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TPACK and Initial Teacher Education: Implications from the Teaching Teachers for the Future Research

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Abstract

This paper provides implications for initial teacher education informed by key findings of research and evaluation of the *Teaching Teachers for the Future (TTF) Project*. The context for initial teacher education is largely situated within an *accountability agenda*, evidenced by the *National Plan for School Improvement* which will require the Tertiary Education Quality and Standards Agency (TEQSA) to audit initial teacher education programs in Australia, in addition to the scrutiny and program accreditation requirements by accrediting authorities. The TTF project demonstrated a more sophisticated, *improvement agenda* which respectfully acknowledged and engaged the collective wisdom of all Australian Higher Education Institutions providing initial teacher education programs. The author argues that recent policy and media commentary on quality teachers, including the *ABC's Q&A Education Special*, *Sky News State of the Nation Forum on Education*, and the *National Plan for School Improvement*, and the reporting of Australian school students performance on international tests, have been silent in relation to the disruptive innovations occurring through technological innovations and their implications for initial teacher education. The implications from the research and evaluation of the TTF project research and evaluation indicate that the TPACK conceptualisation and AITSL's *ICT Elaborations for Graduate Teacher Standards* can inform the design of initial teacher education in preparing teachers for the 21st Century.

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Introduction

In relation to initial teacher education programs in Australia, the Australian Institute for Teaching and School Leadership (AITSL) (2011) highlights the dual *improvement* and *accountability* agendas, stating that national accreditation of initial teacher education programs has two key objectives:

- improving teacher quality through continuous improvement of initial teacher education, and
- accountability of providers for their delivery of quality teacher education programs based on transparent and rigorous standards and accreditation processes.

By contributing to teacher quality, national accreditation of initial teacher education programs will help to achieve the national goals for schooling expressed in the *Melbourne Declaration on Educational Goals for Young Australians* endorsed by Ministers in December 2008. (AITSL, 2011, p. 3)

This paper argues that the policy and media drivers impacting upon education policy have positioned the **quality teacher agenda** largely within an *accountability agenda*. The paper

argues that this is inappropriate as it tends to look backwards. Consequently, this has contributed to creating an untenable, unsustainable, and unhelpful environment for initial teacher education in which serious educational challenges will not be able to be addressed to achieve high performance, high equity outcomes in a dynamically changing global knowledge economy. This requires a new narrative for teachers and students. The discourse evident in policy and media commentary about teacher quality largely neglects and undermines envisioning the potential power of a **quality teaching agenda** developed through **an improvement agenda**. In contrast to an accountability agenda which adopts a deficit discourse and focuses on compliance, an improvement agenda enables a forward looking approach enabling agency and innovation.

To demonstrate this potential power, the *Teaching Teachers for the Future (TTF)* Project is provided as an example of a preferred approach which is respectful, enabling, and reflects an improvement agenda through drawing upon the collective wisdom of all Higher Education Institutions (HEIs) which provide initial teacher education programs. Subsequent to a summary of the key findings of the analysis of the data collected using the *TTF TPACK Survey* (see Jamieson-Proctor et al., 2012), implications for initial teacher education programs are presented.

The Accountability Agenda - Policy and Media Commentary

There is considerable evidence that policy and media commentary positions teachers and schooling as easy targets for criticism. For example, Dinham (2012, p. 1) in *A political education: hijacking the quality teaching movement* makes a compelling argument that:

All we seem to hear about these days is failing teachers in failing schools. Those from business, government and the field of economics have all weighed in, criticising teachers, teacher educators and schools and offering often naive, misinformed or ideologically driven “remedies”.

...What I do see is a blanket stigmatisation of teachers, principals, teacher educators and education system leaders.

All these “solutions” ignore the fact that Australia still performs well on international measures of student achievement such as the Programme for International Student Assessment (PISA). (Dinham, 2012)

Similarly, this deficit construction of teachers is evident internationally, and Costello (2012), referring to the United States, highlights this effectively,

If you’ve noticed like I have, all the talk about school reform seems to begin and end with teachers. Teacher preparation, teacher observations, teacher evaluations, teacher tenure, teacher dismissals, etc. You would think that the reason this country is in the education predicament it’s in is all because of the person in front of the classroom. Teachers are blamed for poor test scores and are used as scapegoats for low achievement, while being characterized as untalented and lazy. And that’s on a good day.

