Developing a thinking curriculum for Year 5: theory and practice

Jason Pietzner
Fitzroy High School

Abstract

In this chapter Jason Pietzner discusses the theories behind his work with the thinking curriculum in his former Year 5 classroom. He examines Bloom's Taxonomy and Anderson's revision of this model and then shows how he has distilled them into the Three Storey Intellect model (Gathering/Processing/Applying). He then demonstrates the usefulness of Gardner's Multiple Intelligences theory and acknowledges the influence of Lipman's Philosophy for Children model. The product of his unit of work showing the effectiveness of the approach is included.

Introduction

Living in a world where information and knowledge are not static concepts, the students of today need exposure to more than the traditional curriculum. There needs to be new pedagogies to guide their learning. The citizens of the future need skills that will help them adapt to, and even exploit, new ways of being. A core idea associated with the term 'thinking curriculum' is that students should not be receptacles of other peoples' (particularly teachers') beliefs and knowledge. To ensure that we have engaged students, the constructivist approach, where students construct their own understanding of the world through the rigorous and analytical gathering and processing of information, is the surest way of achieving critical reflection and a more involved citizenry.

The thinking curriculum is, however, more than just a way of encouraging autonomy and reflection. It recognises that people use a variety of intelligences in order to know the world. The typical thinking curriculum practitioner would believe that you can teach a person to become a more effective thinker and use

the innate cognitive resources they possess to better effect. To this they would add that you can teach creativity, problem solving strategies and a philosophical approach to ideas, to help achieve depth in inquiry.

The belief that the curriculum must put students in touch with the world outside the classroom in a meaningful way is as important as the development of cognitive skills. The walls of a classroom must be removed to enable an engagement with issues that are present in the world of ideas and opportunities outside.

Behaviourism versus constructivism: the primary school

One could almost say that the difference between 'traditional' teaching styles and 'thinking' teaching styles is equal to the distinction between Behaviourism and Constructivism. The differences can be simply illustrated through the two scenarios below.

Scenario One

Students sit at single desks set in rows. The topic is 'Asia'. This the students know because the heading is on the blackboard, along with copious amounts of writing that includes the countries found in Asia, their political systems, populations, primary products and so on. Students copy this information into their books, perhaps in silence. Following this, they colour in a photocopied map of Asia, marking out the different countries, under close instruction and observation by the teacher. The final session has the students making flags of the Asian country chosen by the teacher. Assessment is a written test, in which they diligently recall and repeat the information given to each by their teacher. A grade is given to each student following a test marked by the teacher.

In this classroom the students do not necessarily engage with the information, nor is there anything that they are required to interpret in order to show that they understand. The students' opinions on the topic are not asked for, nor does the teacher tap into any prior knowledge the students may possess. The students have no control over their learning, nor are they taught the skills of questioning or research. The cognitive skill required by the students in order to successfully complete the unit (a high percentage score in the final test) is that of remembering information.

Scenario Two

Students enter a classroom where the tables are arranged in clusters allowing four students to work closely together. The teacher asks each group of students to discuss and write what they know about Indonesia. These discussions are then presented to the class in the form of a quick presentation using any pictures, mind maps, or notes the students made. Prior understandings are clarified, questioned and acknowledged by the teacher.

A newspaper article on the recent elections in Indonesia is circulated. A discussion of the article reveals that the students would like to philosophically examine the question of democracy as a political system. The teacher talks the least of all, using Socratic questioning methods to challenge the students and facilitate their conversation. The teacher then asks each group to develop a question concerning Indonesia that would require research in order to be answered. He or she works with each group to ensure that the questions are open ended and require significant work to develop adequate answers.

Perhaps the most significant difference between the two teaching styles is that the amount of information disseminated by the teacher in Scenario Two is close to none at all. While the teacher may have corrected some misconceptions during the initial discussions, and chosen the newspaper article to provoke conversation, at no point were the students directed to uncritically absorb the knowledge held by the teacher.

The critical difference between the two sessions is that the students were obliged to construct their own understanding of a part of Asia in the second, while they were required to remember their teacher's understanding in the first. In Scenario Two students are actively and constantly involved in creating their own knowledge about Indonesia, and while this is happening, they are learning a range of other skills that will enable this process to continue. The students are learning how to learn and they are leaning how to think. The teacher is teaching the students skills, not facts.

