Science of learning shift: Catholic school system overhauls teaching approach

By Sarah Duggan
Published August 2, 2022

An instruction revolution has swept through a Catholic school archdiocese spanning the ACT and NSW, with teachers and principals discarding long-held pedagogy and hooking into the science of learning.

Andrea McQuirk from St Thomas More's Primary School shares her insights via a Catalyst video.

Ross Fox, director of Catholic Education Canberra and Goulburn, has helped to drive the system-wide transformation and can pin-point the precise moment the shift towards cognitive science and direct explicit instruction really kicked into gear.

“I was listening [five years ago] to Ollie Lovall's podcast … and I listened to a few of the guests, and one of them was actually Lorraine Hammond, which is how I first heard about her approach to coaching," Fox recalls.

“I thought it was quite novel: ‘I'm really good at what I do. I'm here to help you get better, but I'm not having you discover how to be better – from my wisdom and experience, I share that'.

“I think it's a very precise, efficient coaching model.”

The wheels of change were set in motion.

Hammond’s expertise, alongside that of Jennifer Buckingham, Dylan Wiliam, E.D.

Hirsch, Natalie Wexler, Pamela Snow and Michael Roberts, to name a few, has proven to be “very influential” in shaping the thinking and design behind the diocese’s new instructional approach for K-12 teachers, Fox adds.

“We've drawn on ideas and expertise from just such a wide range of people.”

Spotting room for improvement

When Fox assumed his role five-and-a-half years ago, he says there was a pressing question lingering over the school system: were students achieving the academic outcomes that teachers hoped for? He eyed scope for improvement.

“It was very clear to me, very quickly, that we had excellent teachers who are very dedicated to the task, but weren't always well supported with clarity about what effective learning and teaching was.”

A “period of reflection” ensued, Fox explains, where the research behind best practice in pedagogy, curriculum and assessment was scoured. A series of ‘intensive’ school visits followed. There were gatherings of school leaders and numerous talks from educational experts.

A new understanding of what high quality teaching entails emerged, he says.

Now, explicit instruction and cognitive load theory forms the bedrock of teachers' approach in the classroom, he adds.

"We didn't start out saying, 'We want to be an explicit instruction system, not an inquiry learning system.' The desire was to be confident we had the best pedagogy that helps students learn the best.

"Dylan Wiliam is famous for saying the most important concept in school education is opportunity cost. And really, [students] are with us for about a million minutes in their schooling career from Kindergarten up to Year 12, and you have to use every one of those minutes as efficiently as possible.

"Not obsessively so, but if you've got a choice between learning something slowly and learning something quickly, if you learn it on the quicker side, the opportunities that open up for that student to learn more things are clearly greater…"

Ross Fox says teachers are surprised with how quickly their students are now progressing.

Driving change online

Despite there being a “lot of trepidation” from staff early on in the change process, Fox says a suite of online instructional videos and resources have proven a powerful means of bringing teachers on board. Wrapped up in professional learning program, named Catalyst, the large-scale shift has also involved rigorous coaching and feedback.

“We've gone with a very intensive coaching model and professional learning model, we recognise that we didn't necessarily know what we needed to know in terms of things like science of learning, the science of reading, Cognitive Load Theory, other aspects of high quality learning and teaching.

“We've spent a lot of time putting together these online resources. The videos are between half an hour and 40 minutes and can be unpacked as part of a staff meeting in the school … we think that's been really effective.”

Teachers have reported that their efforts in the classroom are now being rewarded, Fox says.

“Many of the teachers involved perhaps have started off sceptical, cynical, very wary – there's been all sorts of fads come and go.

“I would say now, getting into coaching and some of the pedagogical approaches – things like the use of whiteboards to check for understanding in classrooms – they’re quite significantly lifting expectations about what students can learn, how quickly they'll learn, what they will know, being explicit about that, and they're just so surprised at how the students are progressing.”

In a Catalyst video, Year 2 teacher Aimee Barry from St Thomas the Apostle Primary School outlines her most prized lesson from the process.

