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Catholic Teachers' Postgraduate Qualifications and Students' End of Schooling Outcomes: A Large Scale Queensland Based Comparative Study

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Catholic Teachers' Postgraduate Qualifications and Students' End of Schooling

Outcomes:

A Large Scale Queensland Based Comparative Study

Abstract

A key feature of the current era of Australian schooling is the dominance of publically available student, school and teacher performance data. Our paper examines the intersection of data on teachers' postgraduate qualifications and students' end of schooling outcomes in 26 Catholic Systemic Secondary Schools and 18 Catholic Independent Secondary Schools throughout the State of Queensland. We introduce and justify taking up a new socially-just measurement model of students' end of schooling outcomes, called the 'Tracking and Academic Management Index', otherwise known as 'TAMI'. Additional analysis is focused on the outcomes of top-end students *vis-à-vis* all students who are encouraged to remain in institutionalised education of one form or another for the two final years of senior secondary schooling. These findings of the correlations between Catholic teachers' postgraduate qualifications and students' end of schooling outcomes are also compared with teachers' postgraduate qualifications and students' end of schooling outcomes across 174 Queensland Government Secondary Schools and 58 Queensland Independent Secondary Schools from the same data collection period. The findings raise important questions about the transference of teachers' postgraduate qualifications for progressing students' end of schooling outcomes as well as the performance of Queensland Catholic Systemic Secondary Schools and Queensland Catholic Independent Secondary Schools during a particular era of education.

Introduction

In considering the intersecting fields of this correlational and comparative study, the salient literature and recent initiatives from the Australian context on teachers' minimum and postgraduate qualifications was reviewed. In the paper in hand, the term 'minimum' qualification refers to the entry point qualification deemed acceptable for teacher registration according to the Queensland College of Teachers. What constitutes the minimum qualification for teacher registration in Queensland has changed across time, as has the nomenclature, but generally speaking, at the time of data collection, a minimum qualification for teacher registration included either a Bachelor of Education (typically with a major in Early Years, Primary, Middle Years or Secondary) or a Graduate Diploma of Teaching (typically with a major in Early Years, Primary, Middle Years or Secondary). In Queensland, once registered, teachers' assignments are not limited to their field of speciality. For example, a Secondary trained Drama specialist can be assigned to teaching duties in a Preparatory class. For the purposes of this study, a teachers' postgraduate qualification is deemed as being equal to or above a Masters qualification, for example, an Educational Doctorate (EdD) or a Doctor of Philosophy (PhD).

Throughout other jurisdictions the minimum qualification to be a registered teacher has received much attention (see, for example, Darling-Hammond, 1998, and Ingersoll's six nation study, 2007). In various countries attention has also been given to the markers of 'higher quality' teachers (see, for example, Clotfelter, Ladd & Vigdor, 2007, 2010; Darling-Hammond, 2000; Guarino et al., 2006; Haycock, 1998; Ingersoll, 2007). In Australia, however, the discussion of the latter has been limited, due in part to the way the remuneration system in the individual states and territories makes payment on a teacher's years of service rather than assessments of teaching practice, student learning outcomes, community feedback and/or teachers' entry level and/or additional qualifications. The dearth of research is also due to the scarcity of data that link teachers' post-graduate qualifications to students' end of schooling learning outcomes.

During 2005 two Australian economists, Leigh and Ryan (2005), released a report on the quality of teaching in Australia and concluded that "the aptitude of new Australian

