Catalyst

# Knowledge Pack 3.0

8 Big Ideas of Catalyst

CATHOLIC EDUCATION
Archdiocese of Canberra & Goulburn

# The 8 Big Ideas
# Catalyst Knowledge Pack 3.0

Guided by the Science of Learning and research from global education experts like ED Hirsch Jr, Barack Rosenshine, Dylan Wiliam, and John Sweller, we have defined the **8 Big Ideas of Learning**.

This curated collection of articles, podcasts, and webinars have been designed to deepen your understanding of these concepts, and continue to improve education across the system.

Learn more by scanning the QR code

# The 8 Big Ideas
# Catalyst Knowledge Pack 3.0

School is where we learn biologically secondary information

Knowledge matters, it's what we think with

Learning is a change in long-term memory

High quality whole class instruction will help all students learn

Teaching is a profession that should be informed by the evidence

Reading is essential for students to acquire knowledge

The most efficient way to teach knowledge is to teach explicitly

Curriculum should be ambitious, coherent, sequential and cumulative

# School is where we learn biologically secondary information

Biologically primary knowledge is knowledge we acquire more naturally, like speaking and listening, where generally no explicit teaching is required.

Biologically secondary knowledge, however, is what needs to be explicitly taught by another more knowledgeable person. Like learning to read or write.

At school we focus on creating the conditions that best suit the learning of biologically secondary knowledge. Time is precious in schools, and part of the thinking behind Catalyst is the urgency needed to have the greatest impact for student learning, as effectively and efficiently as possible, which means we need to be focusing on explicitly teaching knowledge that will only be acquired through schooling.

# Resources

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|---|---|
| **Leading the Science of Reading with Professor Pamela Snow** | Watch<br>110min |
| **John Sweller Interview**<br>**What's the difference between the goal-free effect and minimally guided instruction?** | Read<br>110min |
| **What is it and how might we catalyse it?**<br>**With Peps McCrea** | Read<br>55min |
| **Mind the Gap Podcast**<br>**Designing Teaching & Understanding Learners with Dylan Wiliam** | Listen<br>55min |

# Learning is a change in long-term memory

At CECG we embrace the definition that learning is a change in long-term memory.  This belief has profound implications for our teaching practices.

We understand that the key elements of human cognitive architecture are:

- There is a limited working memory and it's subject to overload
- There is an unlimited long-term memory

It's also important to understand that we can only get things into our long-term memory by retrieving content previously learnt. Once you take on this understanding of learning, you will always be seeking to adopt High Impact Teaching Practice that focus attention, lower cognitive load and maximise repetition, rehearsal and retrieval.

# Resources

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| **Why Minimal Guidance During Instruction Does Not Work: An Analysis of the Failure of Constructivist, Discovery, Problem-Based, Experiential, and Inquiry-Based Teaching** | Read<br>60min |
| **Cognitive load theory: Research that teachers really need to understand** | Read<br>40min |
| **Deans for Impact: The Science of Learning** | Read<br>30min |
| **Cognitive Load Theory: Instructional Imperatives and Important Effects with Ollie Lovell** | Watch<br>55min |
| **Cognitive Load Theory: Instructional Imperatives and Important Effects with Ollie Lovell** | Watch<br>55min |
| **Science of Learning Keynote – Dr Lorraine Hammond** | Watch<br>27min |
| **Mind the Gap Podcast<br>The Jigsaw Puzzle of Learning with Sarah Cottingham** | Listen<br>50min |
| **Why don't students like school? A cognitive scientist answers questions about how the mind works and what it means for the classroom.** | Read<br>10min |

# Teaching is a profession that should be informed by the evidence

A profession is defined by its members adherence to a body of evidence and a body of practice. Professions - like medicine, like law - have standards of practice, bodies of knowledge and precedence, and practice that everyone must embrace, to be in good standing in that profession and to achieve the desired positive impact.

This is exactly how we consider our approach to teaching in Catalyst.

As teachers, we are professionals who hold ourselves to the evidence and the best available research. We should demonstrate how our teaching practice and our approach to learning, is aligned to the evidence.

Resources

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|---|---|
| **Evidence based teaching practices: Commissioned report** | Read<br>90min |
| **Evidence in Education with Jenny Donovan** | Watch<br>27min |
| **Principles of Instruction by Barak Rosenshine** | Read<br>40min |
| **Introduction to Rosenshine's Principles of Instruction<br>Tom Sherrington** | Watch<br>30min |
| **How to help children learn: the evidence is in by Ross Fox** | Read<br>30min |
| **Science of Reading: The basic science in reading instruction<br>with Daniel Willingham** | Listen<br>42min |
| **Dr. Louisa Moats - Science of Reading Presentation** | Watch<br>70min |

# The most efficient way to teach knowledge is to teach explicitly

Catalyst is about providing teachers with the theory, demonstration, practice and coaching in High Impact Teaching Practice to be able to teach explicitly. To do so is to ensure all teachers are confidently leading their instruction.

As teachers we are clear on what to teach, and how to break new content into smaller chunks for students. Our approach includes well-paced instruction, frequent questioning, students attending to instruction and a commitment to continuous checks for understanding throughout the lesson. This explicit approach ensures we will know when students have truly learnt what we have taught.