“My key takeaway has been the idea of failure-proof teaching, so often I would say, ‘Who can remember the rule for multiplying by four that we looked at yesterday?'

"Now I won't ask students to respond without first reviewing and following the 'my turn, our turn, pair share, your turn' structure.

"Repetition and revisiting concepts daily, weekly and monthly is now my new bible, and also a key takeaway is to never teach a lesson across any subject without an individual whiteboard,” Barry notes.

Fox says he doesn't want to claim this is the only way to do great teaching, but feedback so far has been "really encouraging".

"The feedback from the teachers is they feel like they've been putting in so much effort, sometimes for little return in terms of learning of the students, and they feel it's being rewarded through the coaching, the new practices, the approaches we're taking."

Principals too have experienced a marked shift in their thinking around inquiry learning, Fox says.

"We've had principals openly admit that after interrogating the evidence, and hearing from the expertise, wisdom and research that we've used to inform our approach in our Catalyst program, they have significantly shifted in their understanding – they had really believed at the start that an inquiry approach was the best way to learn.

"They see inquiry has got a place in teaching and learning, but it's not obvious that it's the right place to start. And that explicit instruction has a huge benefit to students, and actually has a huge benefit to teachers…

"They now admit they're in a very different place in their leadership."

Monique George demionstrates best practice in the classroom at St Thomas the Apostle Primary School.

Results at a micro and macro level

Early results at the student level have also been promising, Fox indicates.

“I’m cautious about claiming success, but there's a couple of schools I've visited recently who are well into adopting the learning and teaching approaches, and in some instances, they've got classes of the same year level, where this year the 75th percentile of performance in that class is (achieving) above the 25th percentile two years ago…

“And then at a macro level, last year our NAPLAN Year 3 reading results at a system level … were something like 50 per cent more than any other Catholic education jurisdiction.

“…we believe that’s a result of the dedication, effort and focus of our teachers, we don't think that's an aberration. Of course, I might be wrong … but certainly, there's some (positive) signs.”

Fox says the Diocese is now working with Deloitte Access Economics to do a “very sound” evaluation of the sweeping change.

“We want to be confident it's working beyond the anecdotes, because you've got to be very wary; just because people are positive about something, that doesn't mean it's effective or the right thing to do.”

Yet Fox is confident that explicit instruction is the way to go in the classroom.

“We wouldn't say we're now an ‘explicit instruction system’ at all. But we've got a strong recognition and understanding that based on the science of learning, and what it says about how brains learn, how students learn … if you want a student to know something, then you should teach it to them very clearly, and then spend time – consistent with Cognitive Load Theory – moving that knowledge into their long-term memory.

“And we know that if that occurs, they're able to be creative and critical thinkers, because they've got access to a much bigger store of knowledge.

“I'm a firm believer knowledge sticks to knowledge. So the more knowledge we can share with students, the more they become comfortable and familiar with it, the more confident they become and their learning just accelerates…”

'Concerning' stories from ITE

According to Fox, initial teacher education (ITE) has work to do in ensuring preservice teachers have a solid grounding in the science of learning.

“We've just got too many early career teachers, who when we introduce them to the science of learning and the science of reading, to what we believe are the good pedagogical approaches, they say, ‘I wish I'd heard about this at university.’"

Fox says he’s also heard concerning stories that what’s taught to speech therapists about reading instruction is sometimes different to the information that ITE students are presented with.

“It's not obvious to me why that should be the case,” Fox says.

“I've got reservations that initial teacher education might spend too much time on the philosophy or sociology of education, and not enough on the craft of teaching, and what the science of learning and reading says about how to be effective in that craft…

“We're not against philosophy, sociology or understanding political trends in education policy, but that's not the foremost need in the classroom – the foremost need is to be able to deliver effective pedagogy, to understand how children's brains work, how children learn, and to respond to that.

“All the feedback I get from staff is that too often in their university education, they haven't been exposed to the ideas we find influential in our work. It says there is some way to go…”