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Teaching for equity: insights from international evidence with implications for a teacher education curriculum

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ABSTRACT

Researchers, practitioners, and policy-makers in many countries are grappling with ways to address the persistent problem of inequitable educational outcomes between advantaged and disadvantaged students. This paper reports the results of a unique cross-country, cross-cultural analysis undertaken to provide insights into teaching practices that promote equity, drawing on programmes of empirical research or syntheses of major programmes of research that worked from a complex, non-linear view of teaching and its outcomes. We analysed international evidence about teaching practices that have a positive influence on diverse students' learning outcomes and opportunities and then compared and contrasted the results of these analyses. From the commonalities we identified, we derived six interconnected *facets of practice for equity*, which are general principles of practice rather than specific teaching strategies or behaviours. Building on these facets, we developed a conceptual framework that can inform an equity-centred teacher education curriculum that specifically addresses the task of preparing teachers who can make a positive difference to the learning opportunities and outcomes of diverse students, particularly those historically disadvantaged by the education system.

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Introduction

Researchers, practitioners, and policy-makers in many countries are grappling with ways to address the persistent problem of inequitable educational outcomes and opportunities between advantaged and disadvantaged students (e.g. Carnoy & Rothstein, 2013). Improving the quality of teacher preparation in order to enhance teacher quality is widely regarded as one essential part of addressing this problem (UNESCO, 2014). While research has produced valuable information about many aspects of teacher education, such as new entry routes, course and programme structures, and school–university relationships, teacher education's variable outcomes continue to present a challenge for researchers who want to understand and enhance the impact of teacher education on the learning of

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diverse students. A number of scholars have argued that in order to address this challenge, we need to move away from studying discrete aspects of teacher preparation and, instead, take a more complex and holistic view (Cochran-Smith et al., 2014; Grossman & McDonald, 2008). This paper is a partial response to this call.

The paper reports the results of a unique cross-country, cross-cultural analysis undertaken to identify teaching practices that promote equitable learner outcomes – broadly conceived to include social, emotional, civic, critical, and academic – drawing on programmes of empirical research or syntheses of major programmes of research that worked from a complex, non-linear view of teaching and its outcomes. It is important to note that this was not a literature review, but rather a review of major syntheses/programmes of research. The reviewed material drew on larger studies and not published papers dealing with teaching for equity in general. Our task in undertaking this analysis was two-fold. First, we analysed international evidence about teaching practices that have a positive influence on students' learning outcomes and opportunities. Second, we compared and contrasted the results of these analyses to determine whether there were commonalities across the findings from these different countries' research programmes in terms of teaching practice that has a positive influence on diverse students' learning outcomes and opportunities. Because improving teacher preparation is part of larger efforts to address inequity, we also considered the implications of these findings for a teacher education curriculum that specifically addresses the task of preparing teachers who can make a positive difference to the learning opportunities and outcomes of diverse, particularly disadvantaged, students.

Initial teacher education and inequitable student outcomes

Over the last two decades, many countries have grappled with the persistent problem of differential educational outcomes between groups of students on the basis of ethnicity, socio-economic background, gender, language, and/or culture. While practitioners and researchers continue to debate whether out-of-school factors such as poverty (e.g. Berliner, 2009) or in-school factors such as teaching practices (e.g. Hattie, 2008) are primarily responsible for the achievement gap, policy-makers generally view teacher quality as one of the most important factors in enhancing the educational opportunities and outcomes of all learners (UNESCO, 2014). It is, therefore, not surprising that the problem of how to prepare teachers who are able to promote more equitable outcomes and opportunities for all students is being grappled with internationally (e.g. Milner, 2009; Villegas & Lucas, 2002).

Many initiatives aimed at improving teacher quality to enhance student outcomes are framed in the context of criticism of university-based teacher education's failure to prepare teachers who are effective with, and responsive to, an increasingly diverse range of learners (Cochran-Smith et al., 2016). The introduction of alternative routes into teaching is one attempt at a solution to this problem. In England, for example, routes such as 'Schools Direct' and 'Teach First' have been actively encouraged by the government and the business world and are flourishing (DfE, 2015). In the United States, there has been an expansion of non-university provision of teacher education in programmes such as 'Teach for America' and in new non-university affiliated graduate schools of education (Gastic, 2014). While differences exist across these programmes, at the broadest level alternative

routes assume that in-school factors, particularly teachers, are the main cause of educational inequity and therefore focus on teacher recruitment as the central strategy for improving teacher quality. Meanwhile, proponents of such programmes often view an emphasis on out-of-school factors such as ethnicity or poverty, as teacher education's attempt to vindicate its inability to produce teachers who know how to boost student achievement despite persistent inequities (Haycock, 2005).

The perceived inability of university-based programmes to prepare effective teachers is related to what has been called the 'practice turn' (Reid, 2011) in teacher education. The assumption here is that university teacher education programmes emphasise theory, values, and beliefs over real teaching practice, which results in a disconnect between what students learn in teacher education programmes and what they need to be able to do as teachers, particularly in terms of being effective with, and responsive to, an increasingly diverse range of learners (UNESCO, 2014). One anticipated outcome of a greater emphasis on practice is that greater value would be placed on student teachers' experiential learning in practicum settings relative to their university-based learning. For example, in the USA the National Council for the Accreditation of Teacher Education Report (NCATE) report of an expert Blue Ribbon Panel (2010) recommended restructuring teacher education around teaching practice and partnerships as a way to improve the quality of teacher preparation and teacher effectiveness. In a similar vein, in England the recent Carter Review of Initial Teacher Education (2015) reinforced the importance of effective school-based experiences, and the value of robust school-provider partnerships.

As a number of researchers and practitioners have rightly pointed out (e.g. Forzani, 2014; Murray, 2014), there are many different meanings of the term 'practice' and practice-based teacher education that reflect different views of teaching and professional learning. Cochran-Smith et al. (2016), for example, suggest that some teacher education approaches are driven by a technical view, which assumes that good teaching is mainly dependent on management techniques understood as explicit, uniform, predictable sequences of teacher behaviours (e.g. Lamov, 2010) and thus assumes that these should be the focus of the teacher education curriculum. Others view teaching as comprising key practices that are complicated, but are also predictable and stable across contexts and, therefore, argue that teacher education should concentrate on teaching these practices by breaking them down into their component parts, rehearsing the parts, and then recomposing them in the act of teaching (e.g. Ball & Forzani, 2009; Grossman et al., 2009). In contrast, others take a complex view, believing that teaching is non-linear, holistic and not fully predictable activity that is more than the sum of its parts (e.g. Opfer & Pedder, 2011).

