










# How epistemic reflexivity enables teacher educators' teaching *for* diversity: Exploring a pedagogical framework for critical thinking

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## Abstract

Recent research points to the importance of teacher educators teaching *for* diversity in initial teacher education programmes. Teaching *for* diversity is an approach to teacher education in which an understanding of specialist literature and a focus on critical thinking supports a social justice agenda as opposed to merely using different tips and tricks to prepare future teachers for teaching diverse learners in the classroom. In this study, we explored how Australian and New Zealand teacher educators negotiated a social justice agenda in teacher education programmes, using a new transdisciplinary framework of epistemic reflexivity. The *Epistemic Reflexivity for Teacher Education* (ER-TED) framework draws on epistemic cognition (Clark Chinn's Aims, Ideals, Reliable epistemic processes – AIR – framework) and Margaret Archer's reflexivity to explore knowledge claims in teacher educators' pedagogical decision-making. The findings identified how teacher educators in our study discerned and deliberated with respect to epistemic aims for justification, which involve

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transformative critical thinking and critical thinking for self. They reported good knowledge (ideals) as being scholarly in nature, and reliable epistemic processes based on higher-order thinking (analysis and evaluating competing ideas) or engaging with multiple perspectives. The teacher educators in our study are clear examples of how strong overall evaluative epistemic stances enable teaching for social justice. We argue that the ER-TED framework can help us as a profession to address teaching *for* diversity in teacher education programmes based on the belief that the pursuit of social justice requires an evaluativist epistemic stance.

**KEYWORDS**

epistemic reflexivity, social justice, teacher education, teaching *for* diversity

**Key insights****What is the main issue that the paper addresses?**

Further understanding of how teacher educators prepare preservice teachers to teach diverse students is required. Teaching *for* diversity is a pedagogy of teacher education that promotes a social justice agenda. This paper investigates this approach and what is needed to promote this further in teacher education programmes.

**What are the main insights that the paper provides?**

We analysed observation and interview data from 11 case studies of Australian and New Zealand teacher educators who were identified as teaching *for* diversity. The findings showed that these teacher educators engaged in epistemic reflexivity with strong evaluative epistemic stances that enabled teaching for social justice.

**INTRODUCTION**

Decades of research have consistently shown that the ways in which teachers, schools and educational systems respond to various forms of learner diversity have an impact upon educational pathways, experiences and outcomes (Groundwater-Smith et al., 2011). This research has also shown that despite years of equity-based educational reforms, the meanings attached to gender, sexuality, dis/ability, socio-economic status, First Nations learners, religion, migration and other diversity referents continue to impact upon learners in powerful, long-lasting and wide-reaching ways (see Adams et al., 2016). This is a serious concern for teacher educators. While teacher educators are characterised by ideological diversity, many are conscious of their role in helping prepare teachers to work effectively and appropriately

with diverse learners. In this study, we explored how Australian and New Zealand teacher educators negotiated a social justice agenda in teacher education programmes, using a new transdisciplinary framework for epistemic reflexivity.

Over the last two decades, research into teacher education for diversity and equity has provided key insights to inform this study. First, the literature shows a consistently evidenced relationship between preservice and inservice teachers' beliefs about diversity and the in-class experiences of diverse learners (Khalfaoui et al., 2020). A second, related strand of literature demonstrates that teachers report a lack of confidence in their ability to respond appropriately to populations commonly described as 'diverse' (UK, National College for Teaching and Leadership, [NCTL], 2015; Australia, Rowan et al., 2017). A third body of work has helped make visible the challenges of pursuing a social justice agenda in teacher education programmes. For example, teacher educators have written at length about the lack of space dedicated to critically oriented coursework in programmes that are increasingly structured to meet government demands, accrediting authorities and neo-liberal contexts (Aronson & Anderson, 2013; Chang & McLaren, 2018). Finally, a large body of scholarship has unpacked how teacher educators support critical thinking in pedagogical spaces, with researchers drawing on critical pedagogy theories, critical race theory, feminist theory, queer theory and other anti-essentialist resources (e.g. Cochran-Smith & Villegas, 2015). Here we refer to critical thinking that 'involves reflecting on what is known and how that knowledge is justified' (Kuhn, 1999, p. 23). There is, nevertheless, more that we need to know about how teacher educators engage with these critical theories and their abilities to promote critical thinking in teacher education for social justice. To address this gap, this study explores how some teacher educators negotiated the challenge of pursuing such a social justice agenda, using epistemic reflexivity as a new transdisciplinary theoretical framework. We refer to this as teaching *for* diversity.

In what follows, we first examine different ways of conceptualising diversity education in teacher education programmes. Second, we discuss our theoretical framing of epistemic reflexivity (for a review see Barr & Askell-Williams, 2020; Lunn Brownlee et al., 2019) to make visible, and thus achievable, the decision-making and pedagogical practices that comprise teaching *for* diversity. Third, we describe the methods used to explore teacher educators' epistemic reflexivity in the context of teaching *for* diversity. Fourth, the findings explore the various elements that comprise epistemic reflexivity for teacher educators. Finally, in the discussion, we theorise that teaching *for* diversity in teacher education is an epistemic teaching skill that can be learned and enacted to promote a social justice agenda.

## Conceptualising diversity education in teacher education

In a recent systematic review of teacher education literature, Rowan et al. (2020) discussed a tripartite model to capture three qualitatively different ways in which diversity education in teacher education can be conceptualised: teaching *about* diversity, teaching *to* diversity and teaching *for* diversity.

In teacher education, teaching *about* diversity offers preservice teachers evidence about the existence, common experiences, characteristics and educational needs of identified groups of learners. Teaching *about* diversity is commonly tied to a second approach known as teaching *to* diversity. Within this framework teachers are also provided with information about the existence of a group, and the link between group membership and educational or social risk, and then given specific strategies for teaching these learners. Teaching *to* diversity can reflect the belief that diverse learners are fundamentally knowable. Thus, their education can be improved if we have access to such things as the tips and tricks for working with boys or girls, or First Nation peoples or migrant communities. While teaching *to* and

teaching *about* diversity can be helpful in supporting student diversity, if taken in isolation they can fail to address (and sometimes reproduce) the underlying causes of educational inequity.

