

Submission to the Teacher Education Expert Panel Discussion Paper
The University of Sydney School of Education and Social Work

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Acknowledgement of Country

The University of Sydney's campuses and facilities sit on the ancestral lands of many of Australia's First Peoples, who have for thousands of generations exchanged knowledge for the benefit of all.

These include the Gadigal, Gamaraygal, Dharug, Wangal, Tharawal, Deerabbin, Darkinyung, Guringgai, Gamilaraay, Barkindji, Bundjalung, Wiradjuri, Wiljali, Ngunawal, Gureng Gureng and Gagudju Peoples.

Respectfully acknowledging the ancient learning cultures and traditions of Aboriginal and Torres Strait Islander peoples, the University of Sydney declares its commitment to the continuation of this sharing through the agency of our work.

There is no part of Australia where we work that has not been loved, nourished and cared for since the beginning of time.

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Head of School's message

Within a widespread teacher shortage, a multifaceted approach is needed to retain and retrain teachers and increase the attractiveness of teaching as a career. Reforms to strengthen Initial Teacher Education (ITE) are important to such an approach.

The University of Sydney School of Education and Social Work (SSESW) welcomes the Discussion Paper of the Teacher Education Expert Panel (the Panel) while noting that its terms of reference are limited to two recommendations of the Report of the Quality Initial Teacher Education (QITE) Review.

We share the Panel's ambition to strengthen ITE programs to deliver confident, effective, classroom ready graduates, and improve the quality of the practical experience. In responding to these ambitions, many choices need to be made. Discerning between these choices requires a clear vision for ITE.

What is the vision of ITE informing the work of the Panel?

Recently, the UN secretary general, António Guterres, stated in response to the most recent report of the Intergovernmental Panel on Climate Change:

This report is a clarion call to massively fast-track climate efforts by every country and every sector and on every timeframe. Our world needs climate action on all fronts: everything, everywhere, all at once. (Harvey, 2023, p. 22)

Teachers play a critical role in these efforts. We suggest that one vision of ITE programs is to deliver confident, effective, classroom ready graduates who can support school students and their communities to prepare, respond, and recover from the disruptive impact of more regular extreme weather events. Such a vision emphasises the need for ITE programs to provide opportunities for their students to work in complex and dynamic contexts, to deploy a repertoire of professional practices, related to pedagogy, assessment, and leading teams, and to be empathetic, compassionate, and hopeful, especially in times of crisis.

In finalising its recommendations, we encourage the Panel to clarify its vision for ITE.

Like the Panel, we are mindful of the complex regulatory and funding environment in which ITE is situated. The need for scholarly independence and accountability has been a long-running mostly healthy tension in the relationship between universities and government, both state and federal. Clear lines of responsibility are critically important to maintain the strength and contribution of universities to the Commonwealth.

Key Finding 1.2 identifies four core content types that potentially blur these lines of responsibility and weaken the scholarly independence of university-based ITE programs.

Educational research is a multi-disciplinary field. It has produced extensive knowledge about teaching practices and conditions conducive to their effective implementation. The Panel rightly concedes: It remains appropriate for individual providers to use their expertise in teacher education to design appropriate curricula for their ITE program.

We acknowledge that the four content types identified in the Discussion Paper reflect the advice provided to the Panel. It is thus limited in nature and scale. Our submission provides the Panel with additional research and commentary that we hope will assist its deliberations in finalising its recommendations.

In our submission, we provide evidence to support the claim that quality teaching is not guaranteed by adopting teaching practices that work in some settings. However, we can be more confident that it will be achieved by teachers discerningly selecting from a range of practices in response to local conditions, including their ongoing assessment of student learning.

According to Australian literacy expert Barbara Comber (2006), teachers' work is not only pedagogical but also relational, institutional, discursive, and interpretive. Strengthening ITE requires attending to all these dimensions of teachers' work to prepare confident, effective, classroom ready graduates.

Based upon the unintended effects documented in both Australia and England of reforms intended to enhance performance through targeted funding, we provide data to support our claim that this reform requires careful and cautious further consideration.

Governments, higher education providers, regulators and the broader education sector all have a role to play in improving ITE. We are committed to supporting the work of the Panel in achieving this vital outcome.

To this end, together with the University of Newcastle, and Charles Sturt University, the University of Sydney is engaged in a pilot program, funded by NSW DoE to attract mid-career entrants.

Our submission begins by setting the Panel's Discussion Paper within a broader historical context. We provide a vision for the future of ITE in Australia, including some bold reform ideas for consideration by the Panel. Before moving to our main response, we raise questions about the way the evidence base of the Discussion Paper was constructed and the reliability and trustworthiness of its findings. We then provide an evidence-based commentary on the Panel's reform areas and some of the questions it has asked.

Debra Hayes PhD
Professor of Equity and Education
Head of School

Setting the Panel's Discussion Paper within a broader historical context

During the past half-century Australian government policy, at both state and federal levels, by both Coalition and Labor governments, has underwritten a dramatic and unprecedented educational upskilling of Australia's population:

- Year 12 secondary schooling retention rates passed the 50% mark in the 1980s and it is now customary for young people in Australia to complete a full course of primary and secondary schooling.
- Increasing numbers of children experience a year or more of pre-school education.
- The proportion of young people proceeding to higher education has skyrocketed, as has the proportion of university degree holders amongst the adult population.
- Within this context we also raise concerns at the lower academic achievement rates of Aboriginal and Torres Strait Islander students, who have yet to reach equitable targets in line with their non-Indigenous peers.
- There has been increased identification of students with disability. 22.5% of all students in 2022 received adjustments due to a disability (ACARA, n.d.). Many students with disability experience poorer educational and social outcomes.
- Persistent gender gaps remain in particular fields of STEM (especially physical sciences and mathematics).

In this context the professional education of teachers has been characterised by:

- A consensus that the increasing importance and complexity of school education requires a university-educated teaching workforce, with sustained pre-service preparation as well as ongoing professional learning post-graduation.
- A field of rich scholarly and policy interest in the relationship between university coursework and professional in-school experience—amidst ongoing resourcing and staffing challenges in both schools and universities.
- Intense policy attention including more than a hundred federal and state reviews of the ITE sector since 1980.