In this paper, we work from the assumption that teaching and learning to teach are complex and not fully predictable processes. As members of an international research team called Project RITE[1], our work over time has been based on the assumption that the goal of initial teacher education, as a values-oriented enterprise, is to prepare teachers who challenge educational inequities by enacting teaching practices that promote all student's learning, broadly defined to include academic achievement as well as social, emotional, civic, and critical learning. A second general premise of our work is rejection of the theory-practice binary because we consider that it is misleading to view practice as simply practical. Rather, in line with Cochran-Smith and Lytle (1998), we assume that practice is both theoretical and practical, with theory informed by practice and practice underpinned

by theory in an ongoing and recursive way. The third premise that has guided our work is that equity-centred teacher education provides the social, intellectual, and organisational contexts in which student teachers learn to enact classroom strategies that enhance equity and challenge inequity in particular local contexts while also being informed by broader visions (Cochran-Smith et al., 2016; Zeichner, 2012) of teaching, curriculum, learners, and equity. A complex approach to teacher education focuses not only on what student teachers believe, know, and can do but also takes account of the complex and multi-layered contexts, schools and policy environments in which new teachers learn to teach, and the larger structures of advantage and inequality that intersect with these (Anderson & Stillman, 2013; Cochran-Smith et al., 2014). This complex view of teaching is in tension with neoliberal criticisms of teaching and teacher education that identify educational underachievement as a problem of teacher quality. The neoliberal view ignores systemic disparities that influence educational opportunities and outcomes for advantaged and disadvantaged students and, instead, blames the inequality of student outcomes on teachers and teacher preparation.

However, given that inequitable student outcomes is an international problem, it is not surprising that research in many countries has been aimed at identifying teaching practices that support the learning of diverse students. We set out to examine the international empirical evidence about practice that has a positive influence on student outcomes, broadly defined, and that recognises the complexity of teaching. We sought out international research syntheses and/or programmes of research to see whether there were similar findings about successful teaching practices despite the fact that these works were from different countries and had different approaches and purposes. We then compared and contrasted the results of our analyses of these syntheses or programmes of research to identify commonalities across different countries. In the following sections, we report insights we have gained from the results of this analysis including implications for a teacher education curriculum.

Identifying, assessing and selecting the programmes of research/syntheses

This section addresses the first task we identified above – examining international evidence about teaching practices that have a positive influence on students' learning outcomes and opportunities. In undertaking this task, we were mindful of Weed's (2005) point that much past research has been ignored even when it can be of continuing value because social science researchers are not good at re-using or building on the results of past research results. Hence, we deliberately sought out published syntheses or frameworks developed from the findings of previous empirical studies. We engaged in a process of systematic review (Oakley, Gough, Oliver, & Thomas, 2005) in order to make connections and draw conclusions about teaching practices that promote equitable student outcomes. Our approach was in keeping with the way this method was first used in the health field to organise knowledge into a useable and reliable format by qualitatively summarising and linking different sources of research evidence (Kysh, 2013).

Our international search of the literature focused on identifying research syntheses or programmes of research that empirically linked teaching practice to improved outcomes, broadly defined, for all students' learning and took a complex of learning. Because Project RITE includes researchers from New Zealand and the United States, we were particularly

interested in drawing on research from these two countries. However, we also intentionally considered research syntheses or programmes of empirical research undertaken in a range of other countries that were different from one another in purpose, scope, and format because we wanted to see if, despite differences in political and policy contexts, we could identify similarities which could inform our work as researchers and teacher educators who were committed to equity-centred teacher education. Importantly, we acknowledge that we will not have located all possible programmes of research in this analysis.

We initially identified 10 research syntheses/programmes of research from five different countries that empirically linked teaching practice to improved student outcomes. Because we were interested in creating a theory-based synthesis (White & Waddington, 2012), we then analysed these works against four specific selection criteria which were consistent with our premises for the larger RITE project: (1) student outcomes were broadly conceived (i.e. they included not only academic achievement but also social, emotional, civic, or critical learning); (2) they were aligned with Project RITE's view of teaching and learning as being complex and non-linear; (3) the empirical evidence used to substantiate that these practices were related to improved outcomes could be traced and checked; and (4) the reports about the projects identified practices had a positive impact on diverse learners. We excluded from further analysis research syntheses and programmes that did not meet our criteria, such as frameworks for effective teaching that did not provide the empirical evidence on which they were based. For example, we did not use the 'South Australian Teaching for Effective Learning Framework Guide' (2010) because, at the time, the empirical evidence on which their four dimensions of effective teaching were based was not available in the published literature or in our communication with the leaders of the project. We also excluded syntheses that focused almost entirely on academic achievement and took a more or less linear or causal view of teaching and learning such as both Hattie's (2008) 'meta-analyses' of studies that determined the effect sizes of particular in-school factors on student achievement and Marzano, Pickering, and Pollock (2001) review of high-yield instructional strategies.

We ultimately identified five syntheses or programmes of research from three different countries, each of which was developed for different purposes, which met the criteria listed above. These were: three Best Evidence Syntheses (BES) of international research conducted in New Zealand (Aitken & Sinnema, 2008; Alton-Lee, 2003; Anthony & Walshaw, 2007); the long-term, multiple methods Teaching and Learning Research Program (TLRP) carried out in the United Kingdom (James & Pollard, 2006, 2011), and the Measures of Effective Teaching Project, an initiative designed to validate teacher evaluation instruments linked to student outcomes in the United States (Measures of Effective Teaching [MET], 2013). We then conducted a critical analysis of each of these syntheses or programmes of research according to (i) purpose, scope, and context, (ii) the conceptual framework that guided the work, (iii) underlying views of teaching, learning, and student outcomes, (iv) the empirical evidence used to support identified practices/principles and how the research was analysed, and (v) any available evidence of the impact or use of the synthesis. We also reviewed critiques of these syntheses.

The next section of this article provides an overview of each of the selected syntheses/programmes of research. For each, we focus on contributions and insights about teaching practice that enhance learning opportunities and outcomes for diverse students.

