questions:</p> <ul style="list-style-type: none"> a) Why was the Holocaust a significant event in world history? b) What beliefs did Hitler hold that drove his actions? c) Why is Hitler’s persecution of the Jewish people considered inhumane? <p>Conceptual Questions:</p> <ul style="list-style-type: none"> a) What examples of inhumanity can you cite from our world today? b) What acts of humanity can you cite from our present-day world? c) How are beliefs, values, and perspectives related to views of humanity and inhumanity? <p>Provocative Question: Can one be inhumane and civilized at the same time?</p> |
| <p>2. _____ _____</p> <p>Topic: _____</p> <p>Conceptual Lens: _____</p> | <p>Factual Question:</p> <p>Conceptual Question:</p> <p>Provocative Question:</p> |



Process Differentiation





| Critical and Creative Thinking Skills | | Reflective Thinking Skills (Metacognition) | Conceptual Thinking Skills | Enabling Skills |
|---|---|--|---|---|
| <p>Analytical thinking skills Comparing & contrasting Categorising Criteria setting Ranking and prioritising Seeing relationships Making analogies Determining cause and effect Predicting Analysing Inferring Deductive thinking Evaluating</p> <p>Critical thinking skills Identifying points of view Identifying value statements Determining bias Identifying fact and opinion Determining the accuracy of presented information Determining the strength of an argument Detecting inconsistencies in an argument Recognising assumptions Recognising fallacies Identifying exaggeration Identifying ambiguity</p> <p>Organisation thinking skills Formulating questions Semantic mapping Interpreting data Developing hypotheses Generalising Problem solving Decision making Moral reasoning</p> | <p>Creative thinking skills Deferring judgment Considering alternatives Problem finding Creative problem solving SCAMPER modification techniques Transforming Visualising Listing attributes Brainstorming Random input Synectics Guided imagery Fluency Flexibility Originality Elaboration</p> | <p>Setting goals Planning Monitoring Evaluating Reflecting</p> | <p>Conceptual understanding Integration of thinking Transfer of knowledge across time or situation Includes aspects of critical, creative and reflective (metacognitive) thinking</p> | <p>Study skills Note taking skills Reading skills Memory enhancing strategies Examination techniques Writing for different purposes (e.g., essay writing, technical report writing) Organisational skills Time management skills Stress management skills Social interaction skills</p> |
| | | <p>21st Century Skills:</p> <ul style="list-style-type: none"> • Creativity and innovation • Communication and collaboration • Information, media and ICT literacy • Life and career skills such as flexibility, initiative, productivity, independence, leadership and responsibility | | |

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. | |
| 2 | Attribute Listing | Identification of inherent properties or qualities by examining them in a new light. | |
| 3 | Analogy | Comparisons of very unlike things; forced associations or connections. | |
| 4 | Discrepancy | Focus on gaps and missing links in knowledge, often deliberately set up for the students to discover themselves. | |
| 5 | Provocative Question | Any inquiry of students to incite exploration and curiosity. | |
| 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. | |
| 7 | Examples of habit | Examine examples that demonstrate rigidity and inflexibility. | |
| 8 | Organised random search | Knowledge of a known structure allows the development of random new solutions. | |
| 9 | Skills of search | Research on something done before; trial and error on new ways. | |
| 10 | Tolerance for ambiguity | Posing of a "what if" or "what would happen if" open-ended scenarios that challenge thinking within problem situations. | |



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. | |
| 12 | Adjustment to development | Examine what happens when one makes mistakes or fails – how one adjusts and ultimately succeeds; examine failures for growth. | |
| 13 | Study creative development | Analyse traits of creative people, creative processes, or creative product. | |
| 14 | Evaluate situations | Analyse implications, or consequences, extrapolate from ideas or actions. | |
| 15 | Creative reading skills | Generate new ideas by reading, rather than just reading for meaning. | |
| 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. | |
| 17 | Creative writing skills | Generate new ideas in writing. | |
| 18 | Visualisation | Express ideas in 3D, nontraditional or visual forms. | |