Resources

| | |
|---|---|
| **Teach explicitly** | Read 15min |
| **The Knowledge Gap with Natalie Wexler** | Watch 30min |
| **Teachers Taking up Explicit Instruction: The Impact of a Professional Development and Directive Instructional Coaching Model** | Read 90min |
| **Robust Vocabulary Instruction** | Read 45min |
| **Exploring the Foundations of Explicit Instruction** | Read 80min |
| **What Works Best in Education: The Politics of Collaborative Expertise** | Read 70min |
| **Education Research Reading Room<br>Anita Archer on Explicit Instruction** | Listen 100min |
| **Education Research Reading Room<br>John Hollingsworth on Explicit Direct Instruction** | Listen 100min |
| **Education overhaul for teachers a long time coming by Glenn Fahey** | Read 15min |
| **Explicit teaching with Brendan Lee** | Listen 32min |
| **Mind the Gap: Making Education Work Across the Globe** | Listen 53min |
| **Systematic, not “balanced”, instruction** | Read 23min |

# Knowledge matters, it’s what we think with

Knowledge is what transforms lives. At its heart, Catalyst is about teaching knowledge effectively and efficiently. Of course, sometimes there is merit in people discovering things for themselves, it just takes a long time which we don't have in schools.

It is our responsibility as educators to ensure that we're focused on imparting as much knowledge as we can, as efficiently as possible, to all students.

Resources

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|---|---|---|
| **Schooling and the Public Sphere<br>Why Knowledge Matters with E.D. Hirsch, Jr.** | Watch | 110min |
| **The Knowledge Gap: The hidden cause of America's broken education system and how to fix it.** | Read | 180min |
| **Why Knowledge Matters: Rescuing Our Children from Failed Educational Theories. Harvard Education Press** | Read | 180min |
| **What is Knowledge Rich Curriculum by Tom Sherrington** | Read | 15min |
| **The Role of Background Knowledge in Reading Comprehension: A Critical Review** | Read | 90min |

# High quality whole class instruction will help all students learn

Catalyst in the first instance focuses on whole class instruction.

There will be times when students will require additional scaffolding and support. To ensure we don’t see more students needing intervention, it is critical for us to focus on whole class instruction first and deliver High Impact Teaching Practice for all students.

With focus on High Impact Teaching Practice for all, with frequent checks for understanding, opportunities then present for teachers to more effectively respond to students requiring additional support, scaffolds or identified for more formal intervention.

# Resources

**Reversing the Matthew Effect: High-quality early reading instruction and support for all with Pamela Snow**

Watch
35min

**Science of Reading Presentation by Pamela Snow**

Watch
48min

**Mind the Gap Podcast**
**Making Education Work Across the Globe**

Listen
50min

# Reading is essential for students to acquire knowledge

Reading is an important way students learn. That is why it is one of two of our Bold Goals, ensuring '*every student is a competent reader*'.

Reading is essential to building knowledge - vocabulary, facts, ideas or stories. We know the connection reading has to spelling and writing and many other areas, as reading exposes students to vocabulary, grammar and punctuation.

We want our students to be competent readers which means they will succeed in all areas of reading, including fluency and comprehension.  We endeavour for our students to find reading easy, so that they want to do more of it and so they can use reading as a tool to continue to increase their knowledge throughout their lives.

Resources

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|---|---|
| **Hard Words Podcast - Why aren't our kids being taught to read** | Listen<br>42min |
| **Centre for Education Statistics and Evaluation** | Read |
| **SOLAR: The Science of Language and Reading** | Read<br>51min |
| **Natalie Wexler on The Knowledge Gap** | Listen<br>100min |
| **You can always look it up... Or can you?** | Read<br>30min |
| **Principles for inclusive classrooms** | Read<br>43min |
| **Review of the National School Reform Agreement** | Read<br>150min |
| **Still too many 'instructional casualties': A response to the Productivity Commission's Interim Report on the National School Reform Agreement** | Read<br>20min |
| **Reading Fluency Instruction: What It Is, Why It's Important, and How to Assess It** | Listen<br>20min |
| **Reading Fluency: Understand – Assess – Teach Professional Development Book** | Read<br>120min |

# Curriculum should be ambitious, coherent, sequential and cumulative

A key element of Catalyst is ensuring that our curriculum, resources and instructional materials are knowledge-rich, ambitious, coherent, sequential and cumulative.

That means our educational offering, learning, and teaching need to be incredibly efficient and effective. We need to be desperately efficient with the time we have with our students by cutting out any school or classroom activities that are not needed and being very purposeful in our planning and teaching of core content.

Resources

| | |
|---|---|
| **Building a Coherent Curriculum** | Read 50min |
| **High performing primary schools: What do they have in common?** | Read 70min |
| **Knowledge Rich Curriculum with Reid Smith** | Watch 30min |
| **Robust Vocabulary Instruction** | Read 45min |
| **The role of curriculum in the improvement of Australia's educational outcomes with Dr Ben Jensen** | Watch 30min |
| **Explicit Direct Instruction (EDI): The Power of the Well-Crafted, Well-Taught Lesson** | Read 120min |
| **Ben Jensen on the Importance of Curriculum** | Listen 100min |
| **Desirable difficulties in theory and practice** | Read 30min |
| **Improving Students' Learning With Effective Learning Techniques: Promising Directions From Cognitive and Educational Psychology** | Read 200min |
| **Ending the lesson lottery: How to improve curriculum planning in schools** | Read 238min |
| **Making time for great teaching: a guide for principals** | Read 54min |
| **Building Knowledge: What an Elementary Curriculum Should Do** | Read 24min |