

Science of Learning Network of Schools: The science of communities of practice



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Andrew Jones is an expert in learning design and teacher professional development. He is currently completing his PhD at the University of Melbourne in the areas of learning culture and teacher beliefs, under the expert tutelage of Professor John Hattie.

He has been working in a range of school settings both as a teacher and as a school leader for more than 20 years. He led the closure and regeneration of four failing schools in the northern suburbs of Melbourne and is currently seconded to a national research project at the Australian Research Council's Science of Learning Research Centre.

He is a Research Fellow at the Melbourne Graduate School of Education, and he has a Master of Educational Leadership. He consults regularly with government, researchers and policymakers across Australia, and he has worked in New Zealand, Europe and the United States.

Andrew's research has strong application in the area of elite sport coaching development. In addition to his work with educators, he is working successfully with a number of elite sporting clubs and organisations across the country.



Frank Vetere
Point Cook Prep to Year 9 College

Frank Vetere is the Principal of Point Cook Prep to Year 9 College. Located in one of the fastest developing growth corridors in Victoria, Point Cook College has a current enrolment of 1530 students and has 125 staff. The socio-economic profile of families is high and aspirant. The school has a high proportion of students with English as a second language.

Frank is a graduate of the Principal Preparation Program through the Bastow Institute of Educational Leadership. To be an effective leader of a large and complex organisation, Frank realised the need to invest in the development of a strong and capable leadership team. This high-performing team operates through a true distributed model. Members of the leadership team are engaged in research-based school improvement practices.

Point Cook College has adopted an evidence-based professional learning cycle to support teams to measure the impact of professional learning on teacher practice and on student learning. This cycle is modelled on the work of Professor Helen Timperley.

Frank is the Chair of the Hobsons Bay network of schools, which is recognised for its outstanding growth as a community of practice. Frank is also a State Councillor for the Victorian Primary Principals Association.

Abstract

Frameworks referencing synthesised bodies of prominent research adorn education improvement policy like curiously named pieces of Ikea furniture—peculiar in their assemblage, ostensibly contemporary, and striking in their modular convenience. Amid this, most pundits still agree that we have an education advancement issue in this country. Despite significant increases in funding from successive federal and state governments, we simply haven't been able to shift the needle. What we can ascertain is that compliance-based improvement approaches don't work. They are unable to influence the cognitive maps, beliefs and understandings of the educator to the extent necessary to effectively improve outcomes for students at scale.

Paradoxically, advancements in learning research mean we know more about learning now than at any other time in human history. Neuroscience, cognitive psychology and pedagogic research offer empirical insights into better understanding, measuring and promoting human development. However, despite this increased emphasis on learning research, one must ask, 'What has been the impact of this new knowledge, really?' Schools are awash with professional development options. In an age of such proliferation of professional learning and new information for teachers, is it that our school-based practitioners are simply overfed and undernourished?

The Science of Learning Research Centre was established in 2012, funded as an Australian Research Council special research initiative, to improve learner outcomes in Australian classrooms. Five years later, the extensive transdisciplinary learning research is connecting with Australian schools in a very powerful way.

The Science of Learning Network of Schools (SoLNoS) is a research translation initiative designed to create the necessary platform for schools and researchers to work better together in the implementation, development and refinement of learning research. The best professional learning communities not only have access to quality research but are also capable of engineering and implementing adaptive structures and systems that respond to the changing external environment and demands. These schools have a strong learning culture.

The SoLNoS supports school leadership teams and syndicates of schools with critical guidance and access to the most relevant and reliable learning research available—research that is specifically related to their school improvement strategies and individual contexts. In doing so, the SoLNoS is able to assist school leaders in establishing the conditions for powerful professional learning to occur.

This is a case study of a true community of practice—one inhabited by both researchers and teachers; one that impacts both knowledge and belief; and one designed to bridge the divide between research and practice.

The Science of Learning Research Centre (SLRC)

The SLRC, established in 2012, was funded as an Australian Research Council special research initiative. Its aim was to improve learner outcomes in Australian schools. The SLRC was led by the University of Queensland and the University of Melbourne, with key stakeholders in both the Victorian and Queensland departments of education. By bringing together leading researchers from neuroscience, education and cognitive psychology, and by working together with schools, the SLRC is endeavouring to generate new findings and enhance the practice of educators.

Recent advancements in learning science research mean that we know more about learning now than at any other time in human existence. Neuroscience, cognitive psychology and pedagogic research offer

empirical insight into better understanding, measuring and promoting human development.

It is well understood that in order to impact learning, the scientifically validated learning strategies generated by the SLRC must to be connected in reliable and powerful ways with *school leaders and classroom practitioners*.