The integration of the Initial Teacher Education Sector into universities since the 1980s has resulted in:

- The transformation of ITE providers into powerhouses of cutting-edge research and research-informed teaching across the full range of education research fields.
- A transformation in the research literacy, capacity and impact of the Initial Teacher Education academic workforce with now near universal postdoctoral qualifications and research productivity.

A vision for the future of initial teacher education in Australia

The ITE workforce constitutes an extraordinarily valuable repository of knowledge and expertise for the future of Australian education.

Above all, ITE providers in the early twenty-first century hold ambitious goals for ITE that **meet but also exceed** the minimal requirements of 'classroom ready'. Certainly, current ITE courses will equip novice teachers for their first classrooms with a repertoire of the best practices and the most up-to-date current-day knowledge. The contemporary ITE sector's aspirations go beyond this, aiming to equip beginning teachers:

- with autonomy, creativity, and an understanding of the full ecology of schools and schooling,
- to understand the complex learning, cultural and health needs of all students in changing social, economic, and environmental situations,
- to lay the foundations for lifelong educational careers that encompass all dimensions and stages of a teacher's career,
- to build the capacity for beginning teachers to grow and develop as future school leaders over decades into the future.

Achieving these aspirations will contribute to securing the right of every Australian child and adolescent, no matter their background, to engage and learn in a high-quality inclusive education (Alice Springs Mparntwe Declaration, 2019; Convention on the Rights of Persons with Disability, 2006). All elements of pre-service teacher education programs are responsible for contributing to the achievement of this outcome.

Bold reform ideas for consideration by the Panel

The Panel's Discussion Paper extends discourses of ranking, choice, and competition to the ITE sector.

We propose the following recommendations intended to generate knowledge, build knowledge collaborations, and add value to ITE in ways that are less likely to have unintended negative consequences.

1. Inclusion of 'education' as a national priority for the Australian Research Council.
2. Creation of a new national educational research funding body with a remit to support a wide range of research into key priority areas.
3. Professional experiences that focus on students with diverse needs, such as, Indigenous students, students with different ability needs, and girls/women in STEM.
4. Attention not only to students' but also to teachers' motivation and engagement as precursors to attracting, retraining, and retaining effective teachers who are able to thrive in the profession.
5. Support the sector through competitive funding schemes to work collectively on big projects, scaling up priority research and teaching projects, bringing multi-institutional, multi-disciplinary teams together to work on pressing problems.

Is the evidence base drawn upon by the Discussion Paper sound and trustworthy?

A close reading of both the Discussion Paper and a selection of the supporting evidence it employs raises questions about the way the evidence base itself was constructed and indeed its reliability and trustworthiness. In the following two sections, we identify notable omissions and significant misunderstandings/misrepresentations of the research included in the evidence base and discuss in detail the specific example of how the findings of *Studying the Effectiveness of Teacher Education* (see Mayer et al., 2015; Mayer, Dixon, et al., 2017) are reported.

Omissions, misunderstandings, and misrepresentations

The Discussion Paper aims to advance the most important and evidence-based aspects of teacher education, noting that “the research identifies four types of core content that are supported by the most rigorous and relevant evidence” (p.6). While the Discussion Paper notes that AERO was engaged to “identify the evidence-based practices which have the greatest impact on student learning that ITE students should learn and be able to demonstrate” (p.5), there is no account provided as to how these judgements about ‘greatest impact’ were made. This, coupled with some notable omissions and some significant misunderstandings/misrepresentations of the research included in the evidence base, raises questions about the way the evidence base itself was constructed and indeed its reliability and trustworthiness. Three examples follow.

First, with respect to omissions, it is surprising and concerning that there is no reference in the Discussion Paper to the decades-long program of research of Professor Jenny Gore and colleagues from the Teachers and Teaching Research Centre at the University of Newcastle in relation to the Quality Teaching model. This body of research (e.g., Gore et al., 2022; Gore et al., 2017; Gore et al., 2021; Gore & Rickards, 2021) has provided consistently strong evidence, based on randomised controlled trials and other large-scale quantitative and qualitative research methods, of the critical role that pedagogies other than explicit instruction can play in both improved student achievement and teacher development. A stronger evidence base for particular pedagogical approaches simply does not exist, and yet this research has not been included in the evidence base constructed by AERO for the ITE Expert Panel.

Second, the work of Burns and colleagues (Burns et al., 2005; Burns & Symington, 2002) is used in the Discussion Paper to substantiate the use of direct and explicit instruction, where it is argued that “meta-analyses have found that when general whole class instruction is based on the evidence-based effective practices outlined above, an average of 80 per cent of students were able to meet intended learning progress goals with the remaining 20 per cent benefiting from effective targeted and timely small group interventions, and only 6 per cent of these students needed more intensive and individualised intervention” (p. 11). A close reading of the meta-analyses cited, however, highlights that they are actually focused on the effectiveness of different approaches to pre-referral intervention for students who might otherwise be referred to special education settings (Burns & Symington, 2002) and the responsiveness to intervention (RTI) approach in diagnosing learning disabilities (Burns et al., 2005). While one of these meta-analyses did indeed highlight that approximately 20% of students were, on average, “children who were identified with learning difficulties and participated in the intervention but did not meet the individual study’s operational definition of adequate responsiveness to the intervention” (Burns et al., 2005, p. 387), and 6% were referred to a RTI team for more intensive and individualised intervention, extrapolating from these findings to broad claims about pedagogical practices is misguided. Good researchers make

knowledge claims out of their research commensurate with their findings, and in this case, not only do the researchers clearly articulate the very specific focus of the research on children with suspected learning disabilities, they are also appropriately wary of extrapolating from their findings, noting in one case that “some caution should be exercised when interpreting these data” (Burns et al., 2005, p. 390) and in the other that “the homogeneity [of the participant pool] does limit the study’s generalizability” (Burns & Symington, 2002, p. 444).