It is not difficult to locate public policy developments such as the *National Plan for School Improvement* implying this stigmatisation, and includes ‘transparency and accountability’ in the five key areas of the plan; namely

- [Quality teaching](#)
- [Quality learning](#)
- [Empowered school leadership](#)

- [Meeting student needs](#)
- [Transparency and accountability](#)

‘Quality teaching’ is restricted to the ‘quality teachers’ discourse, and indicates that, “The Australian Government will introduce new, more rigorous standards for teacher training courses as part of the National Plan for School Improvement” (Australian Government, 2013). To achieve ‘Transparency and Accountability’, “The Australian Government will establish an Australian School Performance entity (ASPe) to collect better data about school performance and provide expert help to schools and school systems to help them improve results measures”. While *accountability* and *improvement* are both referred to, the message is clear that, according to Government, more accountability and new, more rigorous standards for initial teacher education are required.

To gain insights into public policy formation and the direction of education policy, the special Q&A Education Debate conducted on ABC television on 11 March 2013 made for disturbing scholarly analysis in relation to initial teacher education. For example, Christopher Pyne, Shadow Minister for Education, Apprenticeships and Training referred to ‘Teachers Colleges’ and ‘teacher training’, while Peter Garrett, Minister for School Education, Early Childhood and Youth referred to “the announcement that we made today about teacher training and teacher quality all go together”. A search of the transcript failed to find any reference to initial teacher education or the role of HEIs in producing quality graduates.

Similarly, it is not difficult to identify media commentary where everyone seems to not only have an opinion about what is wrong with teachers and schools, but they seem to believe that they are knowledgeable about this. Peter van Onselen, writing in *The Australian* (1 June 2013), while attempting to shed some light on what he believes are the important schools reforms needed, made the rather remarkable statement that, “the design of the curriculum does not adequately teach students the basics of what they should know by the time they reach Year 12”. Van Onselen positions himself as a curriculum expert. Daily there are many examples which dominate the word count in public conversation about quality teaching and is largely provided by politicians and journalists. This commentary tends to push for improved teacher quality through, for example, more rigorous initial teacher education entry requirements, and more rigorous initial teacher education program accreditation processes, by commentators who do not have those formal qualifications.

This paper assertively supports the critique and analysis by Zyngier (2009, p. 10) who argued that,

Media driven opinions of “what makes for good teaching” coupled with the government’s intervention in pedagogy, assessment and curriculum through the national assessment, national curriculum and prioritising of a phonics based method of teaching of reading (Rowe, 2005) could lead to what has been characterised as a pedagogy of poverty (Haberman, 1991). Teachers no longer (if they ever did) own their own profession.

As Dinham (2012) has indicated, there is little or no recognition for our strengths as a profession through government, business, and media commentary, apart from expecting some successful programs and schools being identified to share their ideas. There is a deep and deliberate ignoring of our successful performances, and a heavy reliance on the selective use of a narrow range of international data, such as PISA. As Joy Cumming cut through in her analysis in *ACE Notepad* (September 2012).

Claims by the Australian government that Australian education will be 'world-class' and 'top 5' by 2025 could be interpreted to believe that Australian education is poor quality. Australian education is very high quality on 'world-class' on all fronts. Statements of 'top 5' relate to performance on 2 hour-long standardised tests administered to a sample of students in a sample of schools in a number of countries that pay to participate in international comparison tests.

Cumming concluded that, "In Australia we now focus on judgement of schooling by the MySchool publication of school achievements based on less than four hours of overall testing (Year 7 example) consisting of 169 predominantly multiple choice and very short answer questions and a 30-40 minute writing task. Our education quality is far greater than this." (Cumming, 2012)

There is little or no commentary by politicians and the media in relation to our achievements. For example, in *Preparing Australian Students for the Digital World: Results from the PISA 2009 Digital Reading Literacy Assessment* (Thomson & Di Bartoli, 2012), Australia was the second highest performing country in relation to this assessment of 15 year old students' ability to read, understand and apply digital texts, with only Korean students outperforming Australian students. Therefore, it is refreshing when more balanced, evidence-based commentary appears which highlights the contributions and achievements of Australia's teachers.