Teaching *for* diversity, in contrast, focuses on challenging the beliefs and attitudes that produce inequities in the first place. It therefore requires an understanding of specialist literature that draws upon feminism, post-colonial theory, disability studies, critical race theory, queer theory and related anti-essentialist resources to interrogate the operation of power, to question binaries and essentialist perspectives, and to recognise the ways in which differences intersect and combine to create hierarchies of risk and advantage. The ability to articulate, defend, justify and advance strategies that are linked to this specialist literature requires critical thinking which we argue relates to epistemic reflexivity.

The tripartite model of teaching *about/to/for* diversity describes a range of ways in which teacher educators support preservice teachers to work with diverse groups of children. However, more needs to be known about how teacher educators engage in decision-making with respect to knowledge claims about teaching diverse learners, in particular teaching *for* diversity (Ryan et al., 2020).

## Epistemic reflexivity in teacher education

This study draws on epistemic cognition and reflexivity (epistemic reflexivity) to explore knowledge claims that support teacher educators' pedagogical decision-making (Ryan et al., 2020, p. 2) with respect to teaching *for* diversity. Epistemic reflexivity represents a confluence of two distinct theoretical and research traditions – epistemic cognition (educational psychology) and Margaret Archer's reflexivity (sociology). We explain in detail how we have brought these theories together in our project and their application for teaching diversity in Ryan et al. (2020).

Following Chinn et al.'s (2011, 2014) *AIR* (Aims, Ideals, Reliable) framework, the term *epistemic cognition* acknowledges the role of knowledge and knowing in teaching and learning. By explicitly considering epistemic Aims, Ideals and Reliable epistemic processes, teacher educators can amplify their, and their preservice teachers', capacities to teach diverse groups of children by paying attention to knowledge claims. First, 'epistemic Aims are goals to achieve epistemic ends' such as 'knowledge, understanding, explanation, justification, true belief, the avoidance of false belief, useful scientific models, and wisdom' (Chinn et al., 2014, p. 428). Next, *Ideals* help us to understand what constitutes good knowledge or explanations. For example, good knowledge in learning to teach diverse groups of children might include knowledge that is accurate and informed. Finally, *Reliable* epistemic processes are thinking processes needed to achieve epistemic aims. For example, argumentation might be considered to be a reliable epistemic process for achieving the epistemic aim of true, justified beliefs (Chinn et al., 2014) and we think it can also be reliable for achieving the epistemic end of justification (Ryan et al., 2020).

We argue that epistemic cognition can be enhanced through epistemic reflexivity as teacher educators engage in decision-making about teaching *for* diversity. We draw on Margaret Archer's (2012) critical realist theory of reflexivity to interrogate the ways in which we make decisions and the contextual conditions that influence how we decide to act. This theory provides a generative bridge between reflexivity and epistemic cognition as it includes individual thought processes within a broader sociological frame of critical deliberation and action in emergent conditions. For Archer, decision-making and ensuing action involve internal conversations: sorting through our concerns, prioritising, mulling over, considering options and implications, and then choosing how to act. She explains three recurring phases: discernment, deliberation and dedication. Once concerns are discerned

(identified), deliberation involves internal conversations that evaluate competing personal and contextual (structural and cultural) emergent properties to arrive at a certain course of action. Personal concerns include individual aims, beliefs, approaches, motivations; structural concerns include daily practices, resources, policies and processes; and cultural concerns include ideologies, norms and expectations within a context. This decision-making in context then leads to dedication in which some kind of action is taken (Archer, 2012) (see Lunn Brownlee et al., 2017; Ryan et al., 2020 for detailed application to teacher education) as outlined in Figure 1.

Initially in Figure 1, *discernment* addresses how teacher educators epistemically define and understand a pedagogical problem about supporting preservice teachers to teach *about/to/for* diversity. By considering their key concerns, teacher educators discern a range of epistemic aims (e.g. critical evaluation of evidence related to diversity), ideals (criteria for what constitutes good knowledge or a good explanation) and reliable epistemic processes (e.g. what thinking processes can preservice teachers engage in to reliably achieve these



**FIGURE 1** Lunn Brownlee, Jo; Ryan, Mary; Rowan, Leonie; Bourke, Terri; Walker, Sue; L'Estrange, Lyra; Churchward, Peter; Johansson, Eva; Berge, Anita; (2021): Epistemic Reflexivity - Teacher Education about/to/for Diversity (ER-TED) framework (adapted from Archer, 2012; Chinn et al., 2011, 2014; Lunn Brownlee et al., 2017). Queensland University of Technology. (Theoretical framework) [https://doi.org/10.25912/RDF\\_1624502132194](https://doi.org/10.25912/RDF_1624502132194)

aims with respect to teaching about/to/for diversity). Next, in Figure 2, *deliberation* involves weighing up how aspects of their epistemic cognition can be enacted in their current context. To deliberate on potential actions, teacher educators may use internal and collegial dialogue to align epistemic aims, ideals and reliable processes with teaching processes (Archer, 2012; Lunn Brownlee et al., 2017). For example, teacher educators may deliberate about encouraging their preservice teachers to challenge what they hear and read in class to achieve an epistemic aim of justification. A critical component of deliberation involves the evaluation and adaptation of contextual conditions. Finally, in Figure 1, *Dedication* involves enacting pedagogical decisions. Using our example of justification and reasoning, encouraging critical dialogue in workshops could stimulate debate about alternative theories and perspectives which may disrupt prevailing deficit views.

Epistemic reflexivity (see Ryan et al., 2020) provides a theoretical lens to support teacher educators' epistemic cognition about diversity and critical actions in teaching *about/to/for* diversity in teacher education programmes and presses us to interrogate our own practices with preservice teachers.

## THE STUDY

The focus of this paper is to explore teaching *for* diversity through the theoretical lens of epistemic reflexivity. In doing so, we theorise a new pedagogy of teaching *for* diversity in teacher education programmes.