In a third example, the work of Black and Wiliam (1998a, 1998b) is used to substantiate the claims that “teaching should begin with a clear explanation of what students are expected to learn, including its purpose and relevance, and understand each objective’s success criteria before presenting any new material” (p. 13) and “when presenting new material, learning should be chunked into small, manageable tasks with well-defined goals” (p. 13). A close examination of the two seminal articles by Black and Wiliam cited in the Discussion Paper – one a 68-page peer-reviewed literature review published in the scholarly journal *Assessment in Education: Principles, Policy and Practice* (Black & Wiliam, 1998a) and the other a companion piece to the literature review published in the professional magazine *Phi Delta Kappan* (Black & Wiliam, 1998b) – highlights that these research articles provide sound evidence for neither of these claims. Black and Wiliam (1998a, 1998b) write at length of the need for students to understand assessment criteria particularly as an aid to building a critical capacity for student self-assessment, however they draw no links between formative assessment and specific pedagogical approaches when, in the words of the Discussion Paper, “presenting new material”. Indeed, Black and Wiliam’s work contrasts strongly with the assumptions embedded within the Discussion Paper that equate learning with recall and teaching with transmission. In their *Phi Delta Kappan* article, they argue that these ideas are incompatible with the fundamentals of formative assessment:

If the teacher assumes that knowledge is to be transmitted and learned, that understanding will develop later, and that clarity of exposition accompanied by rewards for patient reception are the essentials of good teaching, then formative assessment is hardly necessary. However, most teachers accept the wealth of evidence that this transmission model does not work, even when judged by its own criteria, and so are willing to make a commitment to teaching. (1998b, p. 145)

Furthermore, while Dylan Wiliam has long been an advocate of clarifying, sharing and understanding learning intentions and criteria for success (e.g., Wiliam, 2011/2018, 2018), he has also emphasised the dangers of requiring teachers to begin lessons or learning sequences with the articulation of these, arguing that this requirement is far from the “best practice” it is sometimes constituted as. He notes “of course students should know where they’re going but it’s a mistake to think that the best way to do this is always with a learning intention given at the start of a lesson”, continuing on to argue that “telling every single student where you’re going at the beginning of every single lesson is just a recipe for uninspired and uninspiring teaching” (Wiliam, 2018, n.p.). Indeed, the body of Wiliam’s work, including those joint publications with Black cited in the Discussion Paper, emphasises high quality teaching, learning and assessment as contingent processes underwritten by high quality classroom relationships and well-honed teacher professional judgement. In later work, for example, Black and Wiliam (2018) argue for the central role of pedagogies of responsiveness and engagement, encouraging teachers to move along the learning continuum posed by Alexander (2008) of rote > recitation > instruction by exposition > discussion > dialogue, emphasising that “interactive dialogue, with its essentially contingent nature, which is a strong component of formative assessment practices, does lead to more effective learning” (Black & Wiliam, 2018, p. 559).

These are but three examples from the Discussion Paper where significant, recent and highly relevant research has been omitted from the evidence base on which the Discussion Paper is based, or where research has been used to substantiate an argument for which it does not provide sound evidence. This raises significant questions about the reliability and trustworthiness of the evidence base and the quality of scholarship underpinning the Discussion Paper, and consequently the premises upon which the findings and ensuing discussion are based.

Classroom readiness: what the Mayer et al study found

The Discussion Paper, as well as many that have preceded it, rely on claims that graduate teachers and their principals report being underprepared by their initial teacher education programs. The evidence used to support these claims is not always accurately cited. For example, the findings from the 4-year longitudinal study from 2011-2015 in Australia, the Studying the Effectiveness of Teacher Education (SETE) study (see Mayer et al., 2015; Mayer, Dixon, et al., 2017), are not always accurately represented in both the Discussion Paper and the QITE review which it invokes. SETE used a longitudinal, mixed-methods, iterative research design including: mapping teacher education programs to document various characteristics and components of the programs; surveys of graduate teachers and their principals (four surveys over three years involving over 5,000 graduate teachers and 1,000 principals); and, case studies of 197 beginning teachers in 29 diverse school settings. A snapshot of the findings is reported in Mayer (2021) as below. Significantly, graduate teacher respondents felt prepared by their teacher education programs and also felt effective as beginning teachers in all nine scaled key areas of teachers' work:

- Teaching culturally, linguistically, and socio-economically diverse learners
- Design and implementation of the curriculum
- Pedagogy
- Assessment and the provision of feedback and reporting on student learning
- Classroom management
- Collegiality
- Professional engagement with parents/carers and the community
- Professional ethics
- Engagement with ongoing professional learning

However, they did feel better prepared in some of these areas including pedagogy, professional ethics, and engagement with ongoing professional learning, and less well prepared in some areas including classroom management, professional engagement with parents/carers and the community, assessment and the provision of feedback and reporting on student learning, and teaching culturally, linguistically and socio-economically diverse learners. In terms of effectiveness as beginning teachers, the respondents judged themselves as more effective in the areas of professional ethics and engagement with ongoing professional learning but less effective in teaching culturally, linguistically, and socio-economically diverse learners, the design and implementation of the curriculum, pedagogy, and assessment and the provision of feedback and reporting on student learning. However, it is important to restate that overall, the new teachers did feel prepared and effective in all areas. Claims that this study reported graduate teachers felt underprepared in some of these areas are inaccurate. Principals reported the new teachers as being more effective in all

areas than the new teachers judged themselves. Both the graduate teachers and the principals identified classroom management and catering for diverse learners as key challenges during the first year of teaching, and important foci for further professional development.

In the statistical analysis of the survey data, perceptions of preparedness were not able to be causally linked with specific characteristics or dimensions of the teacher education programs identified in the mapping, though there was evidence that those graduate teachers who completed a teacher education program of two or more years' duration (e.g., Masters of Teaching) did feel more prepared. However, the analysis showed that employment and school context had the most significant bearing on perceptions of preparedness and effectiveness. For example, those with fulltime and permanent employment as teachers were more likely to say their teacher education program prepared them well and that they felt effective as beginning teachers. Moreover, new teachers in schools where there were solid support structures and/or where there was synergy between their own educational philosophy, that of their teacher education program and that of the school, were more likely to report that they felt well prepared.

While both graduate teachers and principals suggested that the preparation provided by teacher education programs would have been strengthened if there had been more time in schools and more time on strategies for teaching and less theory, both groups articulated a view that teacher education provides necessary knowledge and skills to enter the profession as effective beginning teachers and that professional learning and growth continue during the first few years of teaching and employment. In this way, 'classroom ready' was not seen as a destination. Moreover, there was an understanding that 'the classroom' doesn't really exist as any one thing and that diverse contexts mean there are many classrooms and many school settings for which new teachers have to be prepared. The career progression of graduate teachers was also investigated including employment pathways, movements between schools and out of the profession (teachers in case study schools who moved to other schools or left teaching were followed up). Career progression decisions were influenced by multiple factors including the professional capabilities that they developed as a result of their teacher education programs, the conditions of the job market and employment opportunities, as well as particular school workplace conditions. Moreover, workplace mobility was sometimes associated with personal circumstances, employment possibilities in particular geographic locations, and available and affordable housing.