Best evidence syntheses (New Zealand)

From 2003 until 2010, the New Zealand Ministry of Education funded a major project known as the Iterative Best Evidence Syntheses programme (BES) (Education Counts, n.d.). The aim of the BES programme was to synthesise empirical evidence identifying effective practice that optimises outcomes for diverse learners in order to inform teaching in New Zealand educational settings. The evidence for each BES was systematically drawn from a range of New Zealand and international research including, but not limited to, quantitative meta-analyses, case studies. Authors of the BES studies were particularly interested in identifying teaching practices shown to promote the learning of Maori (New Zealand's indigenous people) and Pasifika students. From the eight BES studies (Ministry of Education, n.d.), we selected three, i.e. *Quality teaching for diverse students in schooling, Effective pedagogy in social sciences, Effective pedagogy in mathematics* because they focused on teaching practices that challenge inequity by enhancing learning opportunities and outcomes for students who have traditionally been disadvantaged. Each of these three BES also met the selection criteria described above, that is, student outcomes were broadly conceived; teaching and learning were viewed as complex and non-linear; the links between empirical evidence used and findings could be traced; and there was evidence that identified practices had a positive impact on diverse learners.

The process of writing each BES was an iterative one that included consultation with local and international advisors (Aitken & Sinnema, 2008). Designed to be a source of robust evidence about what works in education, each BES team searched the international literature for trustworthy studies regarding teaching practices shown to lead to learning, broadly defined (Alton-Lee, 2003). The BES writers ascertained the degree of robustness of the knowledge claims and used triangulation strategies within and between different kinds of studies. Each BES provides a detailed description and analysis of the research evidence underpinning their findings and also detailing the process used to generate them.

The three BES studies we selected all reported research that demonstrated a link between teaching practices and positive student outcomes although each classified these practices using different language as shown in Figure 1. For example, the BES *Quality teaching for diverse students in schooling* (Alton-Lee, 2003) identified 10 'research-based characteristics of quality teaching practices' (p.v) across the curriculum that lead to students' long term learning (see the first column of Figure 1 for a list of these). The Social Science BES also identified quality teaching practices, calling them 'mechanisms that facilitate learning' (Aitken & Sinnema, 2008, p.49) but these authors noted that 'there is no easy "what works" answer for teachers: "what works" depends on context' (Aitken & Sinnema, 2008, p.52). They stressed that teachers always need to attend to questions such as '*why, for whom and in what circumstances* a particular teaching approach is effective' (emphasis in original) (Aitken & Sinnema, 2008, p. 52). The Social Science BES therefore included a model of teaching as inquiry and argued, from evidence, that teachers individually and collaboratively, need to continually investigate the effectiveness of their teaching in their own contexts by considering evidence they collect about their own students' learning. The four mechanisms and the aspects of teaching as inquiry are set out in column two of Figure 1.

The third selected BES, *Effective pedagogy in mathematics* (Anthony & Walshaw, 2007, p. 1) identified ten 'principles of effective pedagogy' (see the third column in Figure 1).

Quality teaching for diverse students in schooling	*Effective pedagogy in social sciences*	*Effective pedagogy in mathematics*
10 characteristics. Quality teaching: 1. is focused on student achievement (including social outcomes) and facilitates high standards of student outcomes for heterogeneous groups of students; 2. uses pedagogical practices that enable classes or other learning groupings to work as caring, inclusive and cohesive learning communities; 3. creates effective links between school and other cultural contexts in which students are socialized to facilitate learning; 4. is responsive to student learning processes; 5. provides effective and sufficient opportunities to learn; 6. includes multiple task contexts to support learning cycles; 7. effectively aligns curriculum goals, resources including ICT, task design and school practices; 8. scaffolds and provides appropriate feedback on students' task engagement; 9. promotes learning orientations, student self-regulation, metacognitive strategies and thoughtful student discourse; 10. engages teachers and students constructively in goal-oriented assessment.	**4 mechanisms facilitate learning (in the social sciences).** 1. Connection. Students' participation and understanding is enhanced when their teachers connect the content of learning to their lives. 2. Alignment. Valued learning will not occur unless learners have sufficient opportunities to engage in learning experiences aligned to that learning (that is, experiences specifically designed to achieve the valued/desired outcomes). 3. Community. Learning communities are built around respectful relationships that establish a foundation for learning, create a climate of collaboration and mutual endeavor, and model inclusion and learning. 4. Interest. Making learning memorable for students by designing learning experiences that stimulate their interest in the important content of learning and by providing a variety of experiences. Activities that are interesting build and sustain motivation for learning. **and** **Teaching as inquiry:** *Focusing Inquiry* Establishing valued outcomes based on curriculum, community expectations and student needs and dispositions *Teaching inquiry* Using evidence of effective strategies from other contexts to inform strategies that are most likely to help students learn *Learning inquiry* Considering evidence from own context about what happened as a result of the teaching, and implications for future teaching	**10 principles of effective pedagogy (in mathematics).** 1. Caring classroom communities that are focused on mathematical goals help develop students' mathematical identities and proficiencies. 2. Effective teachers provide students with opportunities to work both independently and collaboratively to make sense of ideas. 3. Effective teachers plan mathematics learning experiences that enable students to build on their existing proficiencies, interests, and experiences. 4. Effective teachers understand that the tasks and examples they select influence how students come to view, develop, use, and make sense of mathematics. 5. Effective teachers support students in creating connections between mathematical representations and topics, and between mathematics and everyday experiences. 6. Effective teachers use a range of assessment practices to make students' thinking visible and to support students' learning. 7. Effective teachers are able to facilitate classroom dialogue focused on mathematical argumentation. 8. Effective teachers shape mathematical language by modeling appropriate terms and communicating their meaning in ways that students understand. 9. Effective teachers carefully select tools and representations that provide support for students' thinking. 10. Effective teachers develop and use sound knowledge as a basis for initiating learning and responding to the mathematical needs of all their students.

Figure 1. Summary of the BES teaching practices for desirable outcomes for diverse learners adapted from Aitken and Sinnema (2008), Alton-Lee (2003) and Anthony and Walshaw (2007).

While the characteristics and mechanisms of the first two BES are framed as cross-curricular and fairly general statements, the mathematics BES principles are more sharply focused on mathematics teaching and content. Despite the differences in foci between the three BES, looking across the three columns of BES teaching practices in Figure 1, there are clear similar themes about practices that lead to desirable outcomes for diverse learners. We show this with two examples indicated by the light and dark grey shading on Figure 1. For example, all three BES found empirical evidence indicating that effective assessment and feedback strategies are required. As the light grey shaded aspects of Figure 1 show, 'characteristics' 8 and 10 in column 1, 'teaching inquiry' in column 2, and 'principle' 6 in column 3 demonstrate this theme. Likewise, across the three BES shown in Figure 1, the evidence indicates that caring classroom cultures built around respectful relationships are aligned with more equitable outcomes, as demonstrated by 'characteristic 2' in column 1; 'mechanism 3' in column 2; and, 'principle 1' in column 3.