Maker Model Modifications

| Content Modifications | | |
|-------------------------------------|---|--|
| Abstraction | Going beyond the facts, examining underlying ideas, symbolism, and meanings of the content. | |
| Complexity | Posing challenging questions or situations that force the learner to deal with content intricacies; greater breadth or depth. | |
| Variety | Sampling different types of related content, often from other disciplines or subject areas. Exposure to new ideas or content. | |
| Study of People | Relating content to people, the human situation and human problems. | |
| Methods of Inquiry | Relating content to the methods and procedures used by people in a field or subject area. | |
| Process Modifications | | |
| Higher-order thinking skills | Utilising higher-level thinking skills (analysis, synthesis and evaluation) for regular content processing. | |
| Open-ended processing | Utilising divergent thinking skills (such as paradox, analogy, tolerance for ambiguity, intuitive expression) for regular content processing. | |
| Discovery | Requiring students to progress through a series of steps of inquiry to draw own conclusions, answers and generalisations. | |
| Freedom of choice | Providing opportunities for self-directed, independent study. | |
| Product Modifications | | |
| Real world problems | Learners investigate the kinds of questions and problems investigated by professionals; 'real-life' problems. | |
| Real audiences | Student products are developed for the expected evaluation by professionals or experts in that field or discipline. | |
| Transformations | Students are encouraged to suggest practical uses for what has been learned. Uses may be in non-traditional media. | |



Metacognition: Self-Regulated Learning

| Elements | Explanation | Questions | Student Responses |
|-------------------|--|---|-------------------|
| Planning | <p>Identifying goal and the steps needed to reach the goal</p> <p>Allocating time to accomplish the goal</p> | <p>What is your goal and what steps will you take to reach the goal?</p> <p>What should you do first? Second? Third?</p> <p>What do you already know that can help you?</p> <p>What obstacles must be overcome?</p> <p>What will the solution look like?</p> <p>How much time will you allocate to accomplish your goal?</p> | |
| Monitoring | <p>Identified goal</p> <p>Domain and strategy knowledge about task</p> <p>Processes/strategies</p> <p>Motivation to adjust performance</p> | <p>What have you accomplished by the end of Week 1 of the project? What is your next step?</p> <p>What do you still need to know, understand and do about the task/project?</p> <p>Have you made any mistakes? Did you recover from an error? How did you do that?</p> <p>How do you continue to motivate yourself to remain on task?</p> | |

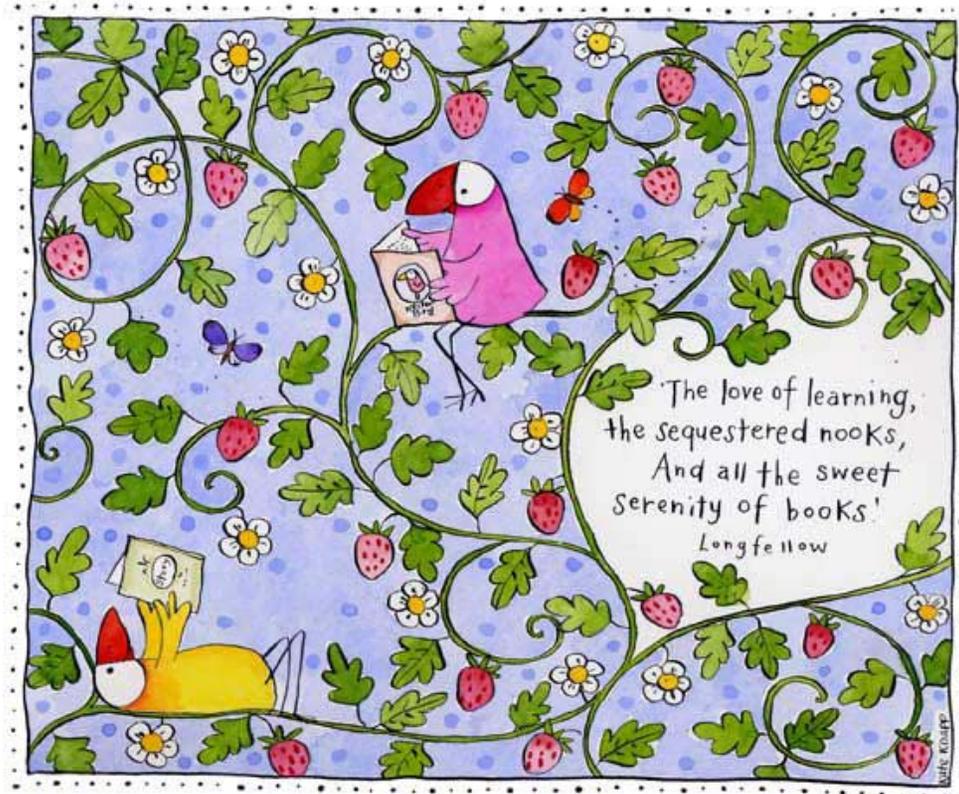


Metacognition: Self-Regulated Learning

| Elements | Explanation | Questions | Student Responses |
|-------------------|--|---|-------------------|
| Evaluating | <p>Appraising your goal</p> <p>Criteria needed to assess the quality of the product</p> <p>Analysing the strategies for developing the product</p> | <p>Did you achieve your goal?</p> <p>Does your solution fit your prediction?</p> <p>What criteria would you employ to judge the quality of your product?</p> <p>How will you judge the effectiveness of your strategies?</p> <p>Did you fix all your mistakes?</p> <p>Did you use your time well?</p> | |
| Reflecting | <p>Looking back at the efficacy of learning</p> <p>Knowledge needing development</p> <p>Processes needing improvement</p> <p>Reflecting on further enhancement</p> | <p>What are your areas of strength and areas of growth?</p> <p>What do you need to learn further?</p> <p>What would you do the same and what would you do differently next time?</p> <p>What suggestions would you have for others?</p> | |