Reform Area 1: Strengthen ITE programs to deliver effective classroom graduates, classroom ready graduates

The Panel's focus on skills is a limited view of how teachers work in classrooms to improve student learning. Skills and knowledge are components necessary for effective teaching to be accurate and procedurally well-informed. However, teaching is a highly social activity constructed through the relationships in an education ecology that is situated in constantly changing lived environments, with learners who bring to the learning context their own backgrounds, motivations and goals. Therefore, suggesting that building pre-service teachers' (PST) skills and knowledge in ITE will be sufficient preparation for a person to become an effective teacher is a view that leaves out the importance of the person who is the teacher and the context in which they operate.

As noted by the Panel in the opening paragraph, international research has shown the importance of teachers in students' lives. This research shows that teachers' influence on students is strongly reliant on their capacity to show empathy, use of superior communication, flexibility in the face of varying student needs, among many other qualities. To become confident and effective teachers therefore need well scaffolded experience in challenging learning contexts in which they can make professional judgements that rely on skills and knowledge filtered through their individual perspectives as human beings.

What does classroom ready mean? There is no consistent use of this term. Noting that the *Australian Professional Standards for Teachers* (APST) have a number of career stages inbuilt, this implies teachers develop professional capacity over time. The current professional standards indicate that early career (EC) teachers are expected to: know students and how they learn, know the content and how to teach it, plan and implement effective teaching and learning, create and maintain safe and supportive learning environments, assess, provide feedback and report on student learning, engage in professional learning, and engage professionally with colleagues, parents/carers, and the community.

If classroom ready for an EC teacher means that a teacher has developed sufficient content knowledge, pedagogic content knowledge and a capacity to consider the pedagogic rationale for decisions made to match student needs, then the image of the EC graduate matches a version of the first career stage that is possible to achieve. We agree that new teachers can start with a strong foundation after completing ITE, but the concept of classroom ready needs to shift from its implied narrow scope of teaching being all about skills and knowledge. APST standard one: know students and how they learn calls for teachers to do more than just understand the brain and learning processes. It asks for teachers to relate to their students as people.

Teaching is not merely delivery of knowledge. ITE needs to mirror the learning that occurs in schools. For example, PST need to experience and try out dialogic learning themselves in ITE to understand how the strategy can engage students. They need to be in ITE programs where modelled, guided and independent practices are demonstrated and then plan assessments appropriate to student needs. They should not be taught a one size fits all view of learning. Their awareness must be shaped to be broad enough to both fulfil curriculum/syllabus requirements, teach to the learning and cultural needs of their students, as well as be able to critique their shortcomings in relation to the students they teach.

The provision of opportunities for applied practice of conceptual knowledge as it is developed cannot be underestimated. That is why ITE programs need to require students to progress through iterative cycles of learning that connect regularly with school partnerships and back again into

education contexts that enable meta-awareness. Graduates need to understand teaching is a reflective practice and time needs to be set aside in ITE for this to occur.

ITE programs that have shown strengths in designing learning experiences and assessment practices that support PST to develop as intellectual professionals – that is those capable of making well-informed contextually relevant judgements – have already been successful in demonstrating the required balance between skills/knowledge and critical reflection. For example, the principles informing the AfGT (TPA) based on the sophisticated intellectual work of teaching ensure that PST are required to engage with tasks that test their ability to plan, teach and assess their impact on students' learning through reflective critique.

We welcome the Panel's acknowledgement of the value of TPA but caution against claiming that it is a valid means of assessing teaching effectiveness. TPAs are in the early years of their implementation cycles, none have undergone reliability checking for proof of concept and only one study of their predictive validity is currently under way. More support is needed in this area to align the requirements of ITE to provide entry, exit and teaching employment data.

Evidence-based teaching practices: Are there other evidence-based practices which should be prioritised in ITE programs?

The Discussion Paper conflates evidence from cognitive science and educational psychology about the architecture and functioning human cognitive system with evidence about "the brain". The former type of research is not grounded in research from neuroscience and provides very little evidence about processes or changes in the human brain. Cognitive load, working memory, etc. are concepts used to describe the functioning of the human *cognitive system* (aka the mind). They say very little about the neural mechanisms and functioning of the biological human brain. It would not be appropriate to include such scientifically misleading content into teacher education programs. Similarly, as doctors should have a foundational understanding of concepts and theories from different disciplines that underpin their practice (anatomy, physiology, genetics, pharmacology, etc.) and know differences between them, so teachers should have a foundational understanding of concepts and theories from different disciplines (neurosciences, cognitive sciences, educational psychology, philosophy, sociology, history, pedagogy, anthropology, etc.) and know differences between them. Such understanding is essential for making informed, autonomous decisions about what evidence actually tells and how to use it in making specific, situated decisions about teaching and learning.

The Discussion Paper states that the proposed core content is informed by cognitive science. However, it is little informed by the accumulated evidence in other disciplines about learning and teaching, including the interdisciplinary field of the learning sciences that brings together theories and evidence from multiple disciplines (including education, neuroscience, cognitive science including embodied cognition perspectives, psychology, anthropology, sociology, applied linguistics, computer science, and design). Over the recent 25 years, there have been several syntheses in this field, bringing together theories and evidence on how learning happens and how to design for and facilitate learning in various real-world learning environments (Darling-Hammond, Flook, Cook-Harvey, Barron, & Osher, 2020; Fischer, Hmelo-Silver, Goldman, & Reimann, 2018; Nasir, Lee, Pea, & McKinney de Royston, 2021; National Academies of Sciences, 2018; Sawyer, 2014).