### Participants

As part of an Australian Research Council Project, we conducted a survey of Australian and New Zealand teacher educators' pedagogical decision-making in relation to teaching diverse learners. Using a combination of professional networks and survey responses, we then invited participation in stimulated recall interviews in which teacher educators reflected on observations of their teaching practices (Dunkin et al., 1998). In total, 27 teacher educators agreed to participate. This paper reports the findings from stimulated recall interviews with 11 teacher educators who were identified as using pedagogies focused on teaching *for* diversity. In this study, we refer to these participants as teachers for diversity (T4Ds). The majority were female ( $n = 7$ ). The 11 participants represented eight universities. Ten participants were Australian: six participants were located in Queensland, three worked in New South Wales universities and one in Victoria. One participant was based in New Zealand. PhDs were the highest qualification for the majority ( $n = 9$ ). Seven teacher educators had a strong curriculum focus to their teaching, two considered themselves as teaching both curriculum and sociology subjects, and two focused specifically on sociology. Most of the teacher educators taught across primary and secondary education ( $n = 8$ ) and reported an average of 11 years of teaching experience as teacher educators.

### Methods

Members of the research team observed participants' teaching sessions, either face-to-face or online. The observations focused on teaching strategies observed, such as: engaging preservice teachers in debate; requiring preservice teachers to solve problems; modelling theoretical vocabulary; using critical pedagogies; and encouraging the informal sharing of stories from professional experience placements. Following the observation



of teaching sessions, participants were individually interviewed (stimulated recall interviews) by the team member who had observed the teaching session. Observation notes were used to personalise and contextualise the interviews. The stimulated recall interviews focused on how teacher educators discerned, deliberated and dedicated (DDD) on epistemic aims, ideals and reliable epistemic processes for preservice teachers' learning about teaching diverse groups of children. The interviews also explored teacher educators' DDDs with respect to espoused and enacted (observations) teaching strategies for supporting preservice teachers' learning to teach diverse groups of children. See the Appendix in the Supplementary Material for details of the interview protocol. Interviews were transcribed verbatim and then uploaded to NVivo, along with observation field notes.

## Analysis

The original 27 interviews were coded inductively by two separate groups of researchers from the research team using NVivo to organise the coding. These teams inductively coded whole transcripts for teaching *about/to/for* diversity (Rowan et al., 2020) and epistemic cognition (aims, ideal, reliable epistemic processes [REPs] and teaching strategies) respectively. A third group of researchers deductively coded the 27 transcripts by applying Archer's phases of reflexivity (discernment, deliberation, and dedication) to the interview data. The observation field notes were coded using the epistemic cognition codes in the interview analysis so that we could check for alignment across interview and observation data. Simply coding for the three separate constructs of epistemic reflexivity (namely teaching *about/to/for*, epistemic cognition and DDDs) could not give us a complete picture of how teacher educators engaged in epistemic reflexivity. It was important to explore how these codes coalesced within each of the interviews identified as teaching *for* diversity ( $n = 11$ ). To do this, we used NVivo's matrix function to cross-map the coding of the three constructs. The matrices enabled us to engage in in-depth analysis of how these constructs coalesced for each teacher educator as they engaged in teaching *for* diversity. Mapping the constructs in this way illuminated how these 11 teacher educators discerned, deliberated and/or dedicated on epistemic aims, ideals, reliable epistemic processes and teaching strategies as they engaged in teaching *for* diversity.

There were three ways in which we ensured credibility of our coding, which was dialogic in nature. First, the initial coding took place in researcher teams who each had expertise in the construct being explored. This meant that code checking was occurring because teams analysed data together. The second round of code checking took place during the analysis of the matrices. Each matrix was scrutinised by three researchers with expertise across the three constructs. Finally, after matrix coding was completed, a 50% sample of these data was checked by another researcher who had expertise in both reflexivity and epistemic cognition. This researcher was able to identify the codes clearly in all the data that were checked and was in agreement with the codes allocated.

## FINDINGS

The findings provide an analysis of how 11 T4Ds engaged in epistemic reflexivity as described in Figure 1, the ER-TED (*Epistemic Reflexivity for Teacher Education*) framework. We have organised the presentation of the findings according to epistemic aims, epistemic ideals, reliable epistemic processes and teaching strategies *for* diversity. When T4Ds only *discerned* an epistemic aim, ideal, reliable epistemic process or teaching strategy, they identified the significance of that element but did not go on to engage in dialogue about it. However, we noted that the majority of T4Ds who engaged in *deliberation* across these

aspects of epistemic reflexivity also evidenced *discernment* in these internal dialogues. *Dedication* or action was evident in the teaching strategies observed and was reflected on during the stimulated recall interviews. What follows is a snapshot of teacher educators' practice and as such there is no expectation that all participants demonstrated each element of teaching *for diversity*.

## Epistemic aims

The T4Ds were asked about their epistemic aims for preservice teachers teaching diverse groups of children. Analysis showed that these academics discerned and deliberated on four epistemic aims that were classified into two broad groups, namely justification – transformative critical thinking/critical thinking for self and understanding/acquiring deep knowledge. Chinn et al. (2011, 2014) described epistemic aims as intentions for knowledge and knowing, for example, intent to acquire accurate learning content, to develop deep understandings or to evaluate and adjudicate (justify) on different perspectives. The epistemic aims for preservice teachers are summarised in Table 1.

### Justification – transformative critical thinking and critical thinking for self

Transformative critical thinking for preservice teachers involved an epistemic aim of justification (weighing up a range of perspectives to promote transformation with respect to equity/social justice). Critical thinking for self also reflected the epistemic aim of justification, however the focus was on their own personal thinking rather than social justice. Critical thinking is underpinned by evaluative epistemic cognition (Kuhn, 1999), in which knowledge is viewed as uncertain and needing 'to be justified as there could be alternative explanations' (Weinstock, 2016, p. 220). In this study, all T4Ds both discerned and/or deliberated on epistemic aims that were focused on justification which were evaluative in nature (see Table 1). Justification through transformative critical thinking was evident in the following quote:

T4D02: Obviously, to inform themselves, to think, to learn themselves. I mean, they have to undertake a journey themselves, don't they? Developing that self-awareness. In our indigenous unit culture studies on indigeneity, it's learning to de-centre themselves and to see themselves – oftentimes, many of them are white – that whole notion of whiteness. And for them to sort of reflect critically on their own position is important. I think it's only when they can start to sort of de-normalize themselves in that sense that they can start to move forward. But I think there are some normative goals too. I mean, I think social justice and equity and so forth should ... be practised.