An evidenced-based example is provided by Job (2012) in *The Drum Opinion* when he highlighted a statement by Andreas Schleicher, of the Directorate of Education of the OECD, noting that the literary achievement of Australian students in the international PISA testing regime places us among the top tier of OECD countries, attributed this accomplishment to a high level of Australian teaching professionalism. Job qualifies this by noting that "Schleicher's remarks were based on 2006 results, and there have been changes in the latest 2009 PISA study". However, Job (2012, p. 1) points out that in 2009,

Australia still achieved well above the OECD average in reading literacy: below six countries including Finland, Canada, Korea and Singapore; on a par with three, Japan, New Zealand and the Netherlands; but significantly above no less than thirty-eight, including the UK, the US, Germany, Switzerland, France, Denmark and Norway. Results in the Mathematics and Science domains were similar.

This is a very different assessment, according to Job (2012), when compared with Rupert Murdoch's assessment that our public education system is a "disgrace", and, at the time, Julia Gillard assertively agreeing with him and suggesting that perhaps the 'Gonski reforms' might be enough to enable Australian students to 'reach international standards'.

Elsewhere, in the United States, Milligan (2012) in a superb piece of writing contesting the views of those who attempted to blame the teachers for the Sandy Hook shootings, wrote that, 'it was among the teachers who thought and acted quickly to get their young charges into safe rooms, then escort them - eyes closed, so they would not see the disturbing scene - out of the building. The teachers, six of whom were murdered that day, include such heroes as Vicki Soto, who was shot dead while she was protecting her students. Soto was just 27... She was a goddaughter, cousin, best friend, and big sister. And she loved being a teacher.'" (Milligan, 20 December 2012). Milligan summarised this beautifully about teachers.

Not only must they teach the curriculum, but they must often deal with kids (and parents) with substance abuse problems, emotional troubles, learning disabilities, homelessness or just run-of-the-mill bad attitudes. They buy their own supplies for their classrooms. They are deemed "ineffective" if their students don't do well enough

on state-administered tests, even if they happen to get a class of kids with particular learning difficulties. They get slammed, wrongly, for demanding, rightly, to be paid what they're worth and to be treated with basic dignity. It's as if their detractors don't believe teachers can ask to be treated with respect and still love their kids. In fact, one of the best lessons children can learn is to treat people with respect and dignity for their work. Teachers shape lives. And last week, a teacher saved lives. (Milligan, 20 December 2012).

These examples from government and media reflect the challenges facing initial teacher education in terms of the tension between the ability of the profession to shape innovation and quality initiatives through an improvement agenda, rather than react to the deficit construction which positions initial teacher education within an increasingly accountability agenda. The following section provides an example of the powerful potential of adopting a respectful, collaborative approach with an improvement agenda to build the capabilities and quality of future teachers.

The *Improvement* Agenda – Teaching Teachers for the Future Project

The Council of Australian Governments (COAG) education reform agenda includes *Improving Teacher Quality*, and all Education Ministers have endorsed the [Australian Professional Standards for Teachers](#), and have agreed to establish national accreditation of initial teacher education programs and endorsed the elements of the teacher registration to be made nationally consistent. In addition, there is a growing recognition by school systems and school leaders of the need for schools to provide a world class education for Australian students in an increasingly digital age.

In contrast to the accountability agenda and approaches reflecting the myth of educational failure and crisis among Australian teachers, the *Teaching Teachers for the Future (TTF) Project*, is an example of an alternative view of future teachers and initial teacher education programs in Australian HEIs. The *TTF Project* arguably adopted an *improvement agenda*, and was one of four initiatives funded through the ICT Innovation Fund (ICTIF) and focused on “systematic change in the ICT proficiency of graduate teachers in Australia by building the ICT capacity of teacher educators and developing resources to provide rich professional learning and digital exemplar packages” (Australian Government, 2010, p. 1).

The 15 month long TTF Project involved all 39 Australian Higher Education providers of initial teacher education, with the lead agency being Education Services Australia (ESA) and partners being the Australian Council of Deans of Education (ACDE), the Australian Institute for Teaching and School Leadership (AITSL), and the Australian Council for Computers in Education (ACCE). Education Services Australia was the lead agency. Further details about the project are available elsewhere (see, for example, <http://www.ttf.edu.au> and <http://www.aitsl.edu.au/teachers/ttf/ttf-project.html>).