The consistent argument in recent syntheses is that: “While humans share basic brain structures and processes, as well as fundamental experiences such as relationships with family, age-related stages, and many more, each of these phenomena are shaped by an individual’s precise experiences. Learning does not happen in the same way for all people because cultural influences are influential from the beginning of life.” (National Academies of Sciences, 2018, p. 22). Further, different pedagogies and situations support different types of learning. For example, effective pedagogies for socially, emotionally and knowledge ‘lean’ learning (e.g., memorising) differ from pedagogies for socially, emotionally and knowledge ‘rich’ learning (e.g., collaborative problem-solving). These reports acknowledge that evidence from educational psychology and cognitive science is important but inadequate. Educators who create classrooms for equitable, deep and fulfilling learning need to draw on an *integrated* and flexible understanding of learning and teaching which spans 1) from individuals (neurosciences, cognitive sciences, etc.) to cultures (anthropology, history, etc.), and 2) from theory and to personal situated experiences. This integration of diverse kinds of knowledge and different ways of knowing in making professional decisions is fundamental in many professional practices, including teaching (Markauskaite & Goodyear, 2017; Reimann & Markauskaite, 2023).

Further, it is well known that much of behavioural research comes from studies conducted in controlled settings and with participants from “Western, educated, industrialized, rich, and democratic” (aka. WEIRD) backgrounds and not everything is applicable beyond this context (National Academies of Sciences, 2018). The panel’s adopted “standards of evidence” define “rigorous evidence” as evidence produced using research methods that “*isolate* the specific impact of a particular educational approach” (emphasis added). This definition explicitly privileges evidence from similar controlled research rather than from holistic pedagogical innovations and interventions where multiple causes and multiple effects are interrelated, a phenomenon that we see in complex real-world pedagogical interventions in disadvantaged contexts. While experimental evidence has value, preservice teachers should know that resituation of such “rigorous and relevant” evidence in real-world classrooms that include diverse learners and more complex learning situations should not be taken for granted; and future teachers should have foundational capabilities to understand and engage with research evidence beyond the surface level. This includes teachers’ capabilities to engage in authentic design, research and other professional knowledge co-creation practices that enable them to integrate and resituate evidence into their classrooms in informed, trustworthy and relevant ways. The emphasis on *what* evidence-based practices should be prioritised should be complemented with the emphasis on *how* evidence-based practices should be used in real world contexts.

Relevance of interdisciplinary research conducted in neuroscience

We argue that cognitive load theory and research should be a key part of ITE *alongside* research evidence from other disciplinary perspectives to form a coherent core content for ITE (Sec. 1.2). Three key areas relevant to ITE from interdisciplinary research conducted in neuroscience should be highlighted here.

First, an important advance in cognitive neuroscience is the recognition of “cultural schemas” (e.g., Kitayama & Park, 2010). That is, students come to schools with “funds of knowledge” derived from their families and communities (Llopart & Esteban-Guitart, 2018), which shapes subsequent schema development. These findings have involved interdisciplinary linking of cognitive science with sociology (e.g., Boutyline & Soter, 2021), anthropology (e.g., Choudhury, 2010), and cultural history (e.g., Fischer & O’Mara, 2022). This is the basis for culturally responsive teaching (Hammond, 2014), which should be the guiding framework for effective pedagogical practice (Sec. 1.2.2) for all

Australian students in their diversity, and for Aboriginal and Torres Strait Islander students (Sec. 1.2.4, 2).

Second, it is acknowledged in the brain sciences that high-level cognitive functions are inextricably linked to the overall physiological wellbeing experienced by students (e.g., Fogarty, 2009; Pietarinen et al., 2014). That is, we must consider the relationship between allostatic load - the cumulative stresses that students bear - and cognitive functioning (Lupien et al., 2009; Evans & Kim, 2012; Edes & Crews, 2017). Neuroscience has linked with other social sciences to determine the social factors that may contribute to the increased allostatic load borne by young people, such as trauma (e.g., D'Amico et al., 2022), disability (e.g., Hollar, 2013), socioeconomic deprivation (e.g., Black & Hoeft, 2015), and other forms social marginalisation (Conradt et al., 2020), which impact cognitive development. This has led to evidence-based approaches in education like social and emotional learning for equity and excellence (Corcoran et al., 2018; Fogarty, 2009; Goleman, 2004), which should inform approaches to classroom management (Sec. 1.2.3).

Third, there is increasing recognition that many cognitive processes relevant to learning are fundamentally *embodied* (Mavilidi et al., 2021; Shapiro & Stolz, 2019; Wakefield & Goldin-Meadow, 2021), drawing on the more fundamental claim that “all psychological processes are influenced by body morphology, sensory systems, motor systems, and emotions” (Glenberg, 2010, p. 586). Indeed, cognitive load theory has considered the potential of such perspectives for over a decade (cf. Paas & Sweller, 2012; Sepp et al., 2019), with recent research (Ginns & King, 2021; Wang et al., 2022) revisiting Maria Montessori’s insights on embodied learning that are over a century old (Montessori, 1912). Embodied cognition perspectives thus stand to enrich ITE by providing a foundation for interdisciplinary curricular design incorporating movement (cf. Lubans, Beauchamp, Diallo et al., 2018) and drama pedagogies (cf. Gibson & Ewing, 2020), resulting in richer, more memorable student learning (Sec.1.2.2).

Taken together, these examples underscore the importance of equipping beginning teachers with knowledge of the interplay of biological, psychological, and social conditions that make for optimal student learning, and ways to secure such conditions at the classroom, school, and community levels. This biopsychosocial model underpins the interdisciplinary design of the Education Studies major at the School of Education and Social Work at the University of Sydney. Such an ITE program requires a diverse team of teacher educators made up of experts in sociology, psychology, neuroscience, Aboriginal education, and special and inclusive education – all of whom should be conversant with disciplinary approaches outside of their area of expertise.

We applaud the attention to cognitive science principles established as crucial in learning since the 1960s 'cognitive revolution' in psychology (Miller, 2003). A glaring omission is the absence of any reference to motivation and engagement core to student learning and behaviour (and important to teachers’ professional practice and commitment – see section on ‘Bold Reform Ideas’). Indeed, it is troubling that those entrusted with the literature review could have missed this highly developed and established field.

From the 1990s, educational psychologists began to highlight the limitations of a ‘cold’ (i.e., overly rational) model of learning focused solely on students’ cognition without considering the ways in which their beliefs about themselves as learners, their goals and values, and influences of their classroom learning culture and own lived experiences of schooling can facilitate or hinder learning (Pintrich, Marx, & Boyle, 1993). Rich evidence and recommendations are provided by the resultant corpus of motivation research the past 40 years and more (Bong, Reeve, & Kim, 2023; Braver et al., 2014; Kruglanski, Chernikova, & Kopetz, 2015). This importance of affective factors is stressed not only by educational psychologists but contemporary neuroscientists (Tully & Niendam, 2014).