Each BES provides a great amount of detail about each of these findings alongside the empirical evidence that these teaching practices address more equitable outcomes for diverse students (for more details refer to the cited documents).

As a scan of Figure 1 indicates, teaching practice for equitable outcomes is broader than specific teaching skills and though there are thematic similarities across these syntheses, each had a different focus and findings. We therefore included all of these characteristics (Alton-Lee, 2003), mechanisms/inquiry (Aitken & Sinnema, 2008), and principles (Anthony & Walshaw, 2007) within our analyses of practices for equity. The findings of the BES studies have been widely used within New Zealand to guide the introduction of 'Teaching as Inquiry' into the New Zealand Curriculum (Ministry of Education, 2007) and to provide teachers with exemplars and case studies of such practice in action (Education Counts, n.d.). The BESs have also been taken up internationally to inform curriculum and professional development programmes through publications and presentation (for example, Sinnema & Aitken, 2012).

Teaching and learning research programme (United Kingdom)

Our second source for analysis was the Teaching Learning Research Programme (TLRP), which was a large-scale, government funded, United Kingdom programme of educational research undertaken primarily between 2000 and 2009. Although the goals of the TLRP were similar to those of the BES, the TLRP took a different approach. Rather than bringing together findings from previously published international research, the TLRP commissioned and coordinated approximately 700 researchers and 100 studies and projects on teaching and learning. The findings across these studies were synthesised into a set of principles to guide effective pedagogy through a process of thematic analysis.

The TLRP was the UK's largest ever investment in educational research. Its overarching aim was to improve outcomes for learners of all ages in teaching and learning contexts across the United Kingdom (James & Pollard, 2006; 2011). Thus, TLRP invested in projects related to all sectors of education including early years, primary, secondary and higher education, workplace, and professional learning. Because TLRP was committed to exploring synergies between different research approaches, the projects focused on different research questions in different contexts and used a range of methods and theoretical perspectives.

Conceptualising teaching and learning as complex, TLRP's core objective was to investigate teaching and learning practices that promoted a broad range of learning outcomes, which included students' attitudes and values as well as knowledge and skills (James & Pollard, 2006). Given the diverse methodological and contextual nature of the TLRP projects, quantitative meta-analyses intended to produce effect sizes as indicators of 'what works' were not appropriate and not undertaken. Rather, James and Pollard (2011), the key directors of the programme, argued that while the TLRP was not able to produce categorical knowledge of cause-effect relationships, it was able to produce ten 'evidence-informed principles' for teaching and learning, synthesised from the findings of its diverse studies. James and Pollard (2011) argued that the principles were not intended to describe particular courses of action. Rather, they were to be used to inform professional judgements about how best to implement them in different contexts.

The 10 'evidence informed principles for effective teaching and learning' (James & Pollard, 2006) were developed synergistically and iteratively primarily from the findings of TLRP's school-based research projects. The intention was to provide a holistic picture of factors that enhance student learning. However, the team believed that the principles had wider relevance, including post-compulsory educational settings. The principles were therefore later amended to be more generic (James & Pollard, 2011) with the term 'pedagogy' replacing 'learning and teaching'. The 10 amended principles are: (1) Effective pedagogy equips learners for life in its broadest sense; (2) Effective pedagogy engages with valued forms of knowledge; (3) Effective pedagogy recognises the importance of prior experience and learning; (4) Effective pedagogy requires learning to be scaffolded; (5) Effective pedagogy needs assessment to be congruent with learning; (6) Effective pedagogy promotes the active engagement of the learner; (7) Effective pedagogy fosters both individual and social processes and outcomes; (8) Effective pedagogy recognises the significance of informal learning; (9) Effective pedagogy depends on the learning of all those who support the learning of others; and (10) Effective pedagogy demands consistent policy frameworks with support for learning their primary focus.

In their 2011 publication, James and Pollard provided a detailed description of the research evidence underpinning the 10 principles and the iterative process by which they were developed. They viewed the 'presentation of "ten principles" as a summarising device to distil complexity and to contribute towards the quality of judgments by practitioners, policy makers and others' (p. 316). They organised or 'clustered' the 10 principles into four broad areas, which they argued reflected the complex, multi-layered nature of pedagogy. Figure 2 below shows the 10 principles 'clustered' into four broad areas.

The overarching goal of TLRP was to maximise impact by making findings about effective learning and teaching accessible to practitioners and policy-makers through a range of different outputs. These included short, full colour commentaries that drew on evidence from a number of TLRP projects related to a particular topic, teacher guides, research briefings comprising four page summaries of findings, and over 30 books which provided manageable and readable accounts of research projects related to improving learning and improving practice (refer http://www.tlrp.org/educationforall/).

As we show above, the TLRP clearly met our selection criteria. The programme aimed to develop knowledge of how to improve outcomes, broadly defined, for all learners in all teaching and learning contexts, and was underpinned by a complex and non-linear view of teaching and learning. Traceable empirical evidence was used to develop 10 'evidence-

Cluster one: Educational values and purposes • *Principle One*: Learning should aim to help people to develop the intellectual, personal and social resources that will enable them to participate as active citizens and workers and to flourish as individuals in a diverse and changing society. This implies a broad view of learning outcomes and that equity and social justice are taken seriously.
Cluster Two: Curriculum, pedagogy and assessment • *Principle Two*: drew on projects with a close focus on learning within school subjects. These demonstrated that carefully designed teaching sequences, incorporating diagnostic questioning, based on the best evidence of how pupils learn certain concepts or skills can enhance performance. Also raised questions about what students should be learning ie 'big ideas • *Principles 3 and 4:* Both relate to the need to take account of students' prior knowledge. While these studies focus particularly on mathematics and science it is argued that the insights apply to all school subjects. A number of TRLP projects found benefits in teachers making more deliberate and positive use of informal knowledge and understandings that students acquire in their homes and local communities. Idea that teaching and learning is a purposeful 'tool mediated activity' ie involve the use of tools such as textbooks, computers and other materials, and signs and symbols such as language and grading systems. Thus the relationship is triangular with interactions involving teacher, learner and tools. It is not the tools but how they are used that is important. • *Principle Five:* Assessment should support and improve learning and not just measure it.
Cluster Three: Personal and social processes and relationships • *Principles Six, Seven and Eight*: Shifts the focus from external conditions, contexts and systems to the nature of learning itself. These principles recognise that learning has both personal and social aspects and involves the development of knowledge, dispositions, and practices – it has cognitive, affective and behavioural dimensions.
Cluster Four: Teachers and policies. A distinctive characteristic of the TLRP school projects was their aim to generate new knowledge about effective teaching and learning in authentic settings ie in classrooms led by teachers. This meant that investigation of teacher learning was an integral part of the work of most projects. • *Principles Nine and Ten* are concerned with the implications of the other principles for teachers' own learning and for policy frameworks. All the TLRP projects had a lot to say about teachers' professional development, because, it was argued, even with access to new programmes and technologies, improvements in pupils' learning and achievement depend on teachers' learning. Teachers need to enquire into their own prior beliefs etc. Targeted professional development, developed from research evidence 'translated' into practical advice, were valued but TRLP also suggested that a crucial strategy is for schools to support teachers to engage in enquiry into practice in classrooms, which, ideally this should involve working with colleagues.