TABLE 1 The epistemic aims of teachers for diversity (T4Ds) for preservice teachers

Epistemic aims	Discern	Deliberate
Justification – transformative critical thinking	T4D02, T4D05, T4D10, T4D12, T4D15, T4D19, T4D22	T4D03, T4D06, T4D07, T4D12, T4D15, T4D16, T4D19, T4D22
Justification – critical thinking for self	T4D02, T4D10, T4D15, T4D19, T4D22	T4D02, T4D05, T4D06, T4D10, T4D12, T4D15, T4D16
Understanding	T4D03, T4D07, T4D12, T4D15, T4D22	T4D02, T4D03, T4D05, T4D07, T4D10, T4D15, T4D16
Acquire knowledge	T4D03, T4D15	T4D02, T4D03, T4D16, T4D22



In this quote, an important foundation for critical thinking for social justice is evident. Such decentring, reflecting critically and de-normalising is suggestive of the epistemic aim of justification and evaluation which is central to teaching *for* diversity. These epistemic aims highlight interrogating and reimagining diversity for social justice.

Another epistemic aim related to justification involved *critical thinking for self* where students 'actually think and consider, use evidence to make a decision ... justifying your decisions as a professional' (T4D06). Here the focus on thinking, informed decision-making and justification shows that the epistemic intent is to evaluate and justify knowledge. However, unlike justification related to transformative critical thinking, the focus is on oneself rather than broader societal change with respect to social justice.

## Understanding and acquiring knowledge

Understanding and acquiring knowledge were also epistemic aims discerned/and or deliberated on by many T4Ds for preservice teachers learning to teach diverse groups of children ( $n = 9$ , see Table 1). First, understanding as an epistemic aim includes aspects of meaning-making which involve 'the process of how individuals make sense of knowledge, experience, relationships, and the self' (Ignelzi, 2000, p. 5). Such meaning-making reflects Kvanvig's (2003) notion of understanding as an epistemic aim requiring 'internal grasping or appreciation of how the various elements in a body of information are related to each other' (pp. 192–193). Making connections between information is exemplified by T4D07, who reports on students dealing with conflict. She argues that they 'examine what sits under, what causes conflict ... and identify the issues. Talk about the theory that underpins solutions or how it's happened'. Here T4D07 intends for preservice teachers to make connections between theories of effective communication, reasons for conflicts and deciding on how to deal with conflict in the classroom when teaching diverse learners.

The related aim of acquiring knowledge was discerned and/or deliberated upon by T4D02, T4D03, T4D15, T4D16 and T4D22 (Table 1). In many cases, knowledge was viewed as foundational for either understanding or critical thinking. That is, it is inferred that essential knowledge is needed to engage in meaning-making (T4D02, T4D03, T4D15 and T4D16). For example, T4D03 described acquiring knowledge of language as foundational for critical thinking. T4D16 commented on the aim of acquiring knowledge as a precursor to understanding – 'sometimes we give them deep knowledge, but we don't give them opportunity to demonstrate deep understanding'. Taken together, these responses show how acquiring knowledge and understanding often constituted epistemic aims for meaning-making but there was no focus on weighing up or interrogating diverse perspectives, as was the case for evaluative epistemic aims.

## Ideals

Epistemic ideals are the criteria used to judge if knowledge is 'good' (Chinn et al., 2011, 2014). For example, with respect to teaching diverse groups of children, such criteria might include good knowledge as considered and accurate, as making links between different ideas or as justified and adjudicated upon through the evaluation of different perspectives (Ryan et al., 2020). The T4Ds discerned and/or deliberated on four epistemic ideals: knowledge as scholarly, a combination of theory/practice or personal/practice; knowledge as flexible; and knowledge as content oriented (see Table 2).

**TABLE 2** T4Ds' epistemic ideals for preservice teachers

Epistemic ideals	Discern	Deliberate
Scholarly	T4D10	T4D02, T4D10, T4D16
Combination (theory/practice; personal/practice)	T4D06	T4D02, T4D03, T4D06, T4D12, T4D16
Flexible, responsive, perspectival	—	T4D07, T4D19, T4D22
Content-oriented	—	T4D05, T4D10, T4D15, T4D16

Three T4Ds discerned and/or deliberated on the criteria of 'good knowledge' as being scholarly in nature. For example, T4D02 suggested 'it's always raising themselves up to a more scholarly sort of level to see things ... not to personalize things so much'. While only three T4Ds discerned and/or deliberated on knowledge as scholarly or theoretical in nature, in the next category, *combination*, we see further evidence that good knowledge is both scholarly (theory/practice) and personal/practical.

Good knowledge as a combination of theory/practice or personal/practice was discerned and/or deliberated on by five T4Ds. For example, T4D06 clearly identifies the role of theory and practice experiences as criteria for determining good knowledge when it comes to teaching diverse learners. She argued that 'there's the practical engagement that we have with colleagues and contexts. But there's also the research and evidence and theory that surround it'. One other T4D (T4D16) talked about a combination of practical and personal knowledge, not theory as the others had discerned and deliberated on.

Three T4Ds deliberated on epistemic ideals that described knowledge as flexible. T4D07 exemplified having flexible content knowledge with respect to how 'you can go in with a wide range of possibilities, but each child presents as a brand-new case study. So, there's this ... weird space with diversity where you can have preconceived ideas, but each one is a unique situation'. Here good knowledge is posited as encompassing a 'wide range of possibilities' and being 'responsive', meaning that preservice teachers need to be able to adapt their knowledge rather than relying on stereotypes. This suggests that flexibility is an epistemic ideal for knowledge about teaching diverse groups of children.

Finally, four T4Ds deliberated on good knowledge in terms of what they believed comprised appropriate content to know. This content related to knowledge of either the subject or the students. T4D16 focused on both knowledge of content – 'have a clue what you're talking about' – and students' 'awareness of the multitude of diversity within our classrooms'; however, it does not seem to be epistemic in nature because there is no focus on what constitutes 'good knowledge' (also no reference to intersectionality), only an acknowledgement of the content to be explored.

