ARC Papers | Paper 003

The Cognitive Work of Teaching

Professional Intelligence and Real-Time Professional Processing

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Abstract

Educational research has fundamentally advanced our understanding of learning, teaching and instructional improvement. Developments in cognitive load theory, pedagogical content knowledge, teacher cognition, formative assessment, teacher noticing and professional learning have reshaped educational practice.[1][2][3][4]

Collectively, this work has strengthened the profession's understanding of how students learn and how teachers interpret and respond to evidence. The Professional Intelligence Framework complements this literature by conceptualising the continual professional processing through which educators synthesise curriculum, pedagogy, assessment, evidence and contextual knowledge into professional judgement.

This paper argues that teaching is not simply the application of professional knowledge. It is the continual interpretation, prioritisation and integration of multiple sources of information into professional judgement and professional action.

The Cognitive Work of Teaching

Educational research has fundamentally advanced our understanding of learning. Cognitive load theory has clarified the limits of working memory and the importance of instructional design, while research into teacher knowledge, formative assessment and professional inquiry has deepened our understanding of effective teaching.[1][2][4]

Collectively, these developments have reshaped curriculum, instruction, assessment and professional learning. Yet one important question remains insufficiently conceptualised.

Every lesson requires educators to process an extraordinary volume of information while continually deciding what deserves attention first.

They monitor understanding, interpret verbal responses, notice non-verbal cues, identify misconceptions, evaluate formative evidence, recall curriculum intent, adjust explanations, modify questioning, regulate lesson pace, manage behaviour, allocate attention across individuals and the whole class, monitor time, maintain lesson coherence and anticipate future learning.

All while continuing to teach.

These decisions are not sequential. They compete for attention. They interrupt one another. They frequently occur under conditions of uncertainty. Every new piece of information has the potential to change the next professional decision.

Teaching has never been the delivery of curriculum alone. It is one of the most cognitively demanding forms of professional practice undertaken in real time.

Learning, Teaching and Expertise

Research into teacher cognition has long examined teachers' planning, interactive thinking and instructional decision-making.[2] Shulman's work established that effective teaching requires the transformation of subject knowledge into forms that learners can understand.[2] Research into teacher noticing has further shown that teachers selectively attend to classroom events and interpret what they notice through professional knowledge.[3] Wiliam's work on formative assessment positions evidence as meaningful when it informs decisions about next steps in instruction, while Timperley locates professional learning within cycles of inquiry into the impact of practice on learners.[4]

These are significant contributions. They explain important dimensions of teacher knowledge, noticing, evidence use and professional learning.

The Professional Intelligence Framework complements this work by conceptualising the continual professional processing through which these dimensions interact during the act of teaching.

Professional Processing in Real Time

A teacher poses a hinge question midway through a mathematics lesson. Most students demonstrate secure understanding, but three responses reveal an emerging misconception. At the same moment, one student disengages and another asks for clarification. The planned lesson sequence no longer fully reflects the needs of the class.

The teacher must decide which evidence matters most, interpret what it signifies, determine whether to pause or continue, modify instruction and anticipate the consequences of that decision for subsequent learning. None of these judgements occurs in isolation. Each is shaped by curriculum intent, pedagogical knowledge, assessment evidence and knowledge of the learners in front of them.

Professional knowledge explains what educators know.

Professional Intelligence as Professional Processing

Paper 001 introduced Professional Intelligence as the processing capacity through which educators synthesise curriculum, pedagogy, assessment, evidence and contextual knowledge into professional judgement. Paper 002 distinguished Professional Intelligence from expertise. This paper extends that proposition.

Knowledge alone cannot explain professional judgement. Experience alone cannot explain professional judgement. Evidence alone cannot explain professional judgement. Professional judgement emerges through their continual interaction.

Rather than viewing teaching as a collection of discrete instructional techniques, the Professional Intelligence Framework represents teaching as a dynamic process of professional noticing, interpretation, prioritisation, judgement and action.

Every professional action generates new evidence. Every new piece of evidence reshapes professional judgement. Professional Intelligence is therefore not a linear process. It is a continual cycle of professional processing.

Figure 1 illustrates this continual cycle. It is not a prescribed instructional sequence. It is a conceptual representation of the interaction between noticing, interpretation, prioritisation, professional judgement and action, with each action generating new evidence for the next cycle.

Figure 1. The continual cycle of professional processing.

Professional Intelligence Is Continual, Not Sequential

Teaching is often described through identifiable instructional decisions. Classroom practice, however, is rarely experienced as a sequence of discrete choices.

Professional noticing, interpretation and judgement do not occur in isolation. They continually interact throughout the act of teaching.

Professional judgement is therefore continually provisional, evolving as new evidence emerges.

Every question asked. Every student response. Every misconception revealed. Every behavioural interaction. Every formative assessment. Every moment of uncertainty.

Professional Intelligence provides a conceptual framework for understanding this continual professional processing. It explains how educators continually integrate curriculum, pedagogy, assessment, evidence and contextual knowledge while maintaining coherence of instructional purpose.

The cycle should not be interpreted as a prescribed sequence of professional actions. Rather, it represents a conceptual model of the continual processing through which professional judgement is formed, tested and refined.

Closing Reflection

Teaching has always required sophisticated professional processing. Professional Intelligence gives the profession a language through which that capability can be understood, strengthened and intentionally developed.

Professional Intelligence is not the knowledge teachers possess. It is the continual professional processing through which professional knowledge becomes professional judgement and professional judgement becomes professional action.

Paper 004 develops the architecture that surrounds this cycle and asks the next question: how are curriculum, pedagogy, assessment, evidence and context integrated into professional judgement?

References

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