Figure 2. TLRP's 10 principles of effective pedagogy 'clustered' into four broad areas, collated from James and Pollard (2011).

informed principles', which James and Pollard's (2011) claimed contributed to the international discussion on effective teaching and learning. The veracity of this claim is shown in the way we have utilised understandings developed through the TLRP in our analysis of practice that is shown empirically to improve the outcomes and opportunities of diverse learners.

Measures of effective teaching (United States)

The third source selected was the US-based Measures of Effective Teaching (MET) project. This project had a different aim from either the Best Evidence Syntheses from New Zealand or the TLRP from the United Kingdom in that its overall focus was measurement; that is, its

purpose was to ascertain whether or not teaching that improved student learning outcomes could be reliably and validly identified and measured using particular evaluation instruments. The three-year project, established in 2009 and funded by the Bill & Melinda Gates Foundation, was a research partnership of academics, teachers (3000 from seven US public school districts), and education organisations. Like the goal of the other syntheses we consider here, the ultimate goal of the MET project was to improve student outcomes. It aimed to determine how to best identify and promote effective teaching defined in terms of closing the gap between 'expectations for effective teaching and what is actually happening in the classroom' (Measures of Effective Teaching [MET] homepage, n.d.).

To reach this goal, the MET project drew together and investigated a range of teacher evaluation strategies. The aim was to build and test measures of effective teaching to inform teachers about the skills that make them most effective with respect to student achievement. Recognising that 'teaching is too complex for any single measure of performance to capture it accurately' (MET, 2013, p. 10), MET took a complex view of how to measure teaching, drawing on a range of strategies such as classroom observation of teaching practices as well as teacher-student interactions, student feedback, and student achievement data.

MET produced three major reports. In the first (MET, 2010) preliminary findings indicated that important information about teaching effectiveness, derived from students' perceptions of their classroom environment, could provide feedback to help teachers improve. Student perception data were gathered using the TRIPOD survey (Fergusson, 2001) that identifies seven constructs that were core to students' experience in the classroom. These were referred to briefly in the report in terms of verbs that describe teachers' work – care, control, clarify, challenge, captivate, confer, and consolidate. MET found that the aspects of teaching that best predicted student learning were control and challenge.

When this student perception data was set alongside student achievement gains on state tests and supplemental tests in math and reading comprehension, four general conclusions were reached. First, in every grade and subject studied, a teacher's past success in raising student achievement on state tests (that is, his or her value-addedness) was one of the strongest predictors of his or her ability to do so again. Second, teachers with the highest value-added scores on state tests also tended to promote deeper conceptual understanding. Third, they showed that most students knew effective teaching when he or she experienced it. And fourth, they identified that valid feedback need not be limited to test scores alone. By combining different sources of data they concluded that it was possible to provide diagnostic, targeted feedback to teachers who are eager to improve.

The second report, which focused on classroom observation schedules intended to develop measures of teacher effectiveness (MET, 2012), provided suggestions for developing reliable and valid classroom observations. This report also presented findings arising from the testing of five instruments for classroom observation. These were: 'Framework for Teaching' (FFT) – Domain 2: The Classroom Environment and Domain 3: Instruction (Danielson, 2007); the Classroom Assessment Scoring System (CLASS) (Pianta, la Paro, & Hamre, 2008); the Protocol of Language Arts Teaching Observations (PLATO) (Grossman et al., 2010); the Mathematics Quality of Instruction (MQI) (Hill et al., 2008) and the UTeach Teacher Observation Protocol (UTOP) (Walkington et al., 2011). MET researchers found that high scores on all five instruments were positively associated with student achievement and reliably characterised teacher practice. However, the observation schedules'

	Instruments				
Rank	FFT	CLASS	PLATO	UTOP	MQI
1	Managing student behaviour	Absence of a negative climate	Behaviour management	Accuracy of teacher written content	Classroom work connected to mathematics
2	Creating an environment of respect and rapport	Behaviour management	Time management	Significance of content	Absence of errors and imprecision
3	Engaging students in learning	Productivity	Intellectual challenge	Majority of students on-task	Explicitness and thoroughness
4	Managing classroom procedures	Student engagement	Classroom discourse	Use of abstraction and representation	Working with students and mathematics
5	Establishing a culture of learning	Positive climate	Strategy use and instruction	Classroom management	Richness

Figure 3. 'Top five' effective teaching practices as identified for five classroom observation schedules.

predictive power and reliability were improved when their results were combined with evidence of student achievement and student feedback.

Even though our purposes were quite different from those behind the MET project, we found we could use their findings to help with our task. We undertook an analysis of each of the MET classroom observation instruments to ascertain the features of effective teaching that they identified as increasing student learning. We drew on graphs provided by MET researchers showing teaching practices linked to student achievement. We extracted information from these graphic representations in order to identify across the data-set the observed practices that correlated with high levels of student achievement. In Figure 3, we show the 'top five' teaching practices that MET researchers identified for each classroom observation instrument.

As Figure 3 shows, there are clear commonalities in the 'top 5' aspects of teaching identified across the instruments. These are: *managing student learning* (including behaviour management, managing classroom procedures, establishing a culture of learning, students on task, intellectual challenge, productivity, richness), *engaging students in learning* (includes relating to students, the significance of content, creating an environment of respect and rapport, developing a positive environment, classroom discourse, strategy use and instruction), and the *significance of teacher knowledge* (including its absence of errors and imprecision, explicitness and thoroughness, and accuracy of content).

In a press release coinciding with the publication of the third and final MET project report (2013), the project claimed that it had 'demonstrated that it is possible to identify great teaching by combining three types of measures: classroom observations, student surveys, and student achievement gains' (p.1). However, the press release also noted that even approaches that utilise both student survey data and classroom observations can only provide measures of effective teaching that are 'less likely to fluctuate from year to year' (p.1), implying that it is impossible to definitively determine a teacher's effectiveness over time. In addition, they indicated that combined measures were likely to also identify

teachers whose students performed well on assessments other than state-mandated achievement tests.