The TTF Project reflected an approach which respectfully understood the potential of capitalising upon the collective wisdom of HEIs involved in initial teacher education in Australia. The approach was collaborative, reflected in the establishment of the TTF National Support Network (NSN), the voluntary contributions of members of the TTF Research and Evaluation Working Group (REWG), and the collegial interactions throughout the project. Therefore, a key strength of the TTF Project was the adoption by participants of an alternative approach to compliance which is required through an accountability agenda. This

alternative approach was to capitalise upon the collective wisdom of participants enabling agency within an improvement agenda.

Central to the TTF Project was the Technological Pedagogical Content Knowledge (TPACK) conceptualisation (see Mishra & Koehler, 2006) which took into account the need for technological knowledge (TK) and well as pedagogical content knowledge (PCK).

The TTF Project – Summary of the Key Findings

A TTF Project Special Edition of *Australian Educational Computing* provides more comprehensive presentations of TTF research and findings. For example, Finger et al. (2013) provides a summary of key findings from the TTF TPACK Survey, while Heck and Sweeney (2013) provide insights into the use of Most Significant Change methodology in collecting stories from the field to establish the impact of the project. They outline how these stories were shared by participants to identify the Most Significant Change across the three domains of change: Course development, ICT capacity of teacher educators and ICT capacity of pre-service teachers. Additional journal articles (Campbell, 2013; Chandler & Redman, 2013; Gronn et al., 2013; Henderson et al., 2013; Kearney & Maher, 2013; Lloyd & Mukherjee, 2013; Masters et al., 2013; Doyle & Reading, 2013; Reading & Doyle, 2013; Sweeney & Drummond, 2013; White & Geer, 2013; Williams & Sutton, 2013; Zagami, 2013) provide a rich, scholarly set of TTF research.

As reported elsewhere by Finger et al. (2013), important findings obtained from the parametric and Rasch analysis of the TTF TPACK Survey data obtained from the administration of the TTF TPACK Survey in Semester 1 2011 (T1) and the data obtained at the end of Semester 2 2011 (T2), were:

- The scale: **Confidence to use ICT as a teacher showed measurable growth** across the whole scale from T1 to T2.
- The scale: **Confidence to facilitate student use of ICT also showed measurable growth** across the whole scale from T1 to T2.
- The scale: **Usefulness of ICT for initial teacher education students as a future teacher showed no change** from T1 to T2.
- The scale: **Usefulness of ICT for initial teacher education students for their future students showed no change** from T1 to T2.

As cautioned by Finger et al. (2013), analysis of the four sets of data using the individual HEI as the unit of analysis found marked differences from the national project results for those universities tested. Further analysis was recommended at the individual HEI level. Moreover, the MSC stories reported elsewhere (Heck & Sweeney, 2013) provide complementary insights about the changes which occurred within and across HEIs. While usefulness showed no change, there were generally positive perceptions of initial teacher education students of the usefulness of ICT for teaching and for the use of ICT by their future students. Due to paper length constraints, the following key summaries are provided of the main results derived from those analyses as reported by Finger et al. (2013).

Confidence and Usefulness – ICT to support teaching

Based on responses to confidence items, participants were *most likely* to be confident that **ICT would support teaching** in relation to:

- Using a range of ICT resources and devices for professional purposes

- Selecting and using a variety of digital media and formats to communicate information
- Collaborating for professional purposes such as online professional communities
- Selecting and organising digital content and resources
- Using ICT for reporting purposes such as reporting to parents/carers
- Teaching specific subject areas in creative ways
- Engaging with colleagues to improve professional practice

In contrast, they were *least likely* to be confident **ICT would support teaching** in relation to:

- Supporting students from Aboriginal and Torres Strait Islander backgrounds
- Managing challenging student behaviour by encouraging responsible use of ICT
- Digital citizenship to promote student demonstration of rights and responsibilities in use of digital resources and tools
- Engaging parents and families in the child's school through ICT
- Teaching strategies responsive to diverse student backgrounds

Based on responses to usefulness items, participants were *most likely* to consider that **ICT would usefully support teaching** in relation to:

- Demonstrating knowledge of a range of ICT to engage students
- Teaching strategies responsive to students' learning styles
- Designing ICT activities that enable students to become active participants in own learning
- Teaching specific subject areas in creative ways
- Accessing, recording, managing and analysing student assessment data

In contrast, participants were *least likely* to consider that **ICT would usefully support teaching** in relation to:

