



THE UNIVERSITY OF
WAIKATO
Te Whare Wānanga o Waikato

The challenges of teacher education-exploiting synergies to meet multiple demands

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Shift in expectation of school and tertiary curriculum

- Confident active citizens
- Generic competencies that are highly transferable to multiple social arenas and work situations
- Communication, collaboration, critical thinking
- Debate around disciplinary knowledge and generic competencies
- Multi and transdiscipline approaches
- Integration and dialogue between subjects
- Understand concepts and recognise and apply knowledge and skills in different contexts

Teacher educators “linchpins in educational reforms” (Cochrane Smith, 2003).

“Greatest demands of knowing and expert practice fall upon teacher educators” (Windschilt & Stroupe, 2017).

“
Preparing Teachers
for the Future
We Want ”



[International Task Force on Teachers](#) for Education 2030 UNESCO 2018

The Teacher Task Force advocates for a teacher education that allows teachers to prepare learners to manage change and to be able to shape a just and equitable future, leaving no one behind.

- Continues to be challenging times for ITE
 - 2002 New Zealand Teachers Council – Autonomous crown entity
 - 2015 Education Council Aotearoa New Zealand - Independent statutory body
 - 2018 Teaching Council New Zealand

When performing its functions, the Teaching Council must have regard to any relevant statement of Government policy.



“Excellent! So that’s all agreed, then! All we need do now is draft the consultation document.”

- New Code of Professional Responsibility
- New Standards for the Teaching Profession
- New ITE requirements
- New Approval processes

PISA/TIMMS Results

Under achievement by Māori and Pacifica

There is a wider gap between the top 10% percent and bottom 10% of our students than in most other OECD countries.

Larger difference in achievement between students from advantaged and disadvantaged backgrounds in New Zealand



A Vision for the Teaching Profession

Education Workforce Advisory Group Report to the Minister of Education

Final Report
April 2010

[New Zealand Government](#)

Teacher Supply

U-turn from postgraduate ITE to:

- multiple pathways
- employment based pathways

- ITE programmes need to position a new graduate to work effectively as a teacher immediately.
- Each learner is entitled to teaching of the quality indicated by the Code and Standards for the Teaching Profession, regardless of whether they are taught by a new graduate or an experienced teacher.

- enabling flexible pathways into ITE to increase diversity and grow the workforce while safeguarding teacher quality

- providers establishing and maintaining authentic partnerships with key partners such as schools/centres/kura, and Māori and iwi, to get their input into key elements of a programme

- At least 10-15 key teaching tasks that graduates can be entrusted to be capable of carrying out as beginning teachers on day one of the job.
- Developed with partner schools and centres

Based on entrustable tasks medical profession

- Council's approval of ITE programmes will be introducing a focus on the evidence of the quality of assessments used in the programme to determine graduates' achievement of the standards.



- open ended (not easily resolved) authentic practice situation which requires complex decision making and synthesis of learning both cognitive and affective from across the programme
- Presented orally

- Graduate profiles
- Graduate attributes
- Disciplinary foundations
- Work integrated learning

Change in

- School curricula
- Expectation of graduates
- Standards for ITE and teachers
- Expectation on ITE lecturers to be researchers



“Your proposal is innovative. Unfortunately, we won’t be able to use it because we’ve never tried something like this before.”

Developing numerate citizens

Capacity for individuals to recognize the role that mathematical thinking plays in the world and to use mathematical thinking to to make well founded judgements and decisions (OECD, 2013)

Understanding of mathematical ideas for social justice

- ‘democratic access to powerful mathematical ideas’ support meaningful participation in work, leisure and political action locally and globally’ (Skovsmos & Valero 2012,p.383)
- Mathematics education is a concern for equity and social justice as mathematics can serve as gate keeper to educational and economic advancement and reproduce inequity and social stratification (Gutierrez 2008).
- Teacher educators seeking to engage beginning teachers with issues of social justice need to attend to the development of their mathematical thinking and their capacity to develop this in their students (de Fretias 2008).

- Mathematical demands of active citizenship
- Development of mathematical thinking across the curriculum to allow students to recognize mathematical thinking across a range of contexts.
- Teachers need to be familiar with the inherent numeracy demands of their subject, to recognize a numeracy opportunity when it arises and have the disposition and pedagogical skills to take advantage of the opportunities (Goos et al 2014)

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Guidelines for Disciplinary Foundations Papers

The Disciplinary Foundations papers are intended to support students in successfully transitioning into university study whilst also providing them with the foundation knowledge required to complete their chosen degree. It is recognised that the relative weight afforded to the various skills listed will vary according to disciplinary context. While the focus of these papers is on basic University-level study skills and learner dispositions, the intention is that opportunities to acquire and practise those skills will be embedded within rich disciplinary contexts. For example, they are not intended as simply study skills or writing papers.