Getting the right frequency

Schools are awash in professional learning and so-called improvement stimulus. Professional bodies, publishers, consultants, research institutes, bureaucrats, policymakers, social media and collegiate networks—to name but a few—inundate schools with material that more often than not has simply no impact on the quality of learning inside the classrooms. Irrespective of truth and eminence, these propositions are unable to influence the cognitive maps, beliefs and understandings of educators to the extent necessary

to effectively improve outcomes for students at scale (Friedlander & Snyder, 1983). Furthermore, there is evidence within organisational learning research to suggest that these attempts to enrich can in fact have the opposite effect. They create a chaos and confusion as schools and teachers deviate from one piece of information towards the next, with inadequate focus and time to learn (O'Day, 2002).

This tension plays out in predictably destructive ways. In their perplexity, schools may choose to actively shut themselves off from these external influences entirely. In that case, isolation often ensues and idiosyncratic practice becomes the norm. Performance invariably slides and the centre is typically left to respond with a program of compliance and bureaucratic accountabilities that inevitably fails to promote widespread organisational adaptation (O'Day, 2002).

There does seem to be consensus that an intelligent model of improvement is required—a model capable of balancing the external accountabilities designed to influence the function of schools with the need to capitalise on the internal professional efficacy within and between schools. Highly effective school improvement programs need to be capable of encouraging growth in schools wherever they might be in their developmental journey. Commonly, schools and networks moving from 'poor to adequate' on the improvement continuum are known to subscribe to a suite of prescriptive tactics (Hopkins, Munro, & Craig, 2011). In the absence of a guiding philosophical framework that provides strategic direction, the flurry of surface-level professional development activity can manifest as adhocism. When considering the design for our community of practice, we understood that we needed to support schools to develop a coherent overarching strategy—one that connected the various components of their plan in a manner that promoted both depth and coherence.

Not to but with

For effective translation of learning research to occur at the school and practitioner level, we endorse the creation of new knowledge *with* the practitioner—and not *to* the practitioner. The role of practice-based evidence must be respected and supported. Personal and environmental factors influence behaviours in predictive and powerful ways and therefore should be acknowledged appropriately in the engagement. Capacity-building methods that take a social systems view of learning can also positively change the relationship between research and practice. A researcher–practitioner collaboration model succeeds because of its capacity to:

- empower the educator
- facilitate further research (analysis of implementation)

- contribute to the inquiry-based repertoire of the educator
- enhance the fidelity of implementation.

The Science of Learning Network of Schools (SoLNoS)

In the simplest terms, the SoLNoS in Victoria is a learning partnership. It is a pilot network made up of 13 'pioneer' schools, representing all education sectors (faith-based, independent and government) and schooling all stages and ages of learner, from early years to senior secondary. The learning communities are both geographically and socially diverse.

The network's commitment to itself is to support leadership teams with critical guidance and access to the most relevant and reliable learning research available. As one of us has been a principal and leader for almost 10 years, we are acutely aware of the challenges across our school system in both the understanding of and access to quality learning research.

Wenger's (2009) research in the domain of communities of practice provides an excellent framework in delineating four key disciplines of an effective community of practice:

- *The discipline of domain:* What is our partnership about? Why should we care? Are we likely to be useful to each other? What is our learning agenda? What specific set of issues does it entail?
- *The discipline of community:* Who should be at the table so the partnership can make progress? What effects will their participation have on the trust and dynamics of the group? How do we manage the boundaries of the community?
- *The discipline of practice:* How can the practice become the curriculum? How can it be made visible and inspectable? What should participants do together to learn and benefit from the partnership?
- *The discipline of convening:* Who will take leadership in holding a social learning space for this partnership? How can we make sure that the partnership sustains a productive inquiry? Who are the external stakeholders and what are their roles? What resources are available to support the process? (p. 12)

These disciplines proved valuable in the establishment of the guiding principles and common beliefs of the SoLNoS network.