As noted, we were interested in including the MET project as one of our major syntheses not because we were interested in teacher evaluation systems per se, but because it is a widely disseminated, highly regarded, and large-scale initiative in the USA that, in the process of validating teacher effectiveness tools, pointed to teaching practices that address equity outcomes for students (for further information refer to the cited documents). In summarising their work, the MET research team readily admitted that they had not provided a definitive answer to the question: *Which competencies most relate to student achievement?* (MET, 2012). Rather, consistent with what they set out to do, they concluded that by combining different sources of data, it is possible to provide targeted feedback to teachers who are interested in improving their students' learning outcomes. We found that their explication of aspects of effective teaching that promote learning, broadly defined, for diverse learners could be used for the purposes of our review.

Cross-synthesis comparison: developing facets of practice for equity

After we analysed each selected synthesis or research programme, we conducted an iterative cross-case comparison (Wong, Greenhalgh, & Westhorp, 2012, p. 93) to determine where there were similar findings. Many of the identified practices, such as being responsive to student learning processes and providing a positive learning climate, would seem very familiar to educational researchers, policy–makers, and practitioners who have worked on the problem of inequitable student outcomes. However, what is remarkable is that across these syntheses and programmes that were very different in terms of countries, scope, purpose, and methods, there were strikingly similar findings about practice that supports the learning of diverse students. Below we elaborate on the process we used to reach this conclusion.

To compare findings across the syntheses and programmes of research, we used a process of 'directed content analysis' (Hsieh & Shannon, 2005). Directed content analysis 'starts with a theory or relevant research findings as guidance for initial codes' (p. 1277). In our case, we were guided by our quest to define the nature of practice for equity (Cochran-Smith et al., 2016) drawing from existing research that had already identified practice that affects the learning of diverse students. As noted above, the purpose and method of the syntheses and research programmes we identified were strikingly different from each other. For example, the TLRP provided fairly high-level principles, the BES provided characteristics, mechanisms, principles of pedagogy, and the MET measures were reported as either constructs (from TRIPOD) or practices (from the five classroom observation instruments). We reasoned that, despite being different in form, method, and scale, if there were similar findings across these different sources of evidence then the principles underlying these practices might provide insights for a teacher education curriculum with equity at the centre. We wanted to bring the findings together in ways that honoured the particularities of the original sources and also to see how the key ideas across the research syntheses/programmes might fit together.

We began the analysis by juxtaposing the three summarising tables (Figures 1–3) and looking across them for key ideas. In line with the processes of directed content analysis, we began by identifying key ideas about effective practice for diverse learners as initial

coding categories. For example, from the BES (Figure 1) 'management' was used as a preliminary code that picked up on *Characteristic 2*, *Mechanism 3* and *Principle 1*, from the TLRP (Figure 2) *Cluster 3* and from the MET (Figure 3) several of the '*Top five*' effective teaching practices. We then consulted each synthesis and research programme report about the aspects related to management and from this built an understanding that what we called 'managing the learning environment' was a common theme across the evidence from each source. Using the same iterative investigative process, we found that 'learning valued content through worthwhile learning activities and opportunities' was another theme constructed from a rich understanding of BES (Figure 1) *Characteristics 1, 5* and *7*, *Mechanism 2* and *Principles 4* and *9*, from the TLRP (Figure 2) *Principle 2, Cluster 2* and from the MET (Figure 3), *CLASS rank 4*, *PLATO rank 3* and *MQI rank 4*.

Proceeding in the manner described above, we built charts of the evidence drawn from the corpus of the BES, TLRP and MET studies, expanding categories where necessary to include outliers that at first did not appear to fit. Searching for confirming and disconfirming evidence, we eventually developed five general principles that were adjusted and readjusted through constant comparison, which we named 'facets of practice for equity.' The facets we identified through this process were: (i) *selecting worthwhile content and designing and implementing learning opportunities aligned to valued learning outcomes.* Examples of practice included in this facet are teachers selecting and designing learning experiences that support students' understanding of content and conceptual development, advance their complex/high cognitive learning and facilitate students' active participation and achievement in learning; (ii) *connecting to students as learners, and to their lives and experiences* with a focus here on teachers identifying and responding to students' prior knowledge, skills, diverse interests, motivations, and level of engagement by making curriculum content relevant and inclusive to students' lives, language, and culture; (iii) *creating learning-focused, respectful and supportive learning environments* with teachers establishing cognitive, social, and emotional connections with students. Teachers also recognise and value student diversity and create a sense of belongingness to the class and school community; (iv) *using evidence to scaffold learning and improve teaching* through the use of feedback processes from assessment to nurture students' learning, self-regulation, critical thinking and metacognitive strategies. Teachers also use assessment evidence to adjust their teaching practice to improve student learning; and (v) *adopting an inquiry stance and taking responsibility for further professional engagement and learning.* Here, teachers develop the knowledge and skills of inquiry in order to evaluate evidence, including evidence of learning, and develop the confidence to challenge, and inquire into, taken for granted assumptions, including their own. Teacher learning is both individual and collaborative.

As we noted earlier, the BES, TLRP, and MET were all motivated by a desire to address inequitable outcomes for diverse students within their own contexts. In addition, as noted previously, the BESs were particularly interested in identifying teaching practices shown to promote the learning of New Zealand's most disadvantaged learners (Maori and Pasifika students). Hsieh and Shannon (2005) argue that a major strength of a directed content analysis approach is that researchers can extend theory by pursuing new evidence that might offer 'a contradictory view of the phenomena or … further refine, extend and enrich the theory' (p. 1283). Hence, we specifically sought out programmes of research that focused on teaching practice shown empirically to enhance educational outcomes

for historically disadvantaged students. We, therefore, examined two additional frameworks: Te Kotahitanga (New Zealand) and CREDE (United States).

The government funded Te Kotahitanga (TK) Project is a New Zealand programme of pedagogical and school reform that began in 2001 with the aim of improving outcomes for Maori students who have been historically disadvantaged by the education system (Bishop, Berryman, & Wearmouth, 2014). Te Kotahitanga developed an Effective Teaching Profile (ETP), fundamental to which was teachers' understanding of the need to explicitly reject deficit theorising as a means of explaining Maori students' educational outcomes, and to take professional responsibility for the learning of their students. Te Kotahitanga holds that, in order to be agentic in their practice, teachers need to consistently demonstrate that they: (1) care for their students as culturally located individuals; (2) have high expectations of the learning for students; (3) manage their classrooms so as to promote learning; (4) engage in a range of discursive learning interactions with students or facilitate students to engage with others in these ways; (5) know a range of strategies that can facilitate learning interactions; and (6) promote, monitor, and reflect upon learning outcomes that in turn lead to improvements in Maori student achievement and share this knowledge with the students.