## Reliable epistemic processes

The T4Ds were asked what thinking processes preservice teachers might need to engage in to achieve the epistemic aims described earlier. Drawing on Chinn et al.'s AIR framework (2011, 2014), we refer to these as REPs for achieving epistemic aims. For example, the REP of engaging in argumentation might support an epistemic aim related to justification (Ryan et al., 2020). There were three main REPs that emerged in our findings, namely higher-order thinking (analysis and evaluation of competing ideas), engaging with multiple perspectives and reflection (see Table 3 for a summary).

## Higher-order thinking: analysis and evaluation of competing ideas

More than half of the T4Ds discerned and/or deliberated on higher-order thinking as analysis (T4D02, T4D16, T4D22, discern; T4D02, T4D03, T4D05, T4D15, deliberate) as REPs for preservice teachers achieving epistemic aims. For example, T4D02 indicated that 'We'd like them to be able to thrive and explain the terms and concepts ... [and] We'd like to take it further and we'd like them to be able to analyse what they're encountering, to synthesise that with their own experiences'.

Another higher-order REP involved the process of evaluation which was discerned and/or deliberated by three T4Ds (T4D22 discern; T4D02, T4D12 deliberate); a particular higher-order skill that clearly reflects evaluative epistemic aims. For example, T4D12 explained that preservice teachers 'have to use ... theory to critique their own decisions about why they do what they do in their lessons ... that level of critique or deconstructing the ideas down to a sort of real-world kind of experience or understanding'. This REP involves preservice teachers evaluating and justifying their positions as they critique or deconstruct ideas. It is noteworthy that only three teacher educators identified evaluation as a REP, given that all T4Ds held evaluative epistemic aims.

## Engaging with multiple perspectives

Another REP discerned and/or deliberated by almost half of the T4Ds (see Table 3) related to the thinking processes of preservice teachers engaging with multiple perspectives. T4D07 wanted preservice teachers 'to be identifying and able to stop, reflect, think critically, and value the information that that person might be trying to send them. Or at least search through a range of options that might explain that behaviour rather than an assumption from your own worldview'. Some T4Ds' responses implied a focus on multiple perspectives through the notion of preservice teachers being flexible in their thinking, such as T4D15 noting 'it's about trying to loosen up their predictions and giving flexibility of thought to these guys going into classrooms'. There was sometimes a suggestion in the quotes related to multiple perspectives that REPs involved the evaluation of many ideas, although it was not explicitly stated. Taken together the REPs related to higher-order thinking processes (analysis and evaluation) and multiple perspectives suggested processes that enabled preservice teachers to think differently about teaching diverse groups of children. Given these data represent a snapshot in time, it is possible that not all REPs have been reflected on or articulated in depth. We think that REPs identified by many T4Ds as higher-order thinking and engaging with multiple perspectives are reliable processes needed for critical work in teaching for diversity.

TABLE 3 T4Ds' reliable epistemic processes for preservice teachers

Reliable epistemic processes	Discern	Deliberate
Higher-order thinking (analysis and evaluation of competing ideas)	T4D02, T4D16, T4D22	T4D02, T4D03, T4D05, T4D12, T4D15
Engaging with multiple perspectives	T4D10,19	T4D07,10, T4D15, T4D22
Reflection	T4D10, T4D22	T4D03, T4D05, T4D06, T4D07, T4D10, T4D22

## Reflection

Six T4Ds discerned/deliberated on REPs related to reflection (see Table 3). T4D06 talked about preservice teachers' reflections on 'what works' in classrooms. Such reflection related to a 'toolkit of experience, knowledge, and expertise. And then com(ing) back to some theories'. Reflection as described by T4D06 would not reliably achieve the epistemic aims identified earlier by this T4D with respect to evaluative (transformative and self-focused) epistemic aims. Rather it seems to be a REP that might achieve an epistemic aim of perhaps understanding and meaning-making.

On the other hand, T4D03 identifies a form of reflection in which preservice teachers acknowledge their own embodied experience 'To really step back, to acknowledge their own embodied experience but to be able to step out of that as well'. T4D03's reflection on embodied experience and stepping back suggests a level of critical thinking that would infer an evaluative epistemic aim, although this is not fully articulated in the quote.

## Teaching strategies

Teaching strategies that were both espoused during the stimulated recall interviews and observed during lectures and tutorials that were either face-to-face or online are explored across three broad categories, namely: deconstructing diversity claims for social justice; scaffolding, modelling and explaining; and supporting independent, emotional and experiential learning (see Table 4).

### Deconstructing diversity claims for social justice

In this first broad category of teaching strategies, all T4Ds identified critical pedagogies, the use of multiple perspectives ( $n = 8$ ) and discussion and questioning ( $n = 10$ ) as distinct

TABLE 4 T4Ds' teaching strategies

Teaching strategies	Discern	Deliberate
Deconstructing diversity for social justice		
Critical pedagogy	T4D03, T4D19	T4D02, T4D03, T4D05, T4D06, T4D07, T4D10, T4D12, T4D15, T4D16, T4D19, T4D22
Supporting engagement with multiple perspectives	T4D03	T4D02, T4D03, T4D05, T4D06,12, T4D15, T4D16, T4D19
Discussion and questioning	T4D03, T4D07, T4D19	T4D02, T4D03, T4D05,06,07,10, T4D15, T4D16,19, T4D22
Scaffolding, modelling and explaining	T4D03	T4D02, T4D03, T4D05, T4D06, T4D07, T4D10, T4D12, T4D15, T4D16, T4D22
Supporting independent learning, emotional connections and experiential learning		
Supporting independent learning	T4D15	T4D03, T4D07, T4D15, T4D16, T4D22
Supporting emotional connections	T4D02, T4D03	T4D02, T4D03, T4D06, T4D07, T4D10, T4D12, T4D15, T4D16, T4D19
Supporting experiential learning	T4D16, T4D19	T4D02, T4D03, T4D06, T4D07,16

teaching strategies that, taken together, seemed to support preservice teachers to deconstruct diversity for social justice. First, critical pedagogies involved teaching strategies which were anti-essentialist in nature and were focused on the critique of preservice teachers' beliefs and knowledge in the pursuit of social justice when teaching diverse groups of children. Using such strategies, T4Ds supported preservice teachers to engage with broader socio-critical and socio-political contexts by questioning, problematising and deconstructing diversity for social justice (Rowan et al., 2020). For example, T4D16 engaged in critical pedagogy that supported preservice teachers to challenge and critique dominant perspectives in an informed way ... 'you've just got to question knowledge ... if there's a viewpoint, we must have a counterviewpoint'. Critical teaching pedagogies like the ones deliberated in this quote seem to point to an evaluative epistemic aim because of the focus on preservice teachers explicitly challenging and critiquing dominant perspectives.