teachers has fallen considerably” (p. ii). Leigh and Ryan’s (2005) research and analysis method were critiqued on two accounts (Exley, Walker & Brownlee, 2009). One critique is with the metric itself, an assessment of pre-service teachers’ literacy and numeracy competencies for teaching on the basis of their literacy and numeracy performances in their ninth year of formal schooling when they were approximately 16 years of age. The distance between a point-in-time assessment in Year Nine and graduating with a teaching qualification at least seven years later erodes the validity of the measure (Exley, Walker & Brownlee, 2009). The second critique is the overgeneralisation of the findings to all undergraduate pre-service teachers when the range of pre-service teachers also includes those who have entered via non-traditional, yet still rigorous, routes. As a case in point, a 2008 study investigating the epistemic beliefs of 292 first year pre-service teachers across two campuses of the Queensland University of Technology (QUT), a large supplier of pre-service teachers in Queensland, found only 34 - 38% of the pre-service teachers came to teacher education directly from secondary school (Exley, Walker & Brownlee, 2009). Of the 62 - 66% that did not come to pre-service teacher education directly from secondary school, 4 - 11% held Technical and Further Education (TAFE) qualifications and 5 - 13% were offered places in QUT’s alternative entry scheme on the basis of their potential for academic success (Exley, Walker & Brownlee, 2009). In addition, Leigh and Ryan’s (2005) conclusions did not account for pre-service teachers who completed their secondary schooling somewhere other than Australia. In summary, we are not committed to employing a single literacy and numeracy measure for immediate school leavers entering pre-service teacher education courses as a proxy for a comparative statement on teacher quality some years later.

In 2010 in the fray of a rigorous Federal election campaign, the then-Shadow Minister for Education, Julia Gillard, promised upon winning government to introduce a performance pay bonus for Australian teachers as a mechanism to boost teacher quality. Following a win at the polling booths, the then-Deputy Prime Minister and Minister for Education, Julia Gillard, established the Australian Institute for Teaching and School Leadership (hereafter

AITSL). One of AITSL's first tasks was the responsibility for finalising and validating the 'National Professional Standards for Teachers' (AITSL, 2011), started by the Ministerial Council for Education, Early Childhood Development and Youth Affairs (MCEECDYA) in 2009 and continued by the National Standards Sub-group of the Australian Education, Early Childhood Development and Youth Affairs Senior Officials Committee (AEEYSOC) throughout 2009 and 2010. By February 2011, a framework of seven Standards outlined "what teachers should know and be able to do" within the domains of 'Professional Knowledge', 'Professional Practice' and 'Professional Engagement' across four professional career stages of 'Graduate', 'Proficient', 'Highly accomplished' and 'Lead' Teachers (AITSL, 2011, pp. 1-3). At their most general, the seven 'National Professional Standards for [Australian] Teachers' are:

- Standard 1 = Know students and how they learn
- Standard 2 = Know the content and how to teach it
- Standard 3 = Plan for and implement effective teaching and learning
- Standard 4 = Create and maintain supportive and safe learning environments
- Standard 5 = Assess, provide feedback and report on student learning
- Standard 6 = Engage in professional learning
- Standard 7 = Engage professionally with colleagues, parents/carers and the community (AITSL, 2011, p. 5).

At a more specific level, 'Standard 6 – Engage in professional learning', requires specific evidence for the three higher career stages:

- Proficient Teachers – "participate in learning to update knowledge and practice, targeted to professional needs and school and/or system priorities" and "undertake professional learning programs designed to address identified student learning needs" (AITSL, 2011, p. 18).
- Highly Accomplished Teachers – "plan for professional learning by accessing and critiquing relevant research, engage in high quality targeted opportunities to improve

practice...”, and “engage with colleagues to evaluate the effectiveness of teacher professional learning activities to address student learning needs” (AITSL, 2011, p. 18).

- Lead Teachers – “engage in research” and “implement professional dialogue within the school or professional learning network(s) that is informed by feedback, analysis of current research and practice to improve the educational outcomes of students” (AITSL, 2011, p. 18).