Center for Research on Education, Diversity, and Excellence (CREDE, n.d.) from the United States provides professional development to teachers of students of native Hawaiian descent and other diverse students. The original research on CREDE, begun in the 1970s, gave rise to principles that were effective for culturally and linguistically diverse students. These were developed into the CREDE Standards for Effective Pedagogy (Dalton, 2007). The five standards are: (1) Joint productive activity: teacher and students producing together; (2) language development: developing language and literacy across the curriculum; (3) contextualisation: making meaning: connecting school to students' lives; (4) challenging activities: teaching complex thinking; and (5) instructional conversation: teaching through conversation. These standards establish principles for best teaching practices for students at risk of educational failure due to cultural, language, racial, geographic, or economic factors, rather than endorsing a particular curriculum.

While both Te Kotahitanga and CREDE were smaller in scale and had fewer standards or practices than our main data sources, the key ideas from both aligned with the facets of practice we had distilled from the MET, TLRP, and BES syntheses. Additionally, they strongly emphasised the critical role that teachers play in improving disadvantaged students' opportunities by challenging inequities in terms of their practice. To take account of these additional insights, we added a sixth facet to the initial list of five facets discussed above: *Recognizing and seeking to address classroom, school and societal practices that reproduce inequity*. Figure 4 demonstrates how evidence from the syntheses and research programmes informed the development of the six facets of practice.

While there was other evidence to support each facet, as Figure 4 demonstrates, there were common themes across the corpus of the documents. For example, in Figure 4 we have shown how findings from each synthesis/programme fitted within the facet we called *selecting worthwhile content and designing learning opportunities aligned to valued outcomes* in the top left-hand box. Likewise, the second box down on the right-hand side shows how all except the CREDE had findings that are connected with the fourth facet, *using evidence to scaffold learning and improve teaching*. It is not possible to list all of the findings for each facet in Figure 4 and thus only examples have been included here.

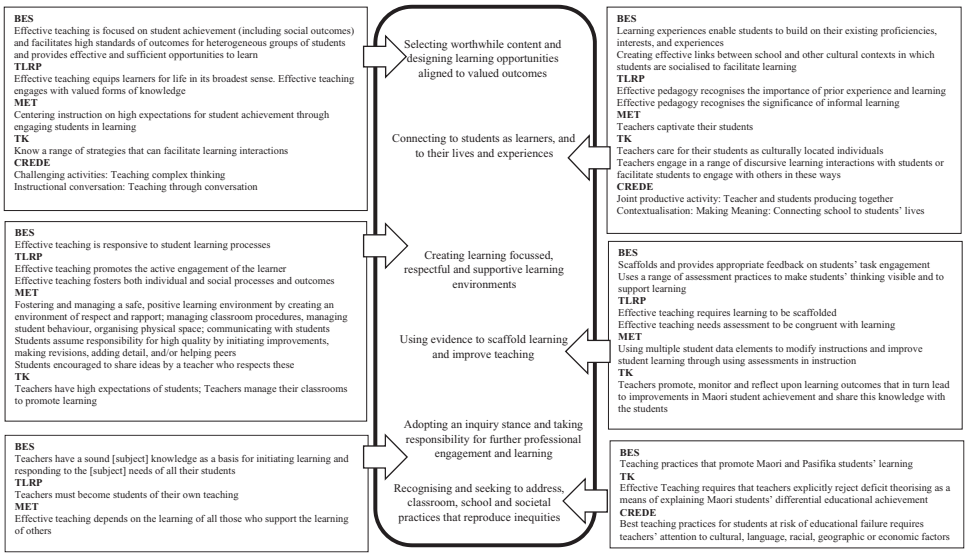


Figure 4. Facets of practice for equity: evidence from the syntheses.

Interestingly, it was the two syntheses/programmes that focused particularly on indigenous and/or disadvantaged students that contributed most strongly to the sixth facet, *recognising and seeking to address classroom, school, and societal inequities*.

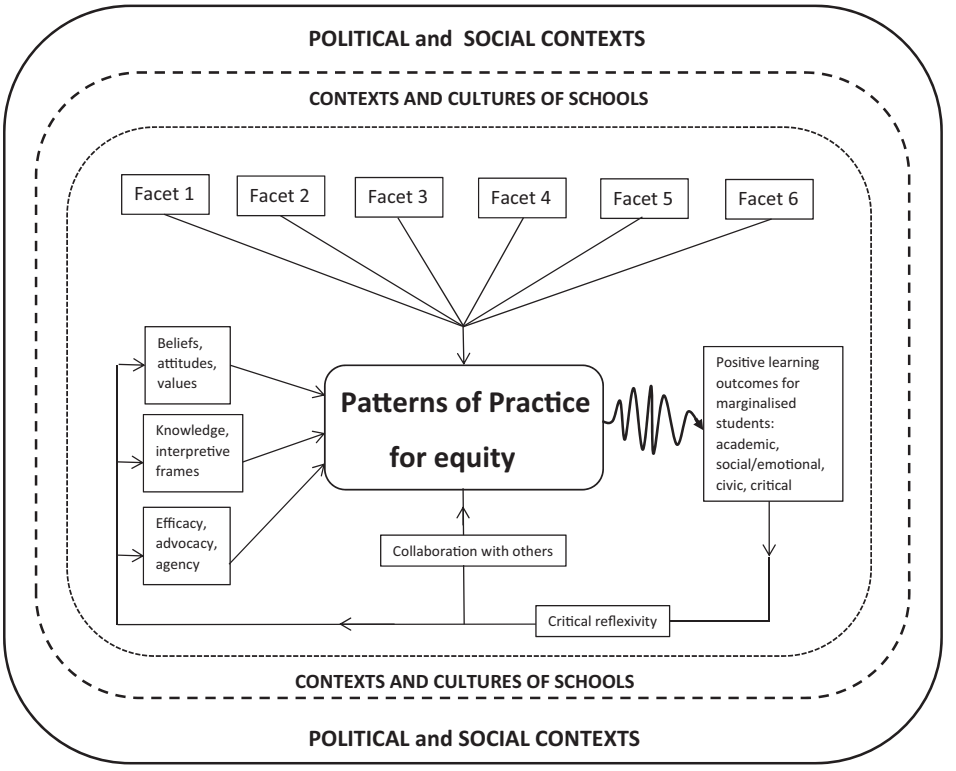
The insights from the international evidence also indicated that the six facets of practice for equity are highly contextualised as well as interconnected. Because each facet is in relationship with other facets, it would be difficult to enact one of these facets without enacting many of the others. The interconnectedness and contextualised nature of these facets means that it is hard to envisage a linear relationship between any one of them and student learning. For example, *creating learning focused, respectful and supportive learning environments* is facilitated through teachers *connecting to students as learners, and to their lives and experiences* which, in turn, influences teachers' *selection of worthwhile content and the design of learning opportunities*. Similarly, in order to address equity, teachers must work from the assumption that the job of teaching involves enhancing students' learning opportunities and outcomes by *recognising and seeking to address classroom, school and societal practices that reproduces inequities*.