Content/Foundational Skill

their intentions



<p>Effective academic writing (Discipline-appropriate)!</p>	<ul style="list-style-type: none"> ! Structure sound arguments in relation to the main topic and in relevance with the reading materials! ! Express their ideas in relation to the main topic/ argument of the writing! ! Use writing skills including note-taking, paraphrasing, summarising, direct quoting, and synthesising! ! Use proper formatting and referencing styles in their writing!
<p>Foundational information literacy and research skills!</p>	<ul style="list-style-type: none"> ! Locate and access information! ! Compare, critically evaluate, and select information resources! ! Organise and manage resources! ! Apply information to specific problems!
<p>Basic digital literacy for academic study!</p>	<ul style="list-style-type: none"> ! Access and use online resources for research purposes! ! Compare and evaluate capabilities of the technologies most commonly used in the relevant disciplines! • Use at least one media capture device, presentation, or editing application! • Communicate using a wide variety of applications in both social and academic forums!
<p>Basic numeracy skills / using data (where appropriate)!</p>	<ul style="list-style-type: none"> • Demonstrate basic numeracy skills in relation to disciplinary context, including proportional reasoning and manipulating formulae if relevant <ul style="list-style-type: none"> • Demonstrate mathematical and / or statistical proficiency required to read, understand, and critique disciplinary knowledge ! Apply and interpret basic statistics using appropriate software to produce descriptive statistics and to generate tables and graphs for effective use in visual presentation <ul style="list-style-type: none"> • Demonstrate ability to communicate clearly using language in addition to graphs, symbols, and formulae as appropriate
<p>Oral communication skills !! !</p>	<ul style="list-style-type: none"> • Contribute and participate in spoken discourse (such as tutorials, labs, workshops) <ul style="list-style-type: none"> ! Use at least one form of visual aid in support of a presentation • Speak to an audience incorporating at least one form of visual aid in a cohesive and timely manner <ul style="list-style-type: none"> • Use strategies for including audience participation!



Mathematical thinking

- Part of school curriculum
 - primary testing
 - NCEA level 1 – 10 credits in maths
 - PISA , PIAAC and TimSS

- Demonstrate proficiency relevant to their professional role
- Knowledge and skills to systematically engage with evidence to improve teaching and learning and communication of assessment information
- Gather analyse and use appropriate assessment information identifying progress and needs of learners to design next steps in learning

- ITE a pivotal role in to play to build teacher mathematical thinking and data literacy but there are a number of challenges
 - Teacher educator confidence
 - commitment and knowledge
 - crowded curriculum

Looked at development of mathematical thinking and reasoning that teachers need across the breadth of their professional work across an ITE programme

- i) teaching the mathematics embedded across all curriculum areas
- ii) collecting, interpreting and reporting on student achievement
- iii) carrying out administrative tasks.



In initial interviews neither lecturers or student teachers appreciated the extent to which mathematical thinking was embedded across the programme or in teacher's work.

- Initially associated mathematics with numbers
- After discussion identified ideas such as data representation, analysis, measurement and probability
- Participated in curriculum mapping
- Developed overview of mathematical thinking in their course and the programme
- Made mathematical thinking explicit and saw the benefits

By end of project student teachers could detail a range of situations where they had seen mathematics in action

- across learning areas
- as part of assessment and reporting
- managing classroom e.g. budgets, timetabling

Beginning teachers two years on were describing how they were working with mathematical thinking across curriculum, assessment and administration

- Built on MARKITE
- All teachers are teachers of literacy and numeracy.
All sectors will include paper(s) dealing with numeracy and literacy development.
- Embed data literacy/ICT across programme



**Capacity for learning lifelong developed
through researched programme innovations**

- Capacity to engage in learning lifelong and lifewide
- Often linked to inquiry activities
- Teacher and teacher educators capacity for continuous professional development essential as context they are working and preparing students for is continuously changing
- Research/inquiry can improve practice and inform the practice of others and model collaboration

- Inquiry central to curriculum
- Embedded in standards. Teacher expectation to inquire into the impact of their teaching overtime.
- ITE accreditation mandates research informed programmes taught by research active staff

- Group of professional practice, literacy and mathematics education specialists looked at the impact of the “front end” of the NZ curriculum in their practice. (vision, values, principles, key competencies, essence statements)
- Series of research activities designed to look at student teachers knowledge of and response to the “front end”.

- Student teacher personal beliefs did not align with principles
- Integration of key competencies and content knowledge in planning for mathematics problematic
- Students working with English learning area challenged by definition of literacy

- Highlighted complexity for both students and teachers
- Brought together teacher educators from different fields for in depth discussion
- Lecturers were able to look across curriculum while focusing on an area of interest
- they recognized they needed to grapple with complex ideas and deepen their understanding of learning



Researching programme innovations

- Professional experience programme for year 1 students designed with with partnership schools.
- Informed by a developmental evaluation based on a design and design-based intervention we aimed to produce robust explanations of innovative practice and to provide principles that could be used in other settings.
- Spawned four additional projects
 - arts assignment work
 - tracked students as beginning teachers
 - revisioning of school science curriculum
 - involved schools as co-researchers on practicum judgements

- Teaching Council requirements for more practicum
- Providers establishing and maintaining authentic partnerships with key partners to get their input into key elements of a programme;
- University WIL programme for all students a requirement from 2020

- Collegial and collaborative research developments (profile and learning)
- Systematic inquiry to question and make sense of and connect day to day work with the work of others and to the social political and cultural context.
- Contributes to local and public knowledge
- Provides evidence for accreditation body

- Small group of students joined the MARKITE research group and continued to attend.
“ just coming to the MARKITE meeting opened my eyes to knowing there is maths outside of maths.”
- Expressed interest in continuing being part of research
‘Opportunity to to engage in inquiry within a learning community may be a vital part of teachers’ and teacher educators ongoing education” (Cochran – Smith, 2003, p.7)

I'M BEGINNING TO WONDER IF OUR
TERMS OF REFERENCE MAY BE JUST
A LITTLE BIT TOO BROAD...?



- As separate initiatives (assessment, evaluation, accreditation, curriculum, research...) demands seem overwhelming
- If we look for intersection and synergies we can find congruence between inquiry and research and evidence
- Sophisticated process but worth pursuing