While the Constructivist model should form the basis of all thinking curriculum units, every unit should contain other pedagogic models. Theorists like Bloom (in Pohl, 2000), Gardner (1989), de Bono (1996), Lipman, Sharp and Oscanyan (1980), and Herrmann (1996) provide strategies, models and ways of understanding learning styles.

Taxonomies

Bloom and colleagues first developed the Taxonomies of Cognitive and Affective Objectives in the 1950s as a means of labelling the different types of thinking that can occur as well as ranking them qualitatively. Through his model Bloom was stating expressly that, though all types of thinking are important, some types of thinking are harder to achieve than others. In the cognitive taxonomy, skills were placed in order from the simplest to harder cognitive tasks. The taxonomy was later revised by Anderson and a team of cognitive psychologists (Pohl, 2000). The taxonomy, along with its revision, is summarised in Chapter 1. One or other of these taxonomies is now frequently used by teachers attempting to develop their students' higher-level thinking skills, the skills most valued by the thinking curriculum practitioner. The student who can analyse information and apply it in new situations will better

adapt to a new and changing world, as will those students adept in making reasoned judgments and creating ideas.

For the purposes of the unit discussed in this chapter, Anderson's cognitive categories (in Pohl, 2000) have been incorporated into a model that recognises the importance of all the categories, but combines them into the Three Storey Intellect's categories: Gathering, Processing and Applying.

The model below exemplifies the importance of each level of thinking and makes clear the hierarchy of skills. It also stresses the importance of one skill being necessarily built upon by the next higher skill.

The range of skills is comprehensive and the depth and difficulty of the skills required at each level increases gradually. This allows students to develop their knowledge and cognitive skills at a steadily increasing rate. The content of a thinking curriculum unit would be skewed towards the more difficult categories.

The Three Storey Intellect	Anderson's Categories
1 Gathering	
Requires you to find the facts, to acquire knowledge and understand the material.	Understanding Remembering
2 Processing	
Requires you to manipulate information, to try to make connections to prior knowledge and previous experience and make sense of things.	Applying Analysing Understanding
3 Applying	
Requires you to use ideas you have gained to solve problems or make decisions. Apply your knowledge and understanding to new situations in meaningful ways.	Creating Evaluating Applying Analysing

Gardner's Multiple Intelligences

Gardner's theory of Multiple Intelligences first appeared in the early 1980s. His studies of the development and breakdown of cognitive capacities, in opposition to Piaget's theory of development, revealed that the human mind could be viewed as modular in design. The theory was based on the belief that different areas of the brain, and different psychological processes, are involved in dealing with the different types of symbolic systems we use in understanding the world (Gardner & Hatch 1989). He believed that all people had particular strengths in some ways of knowing the world, and that these strengths may not be consistent across all types of symbol understanding. Simply stated, one may be excellent at mathematical understanding of the world while having little ability in knowing

how to decode (or encode) the world using the language of words. (The eight intelligences are described in Chapter 1.)

The value of this to the teacher is in the acknowledgment that there is a variety of ways in which one can know the world, and that all of these ways are equally valid and important. The traditional classroom (and no doubt many modern classrooms) relied primarily on the linguistic and logical mathematical intelligences when disseminating and assessing knowledge. The new model insists that teachers recognise the importance of allowing students to express their knowledge and understanding of the world (as well as the provision of learning experiences) in diverse ways. The model also assists in the development in children of a range of abilities allowing them to rely on those in which they are naturally stronger.

Philosophical inquiry

Socrates taught his students by asking them questions, demanding clarification of each answer and challenging his students with further questions. This cycle of question and answer developed in his students the intellectual rigour of a philosopher.

The ability to think critically and logically, reflect on understandings and beliefs, solve problems creatively and (perhaps most of all) ask questions, are skills that all students would value, and skills that all thinking curriculum practitioners should aim to develop (Wilks, 1995).

Rich Tasks and Productive Pedagogies

Education Queensland (2000) released a document that aimed to directly tackle many of the problems that were emerging with current educational practice. In its introduction it stated that:

> The New Basics Project is about dealing with new student identities, new economies and workplaces, new technologies, diverse communities and complex cultures. Many approaches to education treat the current period of rapid change as a problem that will soon go away so we can soon get back to normal … [contemporary society] should be the focus of debate, data analysis and collection, higher order thinking and basic skills building.

Useful in the creation of this unit were the sections on Productive Pedagogies and Rich Tasks.