Differentiating Products





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, radio show, 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, mosaic, mural, origami, painting, photograph, photo journalism, pointillism, pictorial essay, plaque, poster, pop-up book, sculpture, self-portrait, stained glass, storyboard, story map, tessellation, tree chart, Venn diagram, wall hanging, wallpaper pattern, web |
| Performance | Comedy sketch, court trial simulation, dance, demonstration, dramatization, experiment, magic show, monologue, musical performance, peepshow, play, puppet show, reenactment skit, simulation, synchronized movement, treasure hunt |
| Written | Advertisement, book, book review, biography, business letter, classified advertisement, creative writing, critique, diary, editorial, eulogy, essay, explanation, fact file, fractal, journal, hypothesis, literary analysis, logic puzzle, newspaper, persuasive essay, magazine article, motto, musical composition, mystery, newsletter, opinion poll, poem, personal letter, paper, play, puppet show, reflection, report, research, riddle, satire, story, scrapbook, script, song, science fiction story, Sudoku, synthesis of research, 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 display, musical instrument, oral history, ornament, podcast, prototype, scavenger hunt, silk-screen print, television show, terrarium, time capsule, video, Web site, woodworking |

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

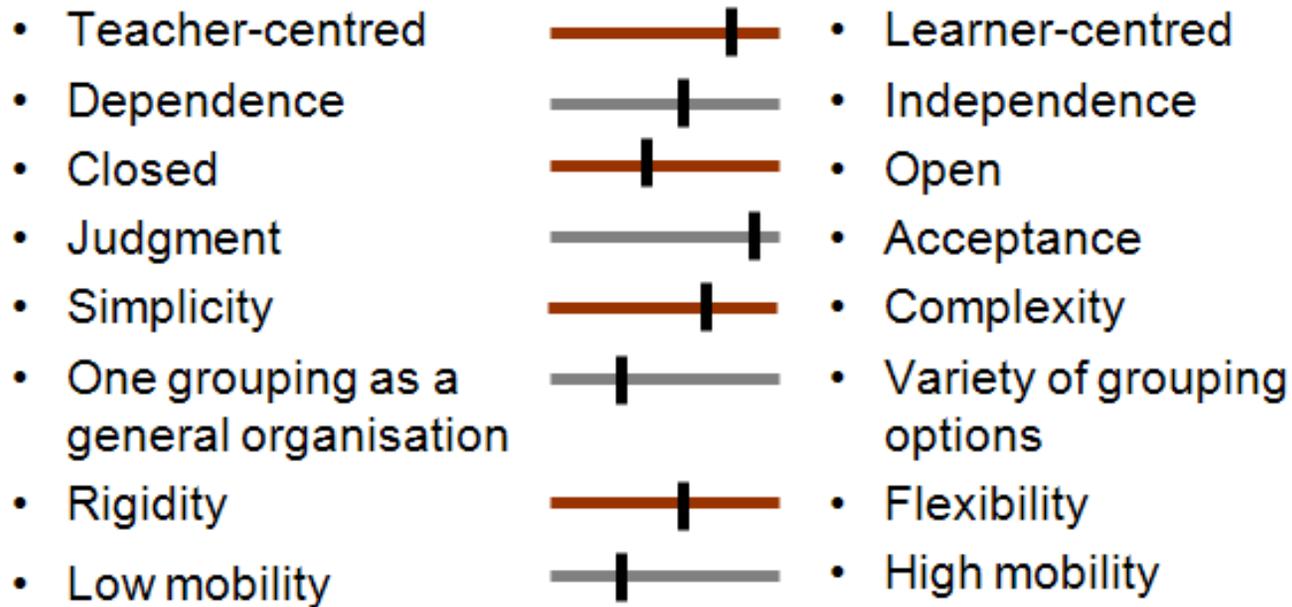


Learning Environment Differentiation





Learning Environment Differentiation - Strategies



Learning Continuum



Learner-centred Differentiation: Framework and Template



Learner-centred Curriculum Differentiation – A Practical Framework