In short, if learners are motivated, they will learn better. Typically we refer to “the will and the skill” (Boekaerts & Corno, 2005; Pintrich & de Groot, 1990) requisite to learning. In our secondary education system where students progressively specialise in terms of their subject choices and difficulty levels, motivations are the main determinant of their choices (Watt, Bucich, & Dacosta, 2019). This means, that students will not even have the exposure to certain content, should they not elect to enrol in particular subjects at school (germane to concern expressed in the Discussion Paper regarding an adequate supply of STEM graduates, 2.2.1).

As teachers are instrumental in promoting students’ positive motivation and engagement, future teachers’ knowledge and skills will be foundational to their effective pedagogy once they commence teaching (1.2.2) and intertwined with their effective classroom management (1.2.3). This maps directly to competencies 1.1 Learning, development and care; 2.1 Alternative pedagogies and curriculum approaches; and 2.4 Teaching methods and strategies. Without considering students’ motivation and engagement – regardless of how thoroughly teachers may know their content and how carefully they have planned their lesson activities – if their students are not motivated, effective learning will not occur. Motivation both activates and sustains students’ learning behaviour and is critical to learning and achievement across the lifespan.

Effective pedagogical practices: Literacy and Numeracy

In the section on effective pedagogical practices in subject areas (section 1.2.1), the Panel focus specifically on Literacy and Numeracy. We welcome this explicit attention to literacy and numeracy and agree that specific attention should be given to reading and writing instruction in all subjects, and at all stages of schooling. We agree that all ITE students, primary and secondary, should be explicitly taught and understand how to teach reading and writing in all subjects, including both primary and secondary initial teacher education. The notion of disciplinary literacy is useful in this conversation (e.g., Shanahan & Shanahan, 2008). It constitutes the need for literacy and numeracy to be prioritised across disciplines to enhance graduate teachers’ and students’ capabilities to be critical consumers of a range of texts.

“Culturally responsive teaching”

Section 2 of Enabling Factors for Learning (section 1.2.4) explicitly addresses “culturally responsive teaching”. However, it is a significant weakness of the current Discussion Paper that it does not sufficiently address the skills ITE students need to develop in order to support their EAL/D students. Around Australia, approximately 25% of students come from a culturally or linguistically diverse background, and 46% of the population have at least one parent born overseas (ABS, 2022). At some schools, more than 90% of students have English as an Additional Language or Dialect (EAL/D) (ACARA, n.d.). Despite representing a significant proportion of Australian students, research has shown that subject-area teachers lack the preparedness and confidence to teach EAL/D students. Available studies from Australia (Filipi & Keary, 2018) and New Zealand (Edwards, 2014) suggest that secondary teachers do not feel prepared to teach EAL/D students, nor are they aware of second language acquisition theories or strategies. Primary teachers have also been found to hold “common “misconceptions” regarding EAL students and their language acquisition (Barnes et al, 2019, p.45). Similar findings are also emerging from other English-speaking countries (e.g., Reeves, 2006, in the US)

The Discussion Paper focus on “self-reflection”, “reflexivity”, “biases” and “assumptions” but there are no references to evidence-based pedagogies and practices or second language acquisition

theories that will support the teaching and learning of EAL/D students. Importantly, the Discussion Paper does not address, at any point, the specific language needs of students with English as an Additional Language or Dialect across the curriculum and across stages of schooling (Gibbons, 2009).

Regarding EAL/D students and culturally responsive teaching, in addition to what is already outlined in the Discussion Paper, all ITE students (regardless of subject area and stages) need to learn:

- About culturally responsive pedagogies, including foundational understanding of cultural diversity and belief systems, and how these impact on student learning.
- How to support EAL/D students reading, writing, speaking, listening, and wellbeing in all stages of schooling, and in all subject areas. This includes both Primary and Secondary students who enter their schooling as Beginning English language learners, and an in-depth understanding of how to scaffold students as they learn both through and about English.
- How EAL/D students can succeed in Australian schools, and how to support them in doing so by scaffolding students in high challenge-high support classrooms (e.g., Hammond, 2006).
- How to recognise the cultural capital that EAL/D students bring to Australian schools and society, combating the “deficit discourse” often surrounding the teaching of EAL/D students (e.g., Alford, 2014).

The priority areas of literacy, numeracy and EAL/D students must be taught by specialised subject matter experts to all ITE students, regardless of their subject area or stages.

Reform Area 2: Strengthen the link between performance and funding of ITE

We invite the Panel to engage with ITE providers more respectfully. It is an indictment on the profession and sells the profession short to assert, *'While ITE accreditation creates an enforceable set of minimum standards, it does not sufficiently incentivise providers to improve beyond this'*.

There is little evidence to support that linking outcome measures to funding has significant "sustainable" impact on the quality of the programs. Of course, as the Discussion Paper acknowledges, making explicit the indicators that are linked to funding will generate a "perverse incentive" for institutions to "play the game", consonant with Campbell's Law (1979; "The more any quantitative social indicator is used for social decision-making, the more subject it will be to corruption pressures and the more apt it will be to distort and corrupt the social processes it is intended to monitor").

It is a concern when promoting a section in the Discussion Paper on measurement, that there is little discussion of the validity of the measures including an evaluation of the consequential validity of the whole proposal. While acknowledging the "perverse incentives" associated with measuring, reporting on publicly, and funding on the outcomes, there is no evaluation of just what influence such measures might have on the overall functioning of the higher education system e.g., what might be changed for the worse because of the refocusing on those outcomes that are incentivised?

We are also concerned about how the indicators have been selected. Normally, one starts with clearly defining the outcomes that one wants to measure; identifying those indicators that would best provide evidence of the attainment of those outcomes; building measures of the indicators; then measuring performance on the indicator. What has been proposed is a set of indicators where there already exist standardised measures (although in most cases they are not really standardised) that can be used to measure the outcome. It is a case of valuing what we have measures for, rather than measuring what we value. An example is that to measure classroom readiness two proxy measures which really have little direct link to measuring classroom readiness – "Student satisfaction" with the quality of their course (evidence from Student Satisfaction question – QILT survey data) and "Graduate preparedness" for employment (Graduate Outcomes Survey: Preparedness to teach question) – and have low response rates. The most direct measure of classroom readiness is the TPA, and it is excluded on the grounds that it does not provide enough discrimination.