Productive Pedagogies are classroom strategies that can be used by teachers when developing units of work or individual lessons. They all have the same purpose in mind, that is, to improve student outcomes through the development of higher order thinking skills, autonomy and connectedness to the world. The pedagogies are productive in that they focus teachers' efforts towards those

teaching strategies that have been shown to be most effective in generating the kinds of outcomes most valuable for students. These strategies include:

Higher order thinking	Deep understanding	Connectedness to the world
Problem based curriculum	Engagement	Student control

The appropriateness of these strategies to the thinking curriculum hardly needs stating. In the following unit the Productive Pedagogies are used as a checklist against which I compared my unit.

Rich Tasks are activities that are problematic, open-ended and (most importantly) have an authentic sense about them. This means students believe that the work that they are doing has a value that exists outside of the classroom itself. They are not simply completing a task because they have to for school. While all work that a student is set in a thinking curriculum unit should be rich in nature, it is especially important that the assessment activities at the end of each unit have a particular validity and importance inherent in them. Rich Tasks are pieces of work that should accurately reflect a real-life task in the world. They should be multi-disciplinary, genuine and useful.

The Significant Structures unit

In the Significant Structures Unit, a selection of the models outlined above has been used. Some theories have been used as checklists, some have been used as a model on which to base a single lesson, and others have been used as a framework to create the unit's 'big picture'. Together they create a rich and challenging unit in which students learn to think, do, say and discover.

The basis of this unit was taken from Education Victoria's *Curriculum and Standards Framework 11* (1995). It is called Significant Structures and uses The Three Storey Intellect and Gardner's Multiple Intelligences (1993) as its framework. The class was already well schooled in Lipman's community of inquiry model, an essential requirement for work of this nature. A grid below is formed from these two models and activities are developed in accordance with the two models' requirements. Students begin with activities at the Gathering stage and then move onto the Processing stage. For these two stages students must choose an existing structure to study in depth.

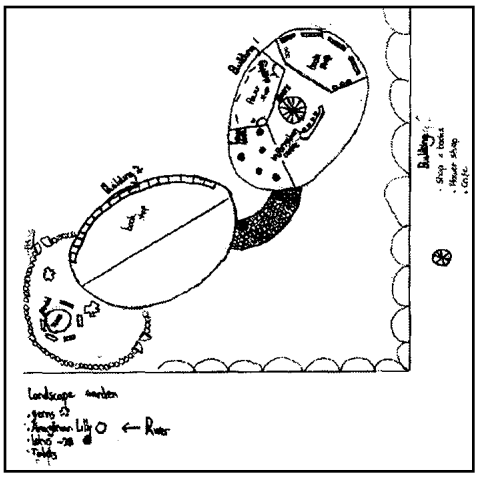
Significant Structures

A unit framed by the Three Storey Intellect and Multiple Intelligences

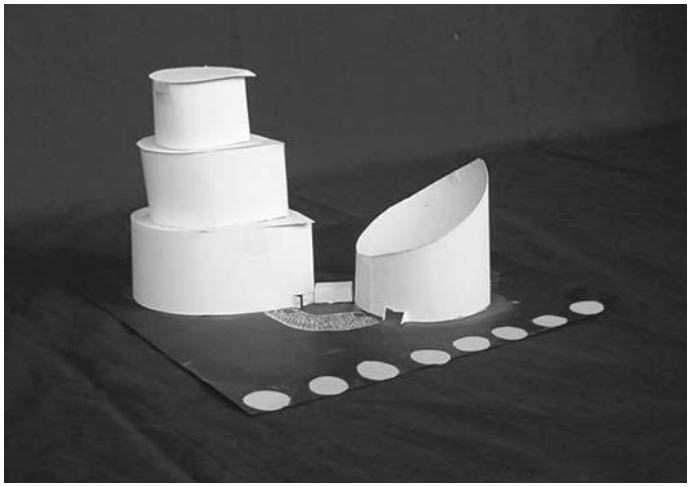
Develop, design and build a structure of significance for your community