Second, supporting preservice teachers to engage with multiple perspectives was another common teaching strategy deliberated on by eight T4Ds. Like critical pedagogies, this strategy also supported preservice teachers to recognise and value multiple perspectives, although there was less evidence of evaluation of these viewpoints. For example, T4D05 intended for preservice teachers to have 'conversations about recognising that it's actually not all white blokes in padded wigs who discovered science. So, bringing in the Arabic and the Indigenous, all of those backgrounds of science and doing that in a really non-tokenistic sort of way'. Here T4D05 helps preservice teachers to examine and value multiple perspectives, such as Indigenous knowledges, although there is no discussion about how this might take place (e.g. evaluating and adjudicating on different perspectives), which was evident in the critical pedagogies described earlier. Such teaching strategies suggest a focus on epistemic aims related to transformative critical thinking, especially with respect to moving beyond essentialist understandings of diversity.

The third teaching strategy associated with deconstructing diversity for social justice involved a focus on discussion and questioning often going beyond a simple sharing of ideas. Ten T4Ds discerned and/or deliberated on the use of discussion and questioning to support preservice teachers' learning about teaching diverse groups of children. For example, T4D02 invited her preservice teachers 'to talk more in terms of the ... readings' and challenged them 'to think about' what they had read. We noticed that discussion and questioning was a common approach used by teacher educators to engage preservice teachers in understanding and sometimes critically reflecting on teaching diverse groups of children.

Discussion and questioning, along with critical pedagogies and recognising and engaging in multiple perspectives, were teaching strategies used by T4Ds that often supported the evaluative epistemic aims for teaching *for* diversity. However, critical pedagogies were the only strategies which seemed to identify explicitly the process used by preservice teachers to evaluate competing perspectives to challenge and critique dominant perspectives for social justice.

## Scaffolding, modelling and/or explaining

The second broad category of teaching strategies involved the use of scaffolding, modelling and/or explaining. Ten T4Ds deliberated on the use of these teacher-centred strategies to support preservice teachers to learn about teaching diverse groups of children. For example, T4D06 indicated 'I have to scaffold it a bit ... So, I'm modelling ... I want to demonstrate to them and say, "I can appreciate your point of view here. You've got some evidence, but I think there's another area I'm not so sure about"'. This example articulates how scaffolding and modelling are intended to support and guide preservice teachers to appreciate other points of view and the role of evidence in thinking about diversity in the classroom. At first

glance teaching strategies related to scaffolding, modelling or explaining might seem to suggest an unproblematised process of simple knowledge acquisition which enables preservice teachers' learning about teaching diverse groups of children. However, often scaffolding, modelling and explaining seemed to be directed towards evaluative or deep understanding as epistemic aims for preservice teachers.

## Supporting independent learning, emotional connections and experiential learning

The final broad category of teaching strategies identified approaches to teaching that often complemented the previous two broad categories. They included supporting independent learning, emotional connections and experiential learning. These strategies are complementary in nature because they sometimes seemed to provide support for evaluative and deep understanding.

*Supporting independent learning* was discerned and/or deliberated on by five T4Ds. For example, T4D15 deliberated on providing support for preservice teachers to work independently, even though this was simply about students tracking down readings to engage with. We think that such strategies, while not directly about deconstructing diversity, provided a mechanism for helping students to seek alternative and multiple perspectives. However, there was very little evidence in the data to suggest a focus on students taking the initiative to engage in independent learning such as inquiry-based approaches.

During the interviews, we asked T4Ds to reflect on what they believed constituted a challenge for preservice teachers' learning to teach diverse groups of children, expecting that such responses might further illuminate teaching and learning processes identified by T4Ds. T4Ds described difficulties getting pre-service teachers to be scholarly, doing the readings/ having knowledge, being reflective, speaking in class with confidence, being critical and dealing with conflicting opinions, engaging with each other and finding solutions. This range of challenges, we argue, would impact on the extent to which T4Ds viewed preservice teachers' competencies to engage in independent learning.

*Supporting emotional connections* also sometimes seemed to complement strategies for deconstructing diversity and were either discerned and/or deliberated by most T4Ds ( $n = 9$ ). These strategies allowed preservice teachers to feel safe, valued and supported. For example, T4D19 indicated that while she can't remove 'power relationships' she intends to 'disrupt ... a little bit'. She goes on to argue that 'if I'm actually trying to teach about multiple perspectives and multiple ways of being ... and if I insist that everyone speaks, it works against that. Because if there's multiple ways of being, then being quiet is one of those ways'. T4D19 was aware of the need to teach in a way that helps preservice teachers to feel emotionally safe but at the same time recognises the importance of these relational teaching strategies in enabling students to engage with multiple perspectives.