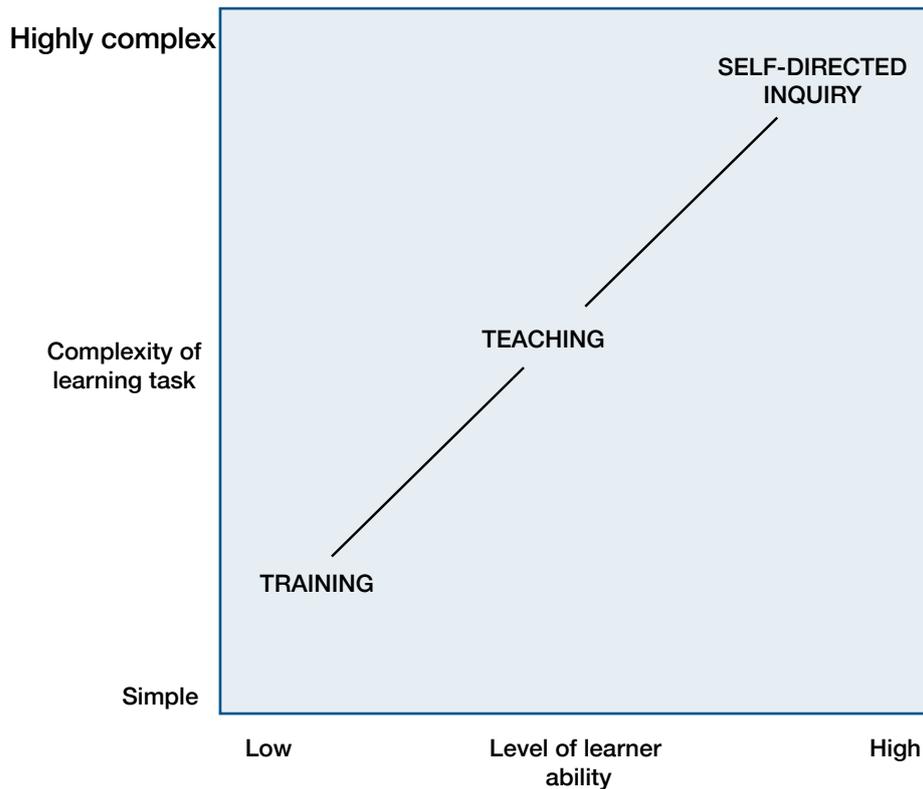


Figure 1 Model of task complexity and learner capability

Understanding how schools learn best

There were always going to be clear challenges in settling on an ideal networked learning model—one agile enough to be able to meet the diverse demands of a multiplicity of learning contexts. So what were the options? The research of Nadler (1970) and Glaser (1962) suggested that different theories of instruction are appropriate for different contexts. Few in education would dispute this. The complexity of the task and the capability of the learner are represented in a two-type taxonomy related to a corresponding model of instruction, shown in Figure 1.

First order: Training

Training or behavioural models are generally associated with specific actionable objectives. In schools, we see examples including compliance and certification modules. In this domain, learning is generally surface-level. Learners are often working with static content, by themselves, and because they have been instructed to. Consequently, the generic nature of the program renders it impotent in developing the capacity of the individual to think and act differently. In schools, learning design of this nature encourages an awareness of an organisation's first-order priorities, which are generally akin to keeping everybody alive, out of jail and off the front page of the morning papers.

Second order: Teaching

Cognitive models of instruction, such as didactic teaching, are associated with the development of a broader set of objectives than training models. This usually involves more complex tasks that require decision-making and professional judgement. Learners are also expected to draw from a set of established disciplines. Activity-based learning is a common feature of this methodology, and the learner outcomes are often predetermined and limited by the complexity of the task. Large institutions such as universities and government departments rely heavily on second-order learning strategies because they are conducive with the institutional mindset. They are also convenient; however, they are not overly effective in building more complex skills with highly competent learners.

Third order: Self-directed inquiry

Psychological models of learning are intended to facilitate greater connections between the learner and the learning. Developmental at this level is distinguished from second-order learning most notably by an increased focus on metacognitive strategies. Self-directed inquiry regularly requires a set of core learner capabilities to permit the level of independence necessary, and therefore teaching and training approaches can be deployed at times to complement third-order strategies and provide the necessary surface-level learning.

The effect of the professional development experience is strongly associated with the features of the activity rather than the format and content (Desimone, 2009). Given that teacher professional learning aims to improve student outcomes, it should be measured against its ability to impact the following aspects:

- the knowledge, beliefs and skills of an individual or group
- the practices evidently impacting student learning.

Consequently, it was necessary in the design of the SoLNoS to develop an associated evaluative framework and performance metrics.

In light of the research, when we contemplated the SoLNoS model of practice, it was essential that a school's engagement with learning science was positioned in a very specific way. Simply having the research on a website or as part of a series of attractive publications was obviously not going to be enough. The very principles that govern human learning needed to live in the experience for SoLNoS members. Relevance, autonomy, collaboration and authentic outcomes would be central to its success.

A school's experience

Point Cook Prep to Year 9 College is a large government school situated in the one of Australia's fastest developing growth corridors. Led by its principal, Frank Vetere—a co-author of this paper—and through the SoLNoS, Point Cook College has embarked on a schoolwide plan to better embed student-centred learning structures and related pedagogical practices within its curriculum and learning programs. The college aims to improve student engagement across the school so that every child is better connected and suitably challenged in their learning. Student voice, learner agency, assessment practices and student leadership are the lead research constructs.

The SoLNoS proposes to do three things:

1. support schools' understanding of the research constructs that sit behind their priority areas by helping them to move from potentially lightweight colloquial interpretations to a firmer grasp of more dependable definitions and frameworks
2. support schools to better interpret the data and evidence being used to inform their strategic

directions by encouraging deeper analysis of both validity and reliability

3. support the design and implementation of a professional learning strategy for the professional workforces in the schools.

The SoLNoS is assisting the professional workforce in schools like Point Cook College to understand, measure and promote learning more effectively.

The SLRC at the University of Melbourne is truly proud to be working with these 13 dynamic pilot school communities and early learning centres as part of the inaugural SoLNoS. In supporting our coalition of leadership teams to better connect learning research with school improvement strategy, we facilitate a powerful and authentic community of practice predicated on building capacity to build capacity.

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