In total these targeted outcomes place an emphasis on differentiation and increased student outcomes. As the Federally driven ‘learn or earn’ Compact (Council of Australian Governments’ Meeting, 2009) has resulted in a more diverse demographic staying in school until the end of the senior secondary years, the emphasis on differentiation and increased student outcomes warrants attention (Teese, 2005). One of the sub-texts of the National Professional Standards for Teachers (AITSL, 2011) is that the means to the end is for teachers to engage in high levels of professional learning. Notable by its absence is overt reference to teachers’ postgraduate credentialed qualifications. This is the point explored in this paper because it is of interest to those involved with teacher professional development. Specifically, this paper focuses on the matter of post-graduate teacher qualifications and its relationship with two forms of student learning outcomes for the end of schooling as it is realised in 26 Catholic Systemic Catholic Schools, 18 Catholic Independent Secondary Schools, 174 Education Queensland Secondary Schools and 58 Independent Secondary Schools across Queensland. In total, this sample constitutes more than half of the Secondary Schools in Queensland at the time of the data collection. The motivation for this study was the shared belief that one fundamental aim for all secondary school teachers should be their students’ end of schooling outcomes. Unlike matters pertaining to students’ socio-economic status (Ingersoll, 2007), race (Kain & Singleton, 1996), cultural mis/alignment to assessment (Exley, 2010) and mis/alignment between teaching major and teaching assignment (Darling-Hammond, 1996), teacher qualifications are not fixed; teacher qualifications are a positively active variable and as such, something the system is empowered to change. The logic for distilling the data across systems of schooling was to

account for the significantly different approaches to teaching and learning inherent in the multiple systems in existence in Queensland at the time of data collection.

The topic of the relationship between teachers' qualifications and students' learning outcomes was again raised in the nation's lead newspaper, *The Australian*, when Prime Minister Julia Gillard was reported as saying "the assessment of teachers' performance would include lesson observations, parental feedback, *qualifications and further education undertaken*, and student performance data, including the national tests [for students] and school-based information" (Ferrari, 2011, emphasis added). In the same article, Ferrari (2011) quoted Federal School Education Minister Peter Garrett as saying "...the government strongly believes that student performance and improvements should be one of those elements, and that includes NAPLAN¹ results where applicable". Two significant points can be made about these media grabs. The first centres on the implication that teacher qualifications and further education are related to higher student learning outcomes. The second is the perennial issue of identifying and measuring student performance and improvement. Each point is discussed in turn.

Teachers' postgraduate qualifications & higher student outcomes

International evidence regarding teachers' postgraduate qualifications and its effect on students' learning outcomes is mixed. The empirical evidence thus far has failed to identify specific teacher characteristics that are positively linked to improved student learning outcomes. Out of the hundreds of studies that have investigated the impact of teachers on students' learning outcomes throughout various countries, most have "modelled standardized test scores across students, schools, or school districts, as a function of individual and family background characteristics and schooling variables such as expenditures per pupil and class size" (Goldhaber & Brewer, 1996, p. 199). Goldhaber and Brewer (1996) call into question the research methods of some of these highly cited studies.

¹ NAPLAN is the Australian Curriculum, Assessment and Reporting Authority's high stakes National Assessment Plan – Literacy and Numeracy.

For example, they reject the studies reviewed by Hanushek (1986) because of an absence of pre-test scores to “net out individual ability, as is now generally accepted as being important” (Goldhaber & Brewer, 1996, p. 200; see also Buddin & Zamarro, 2009).

Goldhaber and Brewer (1996) support the findings of one study undertaken some time ago by Monk and King (1994) which claims a positive relationship between the subject matter preparation of science and mathematics teachers and student performance. Similarly, a comparative study of teachers' self-evaluation of Social Science disciplinary content knowledge and pedagogical knowledge *vis-a-vis* students' learning outcomes found an almost perfect match: students perform best when teachers indicate higher levels of expertise (Baker, 1996).

In contrast to the above, other large-scale longitudinal studies, such as that conducted by Clotfelter, Ladd and Vigdor (2007), examined the effect size of teacher qualifications and further education and student learning outcomes in the primary school. Their study, published through the National Centre for Analysis of Longitudinal Data in Education Research, examined almost all the primary school teachers with responsibility for teaching mathematics and reading in North Carolina to approximately three million students over a ten year period. One of the most counterintuitive findings was the small or negative effects of teachers' postgraduate qualifications on students' learning outcomes. More specifically, the “estimates indicate that the teachers who received their degree prior to entering teaching or any time during the first five years” of teaching were “no less or no more effective than other teachers in raising student achievement” in mathematics and reading in the primary years of schooling (Clotfelter, et al., 2007, p. 33). Teachers who earned their Master's degree “more than five years after they started teaching appear to be somewhat less effective on average than those who do not have” a master's degree (Clotfelter, et al., 2007, p. 33). Another important factor of the Clotfelter et al. (2007) study was that low match rates between individual teachers and their students in the secondary school meant that no conclusions could be drawn for this sector. Other studies in a range of contexts found a nil effect between teachers' postgraduate qualifications and increased student learning