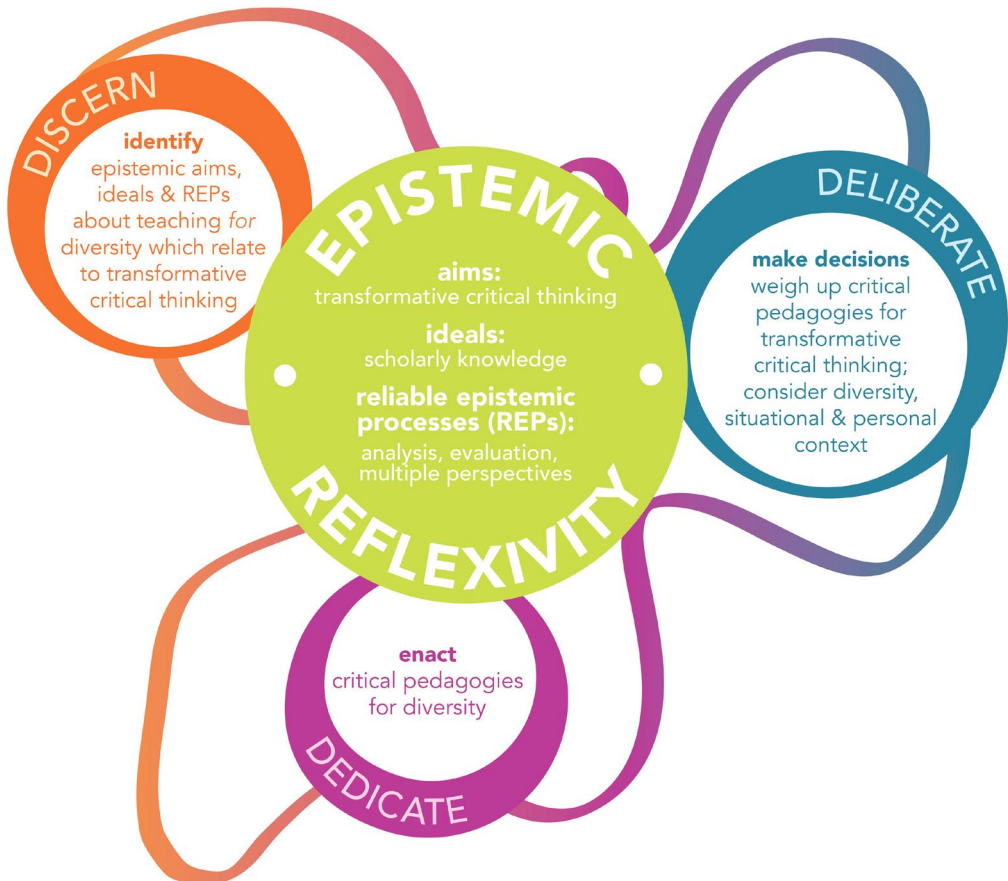
*Supporting experiential learning* was a teaching strategy expressed by six T4Ds and involved, for example, 'trying to find that experience and then letting them attach it to what you're asking them to do in a new way' (T4D07). T4D07 identified a teaching strategy that both valorised and captured preservice teachers' wealth of experiences, with an epistemic aim of developing deep understanding for preservice teachers. Sometimes these strategies simply focused on scenario-based activities. Once again, these teaching strategies appeared to help preservice teachers deconstruct diversity for social justice, enabling preservice teachers to reflect on experiences in new ways.



## DISCUSSION

Our study is the first to use epistemic reflexivity as a transdisciplinary approach to explore T4Ds' decision-making. Figure 2 is a representation of what teaching for diversity generally looks like in our study using the ER-TED framework. The findings identified how T4Ds discerned and deliberated their emergent personal concerns (Archer, 2012) with respect to epistemic aims for justification, which involve transformative critical thinking and critical thinking for self. It seems that the evaluative epistemic aims evident in this study (justification focused on either transformative or self-focused) are suggestive of Chinn et al.'s justification aims, while the aims described as understanding and acquiring deep knowledge relate to Chinn's aim of understanding (Chinn et al., 2011, 2014).

There was some evidence to suggest that T4Ds discerned/deliberated with respect to epistemic ideals related to scholarly knowledge, although this was only articulated by six of the T4Ds (across both the categories of scholarly and combination). Despite the finding that all T4Ds held evaluative epistemic aims (which rely on evaluation of different perspectives), it is interesting that fewer described epistemic ideals in a way that reflects a similar focus on accessing different perspectives of knowledge (i.e. a combination of scholarly and personal



**FIGURE 2** Lunn Brownlee, Jo; Ryan, Mary; Rowan, Leonie; Bourke, Terri; Walker, Sue; L'Estrange, Lyra; Churchward, Peter; Johansson, Eva; Berge, Anita; (2021): Epistemic Reflexivity - Teacher Education about/ to/for Diversity (ER-TED) framework applied to teaching for diversity (adapted from Archer, 2012; Chinn et al., 2011, 2014; Lunn Brownlee et al., 2017). Queensland University of Technology. (Theoretical framework) [https://doi.org/10.25912/RDF\\_1629864583426](https://doi.org/10.25912/RDF_1629864583426)

knowledge). We also noticed that some T4Ds did not seem to have any epistemic focus in ideals; instead their deliberation of structural concerns centred on appropriate content knowledge to teach preservice teachers. We acknowledge that the question about what constitutes good knowledge was challenging and so it is possible that T4Ds did not interpret the question epistemically as we had expected.

Nearly all T4Ds had personal concerns that they discerned and/or deliberated on in regard to REPs that involved either higher-order thinking (analysis and evaluating competing ideas) or engaging with multiple perspectives (see Figure 2). While overall these REPs seem to align with their aims for deep understanding, it is not so clear how they contribute to achieving evaluative epistemic aims. We found it interesting that only three T4Ds explicitly referred to REPs that involved evaluation of perspectives, which we argue is fundamental to an epistemic aim of justification and critical thinking. It is possible that the higher-order and multiple perspective thinking skills identified by most T4Ds could be reliable epistemic processes for supporting the epistemic aims of justification (as transformative and self-focused critical thinking) and understanding. Finally, structural concerns discerned/deliberated by T4Ds included their daily teaching strategies of critical pedagogy, supporting engagement with multiple perspectives and to an extent discussion and questioning. These strategies represented a range of ways in which T4Ds supported preservice teachers to achieve either evaluative or deep understanding as epistemic aims. Other strategies such as supporting emotional connections, scaffolding, modelling and explaining were sometimes linked to evaluative epistemic aims. However, there were very few strategies that supported preservice teachers to engage in independent learning, which was interesting given the overall focus on transformative critical thinking and critical self-reflection.