Implications for a teacher education curriculum

In this section, we shift from a focus on *facets of practice for equity* to teacher education programmes that are equity-centred. In common with many practitioners and researchers around the world, we are interested in examining how and in what ways a teacher education curriculum can be designed to contribute to larger efforts to address the persistent problem of inequitable educational outcomes. As noted previously, our ultimate purpose in undertaking an analysis of international syntheses and programmes of research that examined teaching practice that supports diverse and disadvantaged students' learning

was to determine whether there were commonalities across syntheses and, if so, to use these insights to design an equity-centred teacher education curriculum. Because we conceptualise teacher education for equity in terms of justice and fairness, we envision a curriculum specifically intended to prepare teachers who can make a positive difference to the learning opportunities and outcomes of disadvantaged students. We believe that the identification of six *facets of practice for equity* that emerged from our cross-synthesis analysis can make a worthwhile contribution to teacher education. In this concluding section, we suggest that our notion of *facets of practice for equity* can form the basis of an equity-centred teacher education curriculum.

As noted, facets of practice, as we conceptualise them here, are general principles rather than specific strategies or behaviours, which is consistent with the notion that teaching, learning, and learning to teach are complex processes that are not fully predictable or linear. Building on the six facets, we developed a conceptual framework to guide the development of a teacher education curriculum, which is represented in Figure 5.



Key

Facet 1: Selecting worthwhile content and designing and implementing learning opportunities aligned to valued outcomes
Facet 2: Connecting to students as learners, and to their lives and experiences
Facet 3: Creating learning – focussed, respectful and supportive learning environments
Facet 4: Using evidence to scaffold learning and improve teaching
Facet 5: Adopting an inquiry stance and taking responsibility for professional engagement and learning
Facet 6: Recognising and seeking to address, classroom, school and societal practices that reproduce inequity

Figure 5. A conceptual framework of equity-centred teacher education.

Underpinning the framework is the assumption that a major outcome of teacher education ought to be the preparation of teachers who enact practice that enhances the learning opportunities and outcomes of students traditionally under-served by the system. As Figure 5 shows, by conceptual framework, we mean a coherent set of interrelated understandings about teaching, learning, and learning to teach situated within local and larger political and social contexts. This framework is intended to serve as a tool that guides teacher educators' deliberations and decisions about curriculum design, teaching, and assessment, in keeping with larger visions related to equity and tailored to the history of inequality of local contexts and the resources and constraints that influence local work.

As the Figure 5 graphic indicates, student teachers learn to teach in complex and multi-layered political and societal contexts. A central assumption underlying the framework is that a critical part of these contexts are intersecting systems of inequality based on race/ethnicity, culture, language, socioeconomic status, and gender. A further tenet of the framework, represented in the second ring, is that teaching and learning to teach are influenced by local contexts and by the cultures of schools. The figure also reflects the assumption that student teachers, teachers, and teacher educators have a responsibility to address inequity by working individually and collectively as active agents who enact practices that engender positive learning outcomes for disadvantaged students and, at the same time, challenge the structures that constrain these.

The six *facets of practice for equity* that we identified in the international literature are represented in the inner ring of Figure 5. However, practice is not simply what teachers and student teachers do in classrooms. Practice also includes how student teachers think about what they do and the values, attitudes, and interpretive frames they use to make sense of what happens in classrooms and schools. Thus, as indicated on the left side of the inner circle of Figure 5, facets or general principles of practice interact with student teachers' and teachers' beliefs, attitudes, values, knowledge, interpretive frames, and sense of efficacy and agency as they strive to enact practice for equity. Furthermore, as indicated at the bottom of the inner circle of Figure 5, student teachers learn to interpret and enact these facets by working in collaboration with other teachers, students, and wider groups of colleagues and families in a continual process of critical reflexivity.

The central idea of the conceptual framework is that all of the elements combine to form patterns of practice for equity, represented in the middle of Figure 5. Thus, patterns of practice for equity are consistent with the facets, but are also the result of particular clusters of attitudes, knowledge, and actions tailored to specific schools, communities, content, and points in time. This means that patterns of practice for equity cannot be fully determined, taught, or rehearsed outside of particular teaching contents and contexts. However, patterns of practice for equity *can* be taught and learned in the crucible of practice through a variety of processes as student teachers work collaboratively with mentors and other practitioners in different settings. Putting equity at the centre of initial teacher education requires that teacher candidates learn how to construct patterns of practice that are consistent with the six general facets *and* are appropriate to particular content, tailored to particular local contexts and histories, linked to the culture of a particular school as well as the knowledge traditions of particular cultural communities, and embedded in the relationships of particular teachers and students (Cochran-Smith et al., 2016).

Our conceptual framework for teacher education for equity, as represented by Figure 5, is intended to contribute to the field by providing a unique conceptual tool for the

development of a curriculum that addresses the moral purpose of teacher education – that is, creating the conditions within which teachers learn to challenge inequities by enacting practice that promotes disadvantaged students' learning, and by working with others as advocates for enhancing students' outcomes and opportunities. This kind of framework can be used to guide thinking about how teacher education with equity at the centre could be structured and designed in particular settings, including key elements of the curriculum, the organisational arrangements of the programme, its relationships with schools and communities, and its ways of selecting, supporting and assessing student teachers.

In conclusion, it is important to repeat that, although addressing educational inequities is an international problem that many teacher education practitioners and researchers have taken up, teaching, learning, and learning to teach are always embedded within local and larger political and social contexts. Thus, while frameworks such as the one we offer here can guide thinking about equity-centred teacher preparation, the responses of particular teacher education programmes to educational inequities must always be tailored to local societal, political, and institutional realities, resources, and goals.

Note

1. Project RITE (Rethinking Initial Teacher Education for Equity) is a six-member, two-country research team, led by researchers at the University of Auckland in New Zealand and Boston College in the United States.

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No potential conflict of interest was reported by the authors.

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