outcomes. An analysis of 16,000 teachers of 300,000 middle primary students in the Los Angeles Unified School District found that student learning outcomes were unrelated to teachers' advanced degrees but were positively related with teacher experience (Buddin & Zamarro, 2009).

This literature review renders visible an important conclusion and that is the difficulties of providing definitive answers to questions about the relationship between teachers' higher qualifications and end of schooling outcomes.

Measuring student performance through standardised assessment

As noted in the citations of the media reports mentioned above, the point-in-time National Assessment Plan – Literacy and Numeracy (hereafter NAPLAN) is mooted by both Gillard and Garret (Ferrari, 2011) as one part of a valid measure of a teacher's performance. This notion is problematic on two accounts. The first problematic is NAPLAN's irrelevance for end-of-schooling outcomes. NAPLAN applies only to students in the first trimester of Year 3 (aged 8 years), Year 5 (aged 10 years), Year 7 (aged 12 years) and Year 9 (aged 14 years). In the Queensland context, those finishing secondary school are in Year 12 and by November of their graduating year, are aged between 17 and 18 years.

Second, the NAPLAN instrument has been shown to privilege conservative notions of knowledge and skills over more contemporary and transformative definitions (see Exley & Singh, 2011). NAPLAN thus prioritises a normative stock of goods through privileging of mainstream knowledge. The focus on point-in-time standardised measures of literacy and numeracy assessment as measures of desired learning outcomes stands in contrast to the vision for the outcomes of schooling of the nation's peak educational council, the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA). In December of 2008, MCEETYA released its landmark document that declared the overarching goal of Australian schooling for 2009-2012 would be the promotion of "equity and excellence" where "all young Australians become successful learners, confident and creative individuals and active and informed citizens" (MCEETYA, 2008, p. 3).

Thus, our research focus is the pursuit of a more appropriate mechanism for calculating the correlation of teachers' postgraduate qualifications against end of schooling outcomes than what is possible via NAPLAN data. In the next section, an alternative measure is explored which was developed by Smeed (Author 1) and trialled in Queensland since 2011. Though the basic questions underlying this research are not new, the availability of data for over half of the Secondary Schools within Queensland at the same point in time allows a decent exploration of the situation.

Data Collection

The data are drawn from the 276 Queensland Secondary Schools which made their 2010 graduating cohort's achievements and teachers' postgraduate qualifications available on line by the end of 2011. The schools represent the following four sectors: Catholic Systemic Secondary Schools ($n = 26$), Catholic Independent Secondary Schools ($n = 18$), Education Queensland Secondary Schools ($n = 174$), and Independent Secondary Schools (not Catholic) ($n = 58$). In the Queensland context, each education system has its own remit, receives different amounts of funding from the Federal and State Governments, relies on different forms of support from private tuition fees and operates within different forms of management.

For example, in Queensland, five autonomous Catholic Education Dioceses oversee the Catholic Systemic Schools who receive significant Federal Government funding to assist with building programs. Operational funds are collected from a smaller State Government contribution, the Parish (or redistributed from other Parishes in the Dioceses if need be) and supplemented by parents and caregivers who pay a tuition fee in the vicinity of AUS\$5000 per student per annum. The mission and ethos of these schools is inspired by the example of Jesus Christ and as such "no child should be denied a Catholic education because of their family's financial situation" (Queensland Catholic Education Commission, n. d.). Whilst each school has been encouraged to establish a consultative/advisory board, each board

functions within the provisions of a constitution approved by the Catholic School Authority (Queensland Catholic Education Commission, 2013).