T4Ds' reflections on their perceptions of challenges for preservice teachers may help to shed light on our interesting findings with respect to a lack of independent learning/teaching strategies and evaluative REPs. Taken together the challenges identified earlier in our findings reflect difficulties that preservice teachers may experience with respect to being scholarly and critical. Such difficulties may function as personal concerns that constrain engagement in evaluation and critical thinking as a REP. Most T4Ds held evaluative epistemic aims and engaged in critical pedagogies for diversity, yet did not seem to discern/deliberate with respect to REPs that might support aims for justification.

There also seems to be a tension between using critical pedagogies and not promoting independent learning as a teaching strategy (structural concerns). There are several reasons which we argue may account for these tensions. First, each participant's interview involved one 2-hour observation and a stimulated recall interview, so it is possible that in this limited timeframe we were simply not able to observe and discuss all aspects of their internal conversations and evaluative epistemic stances. Second, we argue that these tensions simply provide evidence of the multiple ways in which an evaluative epistemic stance is manifested across the 3D cycle in the T4Ds' responses. Third, as identified by the T4Ds, thinking in an evaluative and critical way is a skill that students may resist engaging in owing to cultural concerns in that context (out of fear of presenting opinions and being challenged, for example, or fear of conflict), and this may have led to limited engagement with, and reflection on, such critical teaching and learning strategies. Finally, we suggest that these tensions might emerge from the influence of broader structural conditions such as time pressures.

Regardless of these identified teaching and learning tensions, the T4Ds in our study are clearly powerful examples of what a strong overall evaluative epistemic stance for teaching for social justice involves. In earlier work, Lunn Brownlee et al. (2015) identified evaluative mindsets and skill sets in ECEC teachers' decision-making about engaging in professional development. Rickards et al. (2021) more recently argued 'that expertise, specifically the notion of evaluative thinking, needs to be at the core of the profession' (p. viii). From the

evaluative epistemic stances identified in the current study, we noticed that T4Ds discerned and deliberated on critical specialist knowledge, a range of critical pedagogies and REPs for understanding and evaluative critical thinking for self and social justice. We argue that teaching *for* diversity centres on evaluative epistemic aims and critical thinking which challenges the beliefs and attitudes that produce inequities. Such critical thinking requires an awareness of, and engagement with, reflexivity that comprises double criticality with respect to both the literature and processes of engaging in critical thinking (Rowan et al., 2020). As such, teaching *for* diversity is often reported as challenging and risky for educators because it relies on professional decision-making (reflexivity) rather than simply implementing a toolbox of strategies – tips and tricks (for further discussion see Rowan et al., 2020). Teaching *to* and teaching *about* diversity can address student diversity but when used in isolation these approaches do not address the fundamental causes of educational inequity because critical consciousness is not foregrounded (Rowan et al., 2020). We argue that even though double criticality is a defining concern of T4Ds' epistemic reflexivity, it seems that T4Ds' views of preservice teachers' competencies, as evident in the challenges they describe, may impact on the extent to which they believe preservice teachers can engage in evaluative thinking and independent learning.

## Contributions to teacher education

The ER-TED epistemic reflexivity framework provides three main contributions to the field of teacher education with respect to teaching diverse groups of children. First, we know that teacher educators can have an impact on the beliefs and confidence of future teachers, through changes in teachers' views about reflective practices (Liu & Milman, 2010) and engagement in critical theory (Aronson & Anderson, 2013). We argue that the ER-TED framework can also support changes in beliefs and practices when it functions in a meta-epistemic way (see for example Lunn Brownlee et al., 2017). By meta-epistemic we mean that the epistemic elements of the framework are made explicit by teacher educators for themselves and for the preservice teachers whose learning they are supporting. Tang (2020) similarly refers to 'Epistemic metacognition, which operates at a meta-level targeted at our own thought processes concerning the source, nature, and justification of knowledge' (p. 1). For example, by explicitly calling out epistemic aims related to evaluative ways of thinking, the use of critical pedagogies as a pedagogical pathway becomes clearer.

Second, we know that teacher educators are challenged by a lack of space to engage in critically oriented coursework and pedagogies (Aronson & Anderson, 2013; Chang & McLaren, 2018). The research also points to how critical coursework and reflection can have an impact on beliefs and confidence of preservice teachers (Han & Laughter, 2019). The ER-TED framework supports such critical work in teacher education programmes because it articulates a way in which we can engage in reflexivity with epistemic cognition – either at the social justice or personal self-reflection level. The framework therefore provides a basis for a new pedagogy of teacher education with respect to addressing social justice. Epistemically reflexive decision-making takes account of the epistemic nature of critical consciousness, giving preservice teachers the best possible chance to break persistent patterns related to inequity in education.

Finally, our study considered the intractable problem of teaching diverse groups of children in a new way by taking a transdisciplinary approach, combining both epistemic cognition and reflexivity from the fields of educational psychology and sociology respectively. Gillis et al. (2017) argued that 'transdisciplinary research differs in that knowledge builders from two or more disciplines come together to develop new and participatory methods for creating solutions to a challenge that seemingly appears to fall within each domain (Pohl &

Hadorn, 2007; Wilcox & Kueffer, 2008)' (p. 206). In our study, the disciplines of educational psychology and sociology have contributed to a new way of thinking about teaching for diversity.

## CONCLUSION

Teaching for diversity focuses not simply on helping students better fit into an existing educational or social system but, rather, on challenging the beliefs and attitudes that produce the inequities using double criticality. The ER-TED framework, focused on epistemic reflexivity, can help us as a profession move beyond teaching *to* and *about* diversity. However, while we expect that the ER-TED framework can play an important role in supporting preservice teachers to engage in teaching for diversity in their classrooms, we acknowledge that there may be some limitations related to scale. Until we can engage with robust epistemic decision-making in teaching for diversity across both universities and schools, transformation of social processes which continue to perpetuate social inequalities may remain. Our study has investigated this longstanding theoretical and empirical 'blind spot' in teacher education research and contributes to the pursuit of transformational social justice without relying on teaching tips, tricks and checklists.

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## CONFLICT OF INTEREST

There are no conflicts of interest.

## ETHICS APPROVAL

This research was given Queensland University of Technology human ethics approval – number 1800000010.

## DATA AVAILABILITY STATEMENT

Not applicable.

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