We strongly recommend that more thought is given to how these measures (in most cases tangentially linked to the outcomes they are measuring) might be reported. While it makes sense not to aggregate them, it is necessary to ensure they will not be misused or misinterpreted as this can significantly impact the validity of the measurement exercise. We have not been able to do this in relation to the HSC or NAPLAN where the measures are misinterpreted, misused (aggregating them to form single rank orders of merit) and undermine the integrity of the schooling process. It is not clear whether the problem of taking a profile of indicators and linearising it by linking it directly to a funding source has been considered yet. This lack of detail makes us nervous when trying to make an informed judgement about this aspect of the Discussion Paper.

The norm-referenced reporting of the results in bar charts which give no credence to the context of each University is dangerous and misleading. A question is how the results can be reported meaningfully to meet the program's requirements.

Reform Area 3: Improving the quality of practical experience in teaching

In NSW, the sector agreement with the NSW Department of Education (the Department) supports the provision of professional placements in their schools; however, there is no imperative for the Department's schools to offer such placements. The Independent Schools sector, while interested in attracting the best and brightest ITE graduates by offering scholarships to final-year students who meet high-level criteria, rarely offers placements for students at earlier stages of their ITE program claiming parental pressure as the reason.

The most significant concern however, in relation to the provision of high-quality professional placements for ITE students, is the lack of consistency in the quality of school-based learning they experience. While all ITE students value the practicum experience and many are satisfied with the mentoring they receive, they frequently comment on how little time the mentoring teacher has for anything other than lesson observations and completing the assessment report. Quality mentoring requires time to meet with the ITE students to induct them into the profession. This includes time for familiarisation with understanding the dynamics of working in a community with varied cultural and parental needs, local school routines and classroom management strategies, planning lessons to meet diverse student learning and cultural needs, and ongoing feedback on performance and progress. Furthermore, quality mentoring is not a natural extension of teaching, as is frequently assumed. It requires a specific pedagogical toolkit that mentors need time to learn and practise. Mentoring teachers need a time allowance for the invaluable work they do in supporting the learning of ITE students.

Initiatives aimed at improving practicum experiences in schools for ITE students must necessarily also acknowledge and address the industrial and workforce challenges currently being experienced in the teaching profession. Teacher shortages and teacher workload challenges both directly impact on the capacity and willingness of individual teachers and schools/systems to accept practicum placements and can have a negative impact on the quality of experiences students receive when they are accepted.

The Discussion Paper frequently reinforces a theory-practice dichotomy that we believe is artificial and counter-productive. Teachers utilise theory in their teaching practice just as university educators demonstrate a range of pedagogical practises in their teaching. Extending relationships between teachers and university academics that promote better integration of theory and practice is inhibited by the lack of provision of time for teachers to engage in this collaborative work.

There is a significant body of research that helps understand the connections between theoretical knowledge and practice and how to design tasks that strengthen those connections (e.g., Markauskaite & Goodyear, 2017; Markauskaite, Goodyear, & Sutherland, 2021)

Reform area 4: Improving postgraduate ITE for mid-career entrants

Attraction

To attract 'switchers', it is necessary to consider both the career motivations of those recruited into mid-career programs and their responses to relevant policy levers. Since mid-career entrants' career motivations are like those who choose teaching as a 'first career', it is informative to concentrate on policy levers.

The motivations for career switchers into teaching versus those who choose teaching as their initial career have been directly compared (Richardson et al., 2007), a substantial proportion of whom came from business-related careers. Similar to findings across entire cohorts of undergraduate and graduate-entry preservice teachers, their *teaching ability*-related beliefs, *personal* and *social values* and positive prior *experiences of teaching and learning* were all important motivations for choosing teaching as a career. Values included the *intrinsic value* of teaching, *social values* (including the desire to shape the future, enhance social equity, make a social contribution and work with children/adolescents), and then *personal values* (including job security, time for family and job transferability). Teaching was *not* typically considered a "fallback" career for career switchers into teaching. Nor was encouragement from others a strong factor in individuals' choice of teaching as a career. Participants reported relatively strong experiences of *social dissuasion* from teaching – more so for women. These mid-career entrants also perceived teaching as a highly *demanding* career that provided low *returns* in terms of salary and social status. The fact that these switchers into preservice teacher education rated the intrinsic value of teaching high, suggests that a teaching career may afford different rewards that are not always inherent in other occupations. Clearly, they had chosen teaching as a career *despite* perceptions of teaching as high in demand and low in return, and despite experiences of others attempting to dissuade them from their choice. Satisfaction with the choice of teaching as a career was significantly and substantially higher than satisfaction with their previous careers.

Research concerning policy levers to attract students planning to pursue a career in STEM, into teaching, was funded by the ARC and Queensland DET. From a range of potential policy levers, those most important to attract them to switch into teaching were: increased teaching salary, more relevant STEM curriculum in schools, jobs that combine teaching with other work in research or industry, guaranteed jobs, more community respect for teachers, tertiary scholarships and flexible working hours. These findings held true among secondary (Watt, 2017) and tertiary STEM students (Rice & Crebbin, 2018). It seems clear from a policy perspective, that attending to working conditions within schools is essential to attract new recruits to the profession, at the same time as considering creative work arrangements such as joint school/industry appointments.

Responding to the diversity of possible entrants and their needs

One of the problems in research into mid-career programs is that it fails to take into account the diversity of possible entrants and their needs (Bireda & Chait, 2011; Sharpe et al., 2022). This diversity is in terms of prior education backgrounds and linguistic and cultural diversity of applicants. There is strong evidence of a pool of some 7,000 overseas-trained teachers and professionals wanting to gain access to teaching but unable to do so because of a range of barriers (Cruickshank, 2021a). The difficulties of this group of teachers and professionals gaining access has resulted in the lack of diversity in the Australian teaching profession: the percentage of students born overseas and of students with language backgrounds in addition to English is double the cultural/linguistic diversity in the teaching profession (Cruickshank, 2021b).

The second 'untapped' resource is existing qualified teachers in government, non-government schools and in other work. Many of these teachers are interested in gaining approval to teach EAL and also to teach languages.