- Managing challenging student behaviour by encouraging responsible use of ICT
- Engaging parents and families in the child's school through ICT
- Teaching strategies to support students from Aboriginal and Torres Strait Islander backgrounds
- Digital citizenship to promote student demonstration of rights and responsibilities in use of digital resources and tools
- Reflecting on relevant ICT research to inform professional practice
- Identifying personal and professional learning goals in relation to using ICT

Confidence and Usefulness – ICT supports student learning

Based on responses to items asking them how confident they were that they had the knowledge, skills and abilities to support students' use of ICT for learning, they were *most likely* to be confident in relation to:

- Providing motivation for curriculum tasks
- Demonstrating what they have learned
- Developing understanding of world
- Gathering information and communicating with a known audience
- Communicating with others locally and globally

In contrast, they were *least likely* to be confident they had the knowledge, skills and abilities to support **students' use of ICT for learning** in relation to:

- Facilitating integration of curriculum areas to construct multidisciplinary knowledge
- Understanding and participating in a changing knowledge economy
- Synthesising their knowledge
- Acquiring awareness of global implications of ICT-based technologies
- Developing functional competencies in specified curriculum areas

Based on responses to items asking them how useful they considered it would be for them as a teacher to ensure students' use of ICT for learning, they were *most likely* to be confident in relation to:

- Engaging in independent learning through access to education at time, place & pace of own choosing
- Developing understanding of the world
- Demonstrating what they have learned
- Acquiring knowledge, skills, abilities and attitudes to deal with technological change

In contrast, they were *least likely* to feel that ICT would be useful for **students' use of ICT for learning** in relation to:

- Understanding and participating in the changing knowledge economy
- Critically evaluating their own and society's values
- Critically interpreting and evaluating the worth of ICT-based content for specific subjects
- Gaining intercultural understanding
- Acquiring awareness of global implications of ICT-based technologies
- Facilitating integration of curriculum areas to construct multidisciplinary knowledge
- Developing functional competencies in specified curriculum areas

Implications for Initial Teacher Education

This paper has argued that there is a crisis of trust, respect and recognition of teaching as a profession and of those institutions which prepare our nation's teachers. While we can advocate for improved recognition of the teaching profession, and argue in scholarly, evidence-based ways to counter balance the criticisms, I believe that the reality for teachers and future teachers is likely to a worsening context of increased scrutiny and increased criticisms of their status and their work. Teachers' work is now characterised by a 24/7 engagement and commitment, and often in hostile and unattractive teaching and learning environments. This is occurring within a context characterised by an increasing lack of trust of HEIs to produce quality graduates, reduced funding, and increasing regulatory requirements reflecting an *accountability agenda*. The TTF project demonstrated that there is an alternative approach through adopting an *improvement agenda*, characterised by capitalising upon the collective wisdom of HEIs, and a scholarly approach enabled by collaboration and strategic networks.

In conclusion, the key implication is to recognise the importance of a *quality teaching agenda with an improvement focus* which elevates:

- The **respect for teaching as a profession** requiring a significant volume of learning (minimum of 4 years for undergraduate students, and 5 years for all future postgraduate students), learning outcomes, and undertaken in accredited programs in accordance with the *Australian Professional Standards for Teachers*;

- The **confidence held by the community for teacher graduates** and those who prepare them;
- The **understanding of the partnerships between HEIs and schools and school systems to co-design, co-deliver and co-produce quality teacher education graduates**;
- The understanding of **quality teaching aimed to enhance student learning and equity is ‘everybody’s business’**, including policy makers, bureaucrats, teachers, leaders, parents/caregivers, HEIs, curriculum developers, and the community

Evident throughout the TTF Project was the understanding that Pedagogical Content Knowledge (PCK) is no longer sufficient, as teachers in the 21st Century require technological capabilities and knowledge to have **Technological Pedagogical Content Knowledge (TPACK) – the Total PACKage**. The findings reported here showed that there are areas of strength in terms of confidence of future teachers to use ICT to support their teaching and for use for student learning. Given the expected technological changes of new and emerging technologies, an *accountability agenda* is inappropriate as it looks backward, while an *improvement agenda* enables a forward looking approach. Our future teachers who have the potential to improve the life prospects of their students, also need wider support through more sophisticated, research informed government, business and media commentary, which understands the powerful potential for enhanced teacher quality through *engaging in an improvement agenda*.

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