	Verbal/ Linguistic	Logical/ Mathematical	Visual/ Spatial	Musical/ Rhythmic	Body/ Physical	People
Creating	Develop a written proposal. Present your proposal and model to the local council.	Draw up architectural plans.	Sketch/paint some ideas for your structure.	Develop a musical composition celebrating your structure.	Build a scale model.	*Philosophy:* How can we help our community? Consider what our community would value most in a building.
Processing	Prepare and record an audio tour guide for your structure. Write a newspaper article for your structure. Develop a pamphlet advertising the structure.	Reference significant parallels, meridians, equator, tropics, polar circles, prime meridian and international dateline for your structure.	Make a scale or ratio drawing of your structure using, set squares, rulers etc. *Philosophy:* Why do we talk about both the 'form' and the 'function' of great buildings?	Make a Soundscape of the sounds that may be heard around your structure. Write lyrics to a piece of music celebrating your structure.	Interpret mood of building in dance. Write and perform a play related to building.	Written response to the structure. Invite architect to talk about the building process. Write to the Council justifying preservation of the structure.
Gathering	Read information on a significant structure of your choice. Present a report to the class. *Philosophy:* What makes a structure significant?	Locate structure on a map—city/ world / country. Find out dimensions. Timeline of events surrounding building. Identify patterns and shapes in structure.	Draw a picture of proposed structure.	Find a piece of music related to building. Find national anthem of country. Locate and share a piece of music from country.	Re-create structure using Lego or K'nex. Visit 'great' building if possible.	Describe a building that is significant to you for personal reasons. Interview a person involved with this structure.

The unit finishes with a Rich Task in which students build a model of their significant structure. This is also the final evaluation piece, and students are assessed across all 'Intelligences'.



Sketch Plans



Scale Model

The productive pedagogies checklist

This following list of strategies and thinking skills was used as a checklist against which the unit was assessed for the presence of the New Basics' Productive Pedagogies (Education Queensland, 2000). Below are the Pedagogies along with examples of their use in the unit.

Strategy	Example of use
Higher order thinking	Anderson's/Bloom's Taxonomy
Deep knowledge	Study of one structure through a variety of activities
Substantive conversation	Use of philosophical inquiry at each level

Strategy	Example of use
Metalanguage	Students taught about structure of unit grid and aware of its purpose
Knowledge integration	Final task requires use of a range of intelligences to complete satisfactorily
Background knowledge	Students write about a structure significant to them
Connectedness to world	Talk by a visiting architect about real building processes
Problem based curriculum	Final Rich Task, though most tasks were problem based
Student control	All activities negotiated with students
Engagement	Students enjoyed all activities
Explicit criteria	Negotiated with students before each task
Inclusivity	All students participated equally
Narrative	Not in evidence
Citizenship	Final structure designed for benefit of community

This unit, then, can reasonably claim to use a comprehensive range of both productive pedagogies and thinking curriculum aims. Not only are students taught to think at a variety of levels, a skill they will require for the future, but they are also encouraged to be the kind of caring and community minded citizens that we need for this future.

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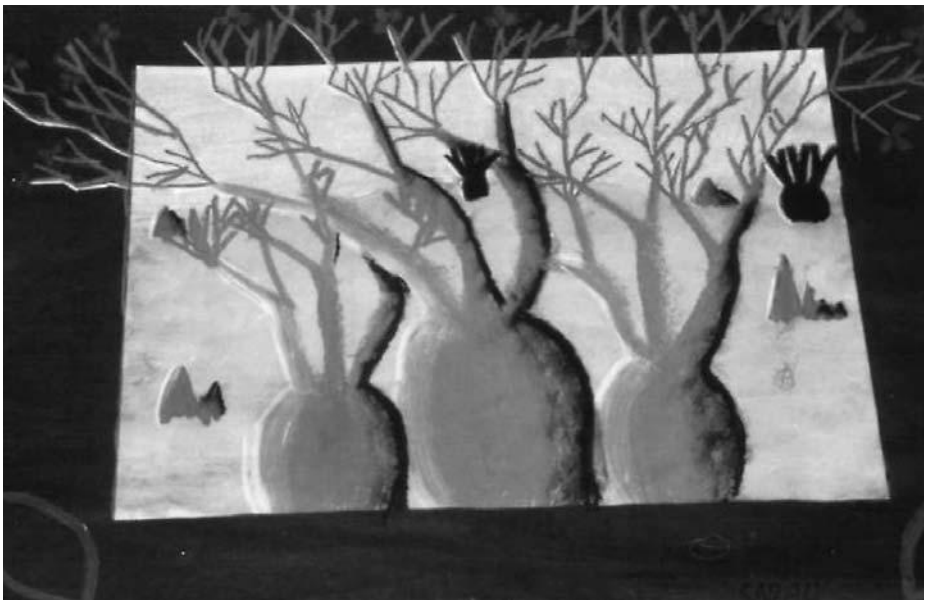
Crying Out
Anthony Nguyen
Year 7 St Bede's College



Boab Tree
Sarah Higgins
Grade 5 Stanley Primary School