The ways to attract these untapped pools of teachers varies: for overseas-trained teachers the best ways of contacting them is through community groups and out-of-hours community language schools where some 7,000 are teaching as volunteers. The use of social and ethnic media is also key to making contacts. For the pool of teachers wanting to extend their approval to teach additional subjects or to gain primary specialist status in EAL and Languages the best way is through existing teacher subject and professional associations and the related social media.

Training

The Sydney Institute of Community Languages Education (SICLE) in SSESW was funded through agreements with the NSW Department of Education to provide pathways for overseas-trained teachers and increase teacher supply in languages, EAL and other areas. Since 2019 SICLE has been organising upgrading programs and tertiary preparation programs for overseas-trained teachers through WSU and ACU Strathfield. Some 51 teachers graduated in 2022/2023, 40% of whom were STEM graduates. Another 100 will undertake the pathways in 2023/2024.

SICLE has also been funded by NSW DOE to provide accreditation through testing of teacher language fluency and professional learning for existing teachers in EAL and languages. 25% of Sydney university Master of Teaching (secondary) applicants now gain entry because of this proficiency test. Some 200 NSW teachers have been accredited through this pathway and an estimated 200 will gain approval to teach in 2023/2024.

The key findings from our research in terms of what constitutes effective ITE for these cohorts are as follows:

- Mature-age entrants to ITE benefit by being in discrete cohort initially but integrated with other ITE students for the second part of their program;
- Teachers need to have flexible pathways through ITE. This includes academic preparation programs, support in setting career goals and recognition of qualifications, recognition of prior learning. RPL must include recognition of prior experience and specific cultural/linguistic skills. Most importantly it involves flexible delivery so that they can meet family and other work commitments.

Retention

Our evidence is that the cohorts of overseas-trained teachers/professionals have higher than average resilience and commitment to teaching. The second cohort of existing teachers also have negligible attrition rates because of their already being accredited teachers.

Responses to selected questions asked by the Panel

Reform Area 1: Strengthen ITE programs to deliver effective, classroom ready graduates

Evidence-based teaching practices: Are there other evidence-based practices which should be prioritised in ITE programs?

Rather than advocate for a ‘canon’ of evidence-based practices (which falsely implies the existence of teaching practices that are applicable across all stages, curriculum areas and contexts) we would instead argue for the need for ITE to continue to focus on providing ITE students with opportunities to experiment with a diverse repertoire of practices, and to develop their skills in relational pedagogies which have demonstrated strong outcomes for student engagement (Munns, Sawyer, & Cole, 2013).

From the perspective of mathematics education in primary school years.

We are also concerned about what has *not* been said about children’s learning. The child is more than a brain alone and learning includes a range of factors that cannot be accounted for through cognitive load theory and mastery learning. Focusing on only one evidence-based approach (driven by cognitive load theory) and excluding other effective pedagogical approaches presents some serious risks for misinterpretation, including:

- The misinterpretation of the meaning of ‘explicit instruction’ to mean a low-level transmission approach, imitative or rote learning, which presents a threat to developing deep conceptual understanding. (e.g., Hiebert, 2003).
- Inappropriately narrowing the meaning of ‘explicit mathematics instruction’ by equating it with mastery learning and ‘worked examples’, thereby excluding the variety of ways explicit teaching can be effectively embedded within other styles of lessons and lesson sequences. (e.g., Stein et al., 2008).
- Reducing the meaning of mathematics education to information retrieval (content knowledge) and excluding ways working and thinking that are necessary for extending mathematical capabilities and Numeracy, such as critical thinking, creativity and application in interdisciplinary contexts. (e.g., Geiger, Forgasz, & Goos, 2015; Rosicka, 2016).

Explicitly teaching and assessing the General Capabilities

The need for core capabilities sometimes called ‘soft skills’ is recognised in the Australian National Curriculum through the General Capabilities. Several meta-analyses have identified these skills to be critical in the development of ‘future-ready’ citizens (National Research Council, 2012). There is however evidence that teachers do not have a strong understanding of how these might be explicitly integrated into their teaching (Carter & Buchanan, 2022).

Curriculum specific content: What steps should be taken to ensure curriculum-specific ITE content embeds the evidence-based practices?

Need to ensure a range of evidenced-based perspectives is embedded into ITE English. When ITE presents one or two ideas/perspectives about teaching reading and writing, we do students a disservice because we do not present what ‘real’ schools look like. They enter schools as early career teachers, often seeing something very different from what they experienced in ITE.

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This submission was prepared by academics who work in ITE at the University of Sydney School of Education and Social Work, listed below (in alphabetical order).

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Deb Hayes, Head of School

Contributing academics

Michael Anderson PhD, Professor of Education (Arts and Creativity), Co-Director CREATE Centre

Debbie Brosseuk PhD, Lecturer, Director, ITE Primary – Postgraduate

Wayne Cotton PhD, Associate Professor

Ken Cruickshank PhD, Professor & Director Sydney Institute of Community Languages

David Evans PhD, Professor, Special and Inclusive Education

Robyn Ewing PhD, Professor Emerita, Co-Director CREATE Centre

Kellie Freebody PhD, Associate Professor

Robyn Gibson PhD, Associate Professor & Deputy Head of School

Paul Ginns PhD, Associate Professor, Education Psychology

Claire Golledge PhD, Lecturer, Coordinator HSIE Secondary

Cathy Little PhD, Senior Lecturer, Chair ITE

Jacqueline Manuel PhD, Professor, English Education

Lina Markauskaite PhD, Professor, Learning Science

Diane Mayer PhD, Professor Emerita, University of Oxford, Honorary SSESW

Nicole Mockler PhD, Professor of Education

Janica Nordstrom PhD, Senior Lecturer, Director, ITE Secondary – Postgraduate

Helen Proctor PhD, Professor, Education History and Policy

Alyson Simpson PhD, Professor English and Literacy Education

Ilektra Spandagou PhD, Associate Professor, Inclusive Education

Debra Talbot PhD, Senior Lecturer, Chair – Professional Placements & Partnerships

James Tognolini PhD, Professor, Director, Centre of Educational Measurement & Assessment

Helen Watt PhD, Professor, Educational Psychology, Director of Research Development (Social Sciences)

Jennifer Way PhD, Associate Professor, Director, ITE Primary - Undergraduate