In contrast, Catholic Independent Secondary Schools are 'order-owned' and although in receipt of substantial Federal Government funding to assist with building programs, operational funds are acquired from smaller State Government contributions, order-owned income generating assets and tuition fees in the vicinity of AUS\$6000 to AUS\$10000 per student per annum. Order-owned schools, also known as Religious Institute Schools, are usually managed by a board of management and acts as the governing body of the school.

Education Queensland schools, on the other hand, are funded in the main by the Queensland Government with smaller Federal Government contributions supporting building programs. The rhetoric is that tuition costs are free; however, the reality is that parents and caregivers are asked to fund the cost of consumables, excursions and the like. A core mantra of Education Queensland schools from 2012 is the "commitment to the core learning priorities of Reading, Writing, including spelling, grammar and punctuation, Numeracy, Science, Retention, attendance, attainment and transition of students at key junctures of schooling and *Closing the Gap* between the attendance and outcomes of Indigenous and non-Indigenous students" (Education Queensland, 2012).

Independent Secondary Schools receive significant funds from the Federal Government to assist with building programs. Operational costs are borne in the main by parents and caregivers who pay tuition fees which range from approximately AUS\$10000 to AUS\$35000 per student per annum. In the Queensland context, these schools are considered to be the most selective by virtue of the pecuniary resources required for admission and ongoing participation. However, what this abridged description does not render visible is that some Independent Secondary Schools, albeit a minority, serve disadvantaged remote and rural communities and in effect operate on budgets less than that made available to Queensland Government schools. Each Independent Secondary School has its own remit and its own board of governors.

Data collection for the study in hand involved visiting the publically available website of each Secondary School in Queensland in 2011, locating the school's publically available 'Annual Report' for 2010 and mining those documents to determine the category of schooling system, as well as numerics on teachers' postgraduate qualifications and students' end of schooling outcomes. Just over half of all Queensland Secondary Schools had the requisite data available for 2010 outcomes during the end of 2011 search. During the data searching process, we came to realise that some school 'Annual Reports' used the nomenclature of 'Staff Qualifications' rather than 'Teacher Qualification' so as to include school Administration (such as the Principal, Deputy Principal, School Guidance Officer etc). Thus in the breakdown of the data, the nomenclature of 'Teachers' Qualification' continues to be used so as to distinguish between those charged with the responsibility of teaching and learning and its administration *vis-à-vis* those who service the business operations of a school (such as the Bursar, Enrolments Officer, School Secretary and the like). In the process of compiling the data set, school sites that did not have all the requisite data available, or data that could not be discerned according to our prescribed categories, were disregarded. A number of data sets were thus discounted because it was not possible to identify if teachers' qualifications met or exceeded registration standards .

The correlational coefficients for each of these four schooling systems were mapped against teachers' postgraduate qualifications and results from the graduating student cohort as achieved by (i) top-end students and (ii) all student outcomes. Although the percentage of teachers with post-graduate qualifications is a static measure that can be administratively defined, one revealing limitation is the absence of a more delicate breakdown of the field of knowledge of the qualification. In technical terms, the estimates of correlation coefficients are subject to at least two sources of bias. First, the coefficients will be biased if teachers' postgraduate qualifications are not positively matched to their area of teaching. For example, whilst some teachers with a postgraduate qualification may have 'Education' as a major, others may have an MBA (Masters of Business Administration), 'Masters of Theology' or even something unrelated to their work as a teacher. The point is the study

was not able to systematically align individual teachers' postgraduate specialisation with their main teaching assignment. For example, a 'Masters of Education - Teacher Librarianship' graduate teaching junior biology or the like could not be accounted for. This anomaly, as well as the inverse potential, that is for very strong matches between teachers' postgraduate qualifications and their teaching assignments, are not controlled variables.

The second source of bias identified is the positive matching of teachers with postgraduate qualifications to the non-government schooling sector. Although all schooling sectors had some schools with in excess of 20 percent of teachers with a postgraduate qualification, the privately-funded schools (i.e. non-Education Queensland Secondary Schools) outnumbered the Government-funded schools (Education Queensland Secondary Schools). Emerging from this data is evidence that teachers with postgraduate qualifications tended to teach in privately funded schools rather than Government-funded schools. Here is the rub. Typically, as Darling-Hammond (1998) illustrated in the United States, the schools and systems that tend to serve low-income minority communities have difficulty attracting the most highly qualified teachers. Table One shows each of the four sectors under review in this study and their Index of Community Socio-Educational Advantage. This index represents student-level data on the occupation and education level of parents/carers, and/or socio-economic characteristics of the areas where students live, whether a school is in a metropolitan, regional or remote area, proportion of students from a language background other than English, as well as the proportion of Indigenous students enrolled at the school (MySchool Website 2012). The higher the Mean ICSEA Value, the higher the perceived advantage.

Table One: Teachers' qualifications and ICSEA value per sector

	Catholic Systemic Secondary Schools	Catholic Independent Secondary Schools	Education Queensland Secondary Schools	Independent Secondary Schools
Percentage of teachers with post-graduate qualifications	14.5	18.6	8.2	13.7
Mean ICSEA	1015.8	1060.6	962.1	1062

Value				
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In terms of conditions for employment in Queensland secondary schools, only the Catholic Systemic Secondary Schools made overt reference to the need for a secondary school Principal applicant to have postgraduate qualifications in an appropriate discipline, or a second degree or a relevant Graduate Diploma in an appropriate discipline (Brisbane Catholic Education, 2011). Principal and Deputy Principal applicants with Education Queensland, the public education employer, were not specifically required to hold postgraduate qualifications (Smartjobs, 2012). Catholic Independent and Independent Secondary Schools had no generic position descriptions available although it is relatively common for Teacher Librarians, School Counsellors, English as Second Language Teachers and Special Education teachers to have credentialed postgraduate qualifications. Thus the figures presented by the 276 participating schools do not distinguish between the number of classroom-based teachers with postgraduate qualifications and those working outside the regular classroom.

End of schooling outcomes for top-end students

In this part of the analysis, data relating to the 2010 graduating cohort consisted of the percentage of students who were eligible for an Overall Position (OP) score and achieved an OP1 - OP5 rank. OPs are a Queensland-wide "rank order of students, starting at OP1 (highest performance) and continuing to OP25 (lowest performance) based on achievements in Authority subjects" (Queensland Studies Authority, 2011a, p. 3). OPs are most commonly used by the tertiary sector for selecting students when there are more eligible applicants than quota places available in particular courses of study. The Queensland Studies Authority (2011a) claims that "OPs provide the most equitable way of comparing overall achievement in Authority subjects" (p. 3). For this part of the study, OP1-OP5 scores account for approximately the top 20% of the graduating students and are thus considered to be indicative of 'top-end' achievement.

Using a Spearman Rank Order Correlation Coefficient, a 0 to +1 (positive 1) or a 0 to -1 (negative 1) indicator variable was derived for each of the four sectors under investigation. A positive correlation indicates a positive correlation between teachers' post graduate qualifications and the school's performance. A negative correlation indicates that the greater the number of teachers with a post graduate qualification, the worse the school's performance. Table Two presents the results.

Table Two: High end student outcomes and correlation with teachers' post-graduate qualifications

	Catholic Systemic Secondary Schools	Catholic Independent Secondary Schools	Education Queensland Secondary Schools	Independent Secondary Schools
Mean % of student with high-end outcomes (OP1-OP5 rank)	9.4	16.5	7.1	18.5
Correlation between % of teachers with post-graduate qualification and students achieving high-end outcomes (OP1-OP5 rank)	-0.07	0.08	0.33	0.52

Table Two shows a positive effect between teachers' post-graduate qualifications and students achieving high-end outcomes in Catholic Independent Secondary Schools (0.08), and a significantly larger positive effect in Education Queensland Secondary Schools (0.33) and Independent Secondary Schools (0.52). The Catholic Systemic Secondary School sector (-0.07) was the only system to record a negative correlation for teachers' postgraduate qualifications and students achieving high-end outcomes. This is interesting as the Catholic Systemic Secondary School sector is the only sector, as noted above, that made overt reference to the need for a secondary school Principal applicant to have

postgraduate qualifications in an appropriate discipