

RIGOR: IS NOT A FOUR-LETTER WORD

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Extracts from Chapters 1 & 2, with additional material from other sources

The Case for Rigor

I've been in education for 25 years. I was a teacher, an education consultant, and a professor. Throughout my experiences, I've learnt many things from my students, and from other teachers and administrators. These frame my beliefs about rigor.

1. The power of the individual teacher
2. Students reflect our perspectives
3. Focus on what we can control.

First, I have seen the power of the individual classroom teacher. My most memorable teachers were also the ones who held me to high standards. As I work with schools, I am privileged to see teachers who make a difference, even in difficult circumstances. One teacher has always made a difference in the life of a student.

Next, I know that students reflect our perspective of them. In my second year, I was assigned to teach two classes of remedial students. They came into class with a defeated, despondent attitude. In response to my enthusiasm about the upcoming year, Rhonda said, "We know we are in the dumb class. Everyone else knows too. Didn't you know that?" Over the course of the year, my students slowly responded to my belief that they were capable of learning. It took time, but they learned to believe in themselves, in part because I believed in them.

Finally, we should focus on things we can control and quit worrying about things that are out of our control. That lens served as a filter for the content of this book. With every chapter, I asked myself, "Is this something that a teacher could decide to implement in his or her classroom?" Too often, I meet teachers who believe they have no control over anything, but that is not true. Focus on your choices. When you focus on what you can control, you'll feel more productive.

The Call for Rigor

There have been calls to increase rigor for many, many years. However, in recent years, there has been a renewed emphasis. This has come from an understanding that all our students will need higher-order skills to be employable in the future; and a concern that our PISA results have not kept pace with other countries. These have shown us we need to re-evaluate what we are doing in terms of rigor.

(There is also a concern from our PISA results that Australian students are poor at applying their learning to other contexts)

Extracts from NSW Curriculum Review, NESA, 2020

*From 2000, Australia participated in the OECD's Programme for International Student Assessment (PISA) – an assessment of reading literacy, mathematical literacy and scientific literacy at 15 years of age. Rather than testing basic skills, PISA assessed students' abilities to apply their knowledge and skills in reading, mathematics and science to a range of real-world problems. In this sense, it assessed higher-order academic skills. Australian students' performances on PISA declined significantly between 2000 and 2015, both in an absolute sense and relative to average performance in all OECD countries. PISA indicated a significant longer-term and continuing decline in 15-year olds' understandings of how to **apply** basic reading, mathematical and scientific knowledge and skills in practical situations.*

English

First, let's look at three critical shifts that need to occur in the area of English (from the USA – does it also relate to us?)

Complexity: Regular practice with complex text and its academic language

- Complexity of text that students are able to read is the greatest predictor of success in college and careers (**ACT – Expand, 2006**)

	<ul style="list-style-type: none"> The current gap in complexity between secondary texts and college/career texts is currently four grade levels (Williamson, 2006)
<i>Evidence: Reading, writing, and speaking grounded in evidence from text, both literary & informational</i>	<ul style="list-style-type: none"> National assessment data and input from college faculty indicates that command of evidence is a key college and career readiness skill.
<i>Knowledge Building: knowledge through content-rich nonfiction</i>	<ul style="list-style-type: none"> Informative text makes up the vast majority of reading required in college and the workplace.

These shifts are critical for all students. A teacher, Margaret, whom I spoke with said, “My students can’t even answer the questions I ask, “How am I supposed to ask them for evidence?” Requiring students to provide evidence for opinions and responses is a necessary skill that should start at Kindergarten level. It’s simple: Just ask, “Why?”

If your students answer that Clifford is a big dog, ask them, “Why do you think he’s big?”. If they tell you that the main character in *Maniac McGee* did a particular action, ask, “Why do you think he did that?” When asking students to justify an antagonist’s actions, ask, “Why?” Of course, with older students we should use words such as “evidence” and “justification” but the heart of citing evidence is answering “Why?”. These three shifts are not only important for students with special needs, they are also achievable.

Mathematics

There are also three shifts related to mathematical thinking

<i>Focus: Focus strongly on where the curriculum focuses</i>	<ul style="list-style-type: none"> Focusing deeply on the major work of each level will allow students to secure the mathematical foundations, conceptual understanding, procedural skill and fluency, and the ability to apply the maths they’ve learned to all kinds of problems – inside and outside the maths classroom.
<i>Coherence: Designing learning around coherent progressions level to level</i>	<ul style="list-style-type: none"> Create coherent progressions in the content within and across levels, so that students can build new understanding onto previous foundations. That way, instructors can count on students having conceptual understanding of core concepts.
<i>Rigor: Pursuing conceptual understanding, procedural skill & fluency, and application all with equal intensity</i>	<ul style="list-style-type: none"> Conceptual understanding of key concepts, procedural skill and fluency, and rigorous application of mathematics in real-world contexts.

Too often in mathematics, debates centre on procedures or concepts. When answering a division of fractions problem, $1/3$ divided by $4/5$, rather than only (a) understanding that $4/5$ is larger than $1/3$ so that answer will be less than one or (b) how to robotically invert and multiply, it is important that students understand both the reasoning and procedures for dividing four-fifths into one-third. As such the student may realise that using equivalent fractions makes better sense in this problem, $5/15$ divided by $12/15 = ?$, answer $5/12$. Holding higher expectations for all students will have a profound impact on their long-term growth and development as seen through academic and behavioural performance.

Extracts from NSW Curriculum Review, NESA, 2020

Essential to school learning is the development of increasingly deep understandings of core concepts and principles in an area of learning, around which factual and procedural knowledge is organised.

Learning for understanding can be contrasted with the superficial memorisation of facts and proceduresthis can be the outcome when curricula specify large amounts of material to be learnt, focus on the performance of specific tasks or are based on checklists of outcomes or skills... Learning for understanding is further compromised when assessment processes prioritise the testing of facts and skills over assessments of thinking and understanding.

Learning based only on following specified routines, reproducing provided information and/or performing low-level tasks is particularly detrimental if it limits opportunities and quality of learning for particular groups of students. Learning with understanding must be an objective for every student if they are to be well prepared for life and work in an increasingly knowledge-based society.

Ten Myths about Rigor

While many myths are infused in our conversations about rigor, the reality is that rigor is about starting with where a student is in learning and helping them grow to new heights.

Myth 1: Lots of Homework Is a Sign of Rigor: For many people the best indicator of rigor is the amount of homework required of students. Some teachers pride themselves on the amount of homework expected of their students, and there are parents who judge teachers by homework quantity. Realistically, all homework is not equally useful. Some of it is just busywork, assigned by teachers because principals or parents expect it.

Myth 2: Rigor Means Doing More: “Doing more” often means doing more low-level activities, frequently repetitions of things already learned. Such narrow and rigid approaches to learning do not define a rigorous classroom. Rigorous and challenging learning experiences will vary with the student. Their design will vary, as will their duration. Ultimately, it is the quality of the assignment that makes a difference in terms of rigor.

Myth 3: Rigor Is Not for Struggling Students or Students With Special Needs: Sometimes, we believe our students who are struggling, whether they have special needs, are English learners or are challenged with other issues, simply cannot learn at high levels. At times, they cannot answer even basic questions, so we accept that there is a limit to what they can do. Realistically, all students are capable of rigorous work, as long as they have the right support and scaffolding. For example, Dr Brad Witzel, a colleague of mine, reminds me:

Just because a student is labeled learning disabled or at risk, it does not mean he or she is incapable of learning. Students with learning disabilities have average to above-average intelligence. Therefore, ensuring their success in school is a matter of finding the appropriate teaching strategies and motivation tools, all of which we can control as teachers.

Myth 4: When You Increase Rigor, Student Motivation Decreases: Because many students do struggle with challenging work, we assume their motivation will decrease. After all, many students already appear to be unmotivated, so what will happen when the work is harder? The truth is that when we “dumb it down” for students, we lessen motivation. They accurately interpret that easier work means we believe they cannot learn, or they become bored, or both. The result is decreased motivation. On the other hand, when we provide challenging work, reflect our belief in their success with our words and actions and provide specific support to help them succeed, they will be motivated to work at rigorous levels.

Myth 5: Providing Support Means Lessening Rigor: In America (and Australia?), we believe in rugged individualism. We are to pull ourselves up by our bootstraps and do things on our own. Working in teams or accepting help is often seen as a sign of weakness. Supporting students so that they can learn at high levels is central to the definition of rigor. As teachers design lessons moving students toward more challenging work, they must provide differentiated scaffolding to support them as they learn.

Myth 6: Resources Equal Rigor: Recently, I’ve heard a common refrain. “If we buy this program or textbook or technology then we would be rigorous.” The right resources can certainly help increase the rigor in your classroom. However, raising the level of rigor for your students is not dependent on the resources you have. Think about the resources you have now. How can you use them more effectively? Do you use a textbook that includes true-false tests? Often they are not rigorous because students can guess the answer. However, add one step for more rigor. Ask students to rewrite all false answers into true statements, and it requires students to demonstrate true understanding. It’s not the resources; it’s how you use them that makes a difference.

Myth 7: Standards Alone Take Care of Rigor: Standards alone, even if they are rigorous, do not guarantee rigor in the classroom. Most curriculum standards are designed to increase the level of rigor for students across the nation. However, they were not designed to address instruction. They provide a framework for what is to be taught and what students are expected to know. If implemented without high levels of questioning or applications, the standards themselves are weakened. Your instructional practices (how you implement standards) are just as critical as the curriculum.

Myth 8: Rigor Means You Have to Quit Doing Everything You Do Now and Start Over: Although there may be times you need to create a rigorous lesson from scratch, in most cases, you can take what you're doing and make adjustments to increase the rigor. For example, if you are teaching maths, instead of asking students to always solve problems, provide examples of problems that are already solved and ask them to identify the errors. Or, if you want students to read & summarize scientific information, ask them to generate research questions based on the text.

Myth 9: Rigor Is Just One More Thing to Do: Rigor is not another thing to add to your plate. Instead, rigor is increasing the level of expectation in all aspects of what you are already doing. For example, if you are working on differentiating instruction, think about how rigor connects. For your lower tiers, it's important to continue to provide rigorous work, although with more support. Rigor is not separate from other components of your classroom, it is a part of them.

Myth 10: Rigor is Not for Younger Students: In many ways, this is one of the most dangerous myths. What I've found is that if we don't expose children to challenging work as they begin school, it is far more of a struggle for them later. Rigor in the primary grades can simply be asking "Why" or "How do you know?" when they answer a basic question, which requires them to justify their answer and provide evidence. Those are critical life skills, as well as academic skills.

As I work with teachers across the nation, I found myself in a tug-of-war of sorts. On the one hand, can one really argue with the notion that each student should be expected to do his or her best, learn at a maximum level, and be prepared for a successful future? On the other hand, dictionary definitions of 'rigor' typically use terms like 'harsh', 'severe' and 'tyrannical'. Such terms hardly seem suitable to characterise the kinds of intellectual learning experiences we would hope young people to have in our schools. This reminds me of a comment from a five-year old: "*Rigor? Is that what mean teachers do?*"

I was at a middle school and had a conversation with a student names Gabrielle. My favourite question to ask students is, "*If you were in charge of the school, what would you change?*" Her answer was insightful. She said, "*For people who don't understand so much (they should) be in higher level classes to understand more (because) if they already don't know much, you don't want to teach them not to know much over and over.*" Isn't that reflective of how students view our levels of expectation in classes that are not labelled "higher level"?

As I began writing this book, I wanted to hear what students would say since they are the ones most directly impacted by the decision to increase rigor in the classroom. I asked, "*How do you feel about rigor, or challenging work in school?*" I received over 400 responses from students in grades 2 through 12. Their replies reflect that tug-of-war of negative and positive perceptions.

Students' Responses about Challenging Work

- ❖ *I would want to quit. I would need help – Robert*
- ❖ *I really don't mind it. I prefer to be challenged rather than bored. Tim*
- ❖ *I think it's okay. I mean, I don't prefer it, but it's not as bad as most people think. Sometimes I prefer to have a little bit of challenge. – Kyle*
- ❖ *It makes my head and hand hurt. – Hayley*
- ❖ *I don't like doing rigor but everything in life isn't easy, so I just try my best to do it. – Dominique*
- ❖ *I feel that rigorous work needs to be explained better than normal work so I understand the material – Benjamin*
- ❖ *OK, but if it's hard, I want it to be fun too. – Keith*
- ❖ *I honestly don't mind it once in a while but not every hour of the day. – Devon*
- ❖ *It makes me feel stupid. I don't ask anything and I just shake my head like I understand and say yes I get it. – Emma*
- ❖ *Sometimes I like it sometimes I don't. - Joseph*

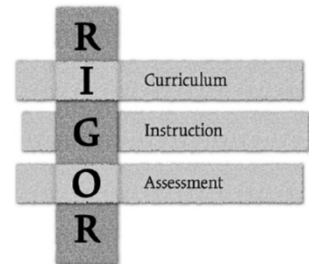
The range of their comments cemented what I believe about rigor. It is important for us to challenge our students, but we must do so in a way that ensures their success, rather than reinforcing their negative feelings.

In classrooms where all students learn, regardless of gender, ethnicity, poverty level or background, teachers do two things. First, they care about their students. The old proverb is true: Students really don't care how much you know till they know how much you care. Building a strong relationship with your students is important, but it isn't enough. You also have to care enough to connect with your students in ways that help them rise to higher levels.

That is the core of my view of rigor. Rigor is ensuring that each student you teach is provided with the opportunity to grow in ways they cannot imagine. True rigor does more with less, preferring depth over breadth. Rigor is not just for your advanced students – it's for every student you teach. This includes students who are at risk of failure and students from language backgrounds other than English. Authentic rigor is learning not punishment. It is about growth and success, not failure.

Definition of Rigor

Rigor is creating an environment in which each student is expected to learn at high levels, each student is supported so he and she can learn at high level, and each student demonstrates learning at high levels



Digging into Rigor

In ensuring rigor, we are looking at the classroom environment you create. Our tri-fold approach to rigor is not limited to the curriculum students are expected to learn. True rigor is the result of weaving together the elements of curriculum, instruction and assessment in a way that maximises the learning of each student.

Expecting every student to learn at high levels begins with the curriculum or content of your lesson. We can fall into the trap of reviewing content too much or settling for more basic content. Therefore, we need to evaluate what we teach. One of the main ways we raise our expectations in terms of content is through our curriculum outcomes. These provide an option for expectations for increased rigor.

Levels of Questioning

Understanding is similar to climbing a mountain. You have to start at the bottom, but to get the full view (the rigorous view); you have to make it to the top. You climb to the top one step at a time; the steps become increasingly more difficult as you go, but the view is worth it.

There are many models of organising higher-level questions. Here is one. In their book, "Asking Better Questions", Norah Morgan & Juliana Saxton classify questions by function. They propose three types of questions: Questions that Elicit Understanding, which draw out known information; Questions that Shape Understanding, which ask for thoughts and feelings; and Questions that Press for Reflection, which require critical and creative thought. Within each classification, there are specific types of questions. The table below shows how these link to the model we are familiar with from *Creating Cultures of Thinking*.

Classification	Types of Questions (Questions that)
Questions that Elicit Information	<ul style="list-style-type: none"> Confirm: Recall & clarifying knowledge <i>What comes next? Could you summarise? What do we know?</i>
	<ul style="list-style-type: none"> Procedural: Establishing expectations <i>Can everyone see? Did someone get a different answer? Are you ready?</i>
	<ul style="list-style-type: none"> Elicit prior experience <i>What ideas come to your mind when? What experience might lead people to act that way?</i>
	<ul style="list-style-type: none"> Generative: Exploring a Topic <i>Is there? Why do we remember?</i>
	<ul style="list-style-type: none"> Constructive: Build new understanding

Questions that Shape Understanding	<i>How could things change when.... ? What could this mean to?</i> <ul style="list-style-type: none"> • Facilitative: Promoting learner's own thinking and understanding <i>Can you put that in a way that Would understand? What makes you say that?</i>
Questions that Press for Reflection	<ul style="list-style-type: none"> • Reflective: Challenge to think critically & creatively <i>What patterns do you see here? Can you compare. To?</i> <i>What are your questions now?</i>

What Else to Teachers Need to Know about Quality Questioning?

Quality questions powerfully focus attention, boost cognition, and foster learning. Sad to say, questions like these do not often appear in a flash of inspiration mid-class. Rather, they require an initial investment of time and work – but this work pays off in dramatic, research-proven effects on student learning. Quality questions have four key features. (We will look at just the first of these)

1. **Quality Questions Connect to *Content*:** Selecting an area of content focus is a challenge in many classrooms: the scope of content standards is often very broad, and students enter class with wildly divergent levels of knowledge. How, then, to select what is most important? In fact, there is no single "right" focus, and students need all kinds of knowledge in order to successfully learn. They need to know facts *and* big ideas. They also need procedural knowledge of how to accomplish tasks, and metacognitive understanding of their own learning.

There are several tools available to help teachers select a content area of focus. One of these is the "backwards planning" model. This model is built around the idea of *enduring understandings* – knowledge that will help students throughout their educational lives. To create a quality question using this model, teachers would:

1. Decide on an enduring understanding (also sometimes called a "big idea") for the unit;
2. Make sure the enduring understanding is connected to NSW curriculum standards; and
3. Write an open-ended, thought-provoking question that ties the enduring understanding to students' interests.

Or, teachers might organize knowledge into three categories: (1) subject-area knowledge, (2) personal knowledge from students' lives, and (3) knowledge from other subjects. Questions may address one, two, or all three of these categories. An example of a question that ties together all categories, written for a middle-school unit on the environment, is:

"Sustainable development" means meeting short-term needs while also providing for the future. In Dr. Seuss's *The Lorax*, the Once-ler only makes plans for the short-term. Would you advise the Once-ler to try sustainable development? Why or why not?

Partner with Students: Connect questions to students' interests: Connecting questions to students' interests – their favourite subjects or out-of-school activities – helps them learn. Talk to students about this, and work with them to create a chart of interests for the class. Use the chart as you write quality questions, connecting the questions to students' interests. For example, you might tie mathematics to sports or to shopping, depending on the students.

(Extract from *The Main Idea: Quality Questioning*, Walsh & Sattes, Corwin, 2017)

HIGH EXPECTATIONS: *The expectation and process of achieving the answer is as important as the question*

A. **Are you seeking answers to questions?** To be an effective questioner you need:

- The patience to wait for answers to be formulated,
- The skill of listening so that you will know how to respond,

- The finesse to ‘send the ball back’ in such a way that learning is perceived by your students as a dialogue in which everyone’s thoughts, feelings and actions are important elements for collective and individual understanding

B .Do you listen actively? Teachers who listen actively are:

- genuinely interested in the reply and willing to let it change them in some way
- prepared to wait for answers
- as interested in others responses as they are in their own
- aware of the social context as well as the subject content

C. Is there quality think time?

- Everyone is comfortable with silence
- Is filled with the energy of curiosity balanced with thinking and feeling
- Interrupting silence is equal to interrupting a speaker
- Everyone knows what actions to take during think time, such as highlighting important notes, making connections, letting mind wander through thoughts, writing down ideas

(Extract from The Well Developed Classroom Blog: Effective Questions)

Differentiated Instruction

Differentiated instruction is a popular concept, and there are many interpretations of its meaning. For most teachers it means creating lessons that include different elements to meet the needs of each individual student in a diverse classroom. Sometimes, teachers assume that differentiating for rigor means assigning some students harder work and others easier work. This is not true.

According to researcher Carol Ann Tomlinson, in differentiated instruction a teacher varies the content (what), process (how), or product (demonstration of learning) of instruction to enhance student understanding. As we consider these three factors, let’s look at how they relate to my definition of rigor.

Blackburn’s Rigor Definition of Differentiation	Comparison to Tomlinson’s Model
Expectations	Content
Support	Process
Demonstration of Learning	Product
Success/ Chance of Success	Readiness
Value/ Seeing value in lesson	Interest
X Learning styles not supported by evidence	Learning styles/ learning profile

Dr Tomlinson first notes that we can adjust our instruction based on the content we teach. In other words, we teach the same standard, but use differing texts withy different groups of students. In a rigorous classroom we make that adjustment in terms of our expectations. We expect the best from each student, but recognise that some students need adjusted content to succeed. Next she suggests we differentiate the process we use to teach. From a rigor perspective, this is the amount of support provided to students. In order for students to succeed we must provide the appropriate support and scaffolding. Finally, in her model, Dr Tomlinson recommends the product, or the end result the student produces. There is alignment here. For differentiation in rigor, students may show what he know in differing ways.

We can differentiate by a student’s chance of success, which relates to readiness. If a student does not have the appropriate skill set or background knowledge, he or she is less apt to achieve, and therefore, not feel successful. In this case we need to adjust expectations in terms of the content we teach for a syllabus outcome, support, and demonstrate learning options to help ensure success.

In the rigorous framework, student interest is the value a student sees in learning. Sometimes we will address this by allowing students to choose content, instruction or assessments based on topics they value, but other times this can be evidenced by students taking standard content and applying it based on their interests.

One concern I hear from teachers is that differentiation means some students will miss some aspects of learning. In sports, there are basic warm up exercises and drills for every player on the team. Good coaches also work with each player to increase strengths and strengthen any weaknesses. During instruction, we need to do the same thing. We should teach core information to everyone, and adjust our lessons based on what we know about our students and help every individual reach his or her potential.

Finally, in a rigorous classroom, each student demonstrates learning at high levels. You might think, “If I provide challenging lessons with extra support won’t this last part happen?” I wish teaching were that easy. Nothing “just happens”. If we want students to show us they understand at a high level, we need to design assessments that provide them with the opportunity to demonstrate that they have truly mastered new content.

There are many different models for this. I prefer Webb’s Depth of Knowledge (DOK) as a benchmark for rigor. There are four levels of rigor. Level 1: Recall; Level 2: skill/concept; Level 3: Strategic Thinking; Level 4: Extended Thinking. These are illustrated in the chart below with examples from Social Studies

Level 1: Recall	Level 2: Skill/Concept	Level 3: Strategic Thinking	Level 4: Extended thinking
Requires students to recall facts, terms, concepts, trends and theories. May require students to recognise specific information contained in maps, tables, graphs, drawings	Requires students to compare or contrast people, events and concepts and give examples, classify or sort items into meaningful categories; describe, interpret or explain issues, problems & patterns, causes, effects, significance or impact, points of view	Requires students to draw conclusions, cite evidence, apply concepts to new situations, use concepts to solve problems, recognise and explain misconceptions and explain main concepts, justify arguments through application and evidence	Requires complexity of at least at the level of DOK level 3 but also an extended time to complete the task; may require students to connect and relate ideas and concepts within and among content areas; examining and explaining alternative perspectives across a variety of sources
Examples: Recall or recognise an event, map or document Describe the features of place or people Identify key features in a particular context	Examples: Describe the causes or effects of particular events Categorise events or figures into meaningful groupings Convert information from one form into another	Examples; Apply concepts in other contexts Analyse how changes have affected people or places Recognise misconceptions and explain them in another way	Examples; Given a situation/problem research, define and describe the problem and provide alternative solutions Describe, define and illustrate common historical or geographical themes & how they interrelate

THE FINAL WORD

Extracts from NSW Curriculum Review, NESR, 2020

Curiosity, discovery, wonder and passion should be motivators and features of learning for every student throughout their school years.

Students’ attitudes to school and their emotional engagement in learning are key determinants of learning success. There is no inherent reason why curiosity, discovery, wonder and passion should not be motivators and features of learning for every student throughout their school years and beyond. This is not to say that students should be free to learn whatever they wish whenever they choose, but that learning should provide opportunities for every student to learn in ways that are intellectually stimulating and that allow them to explore the meaning and relevance of what they are learning. This includes opportunities to develop deeper insights, make new connections, solve meaningful problems and create new solutions. In other words, intrinsically motivated, curiosity-driven learning should be an aspiration for the entire school curriculum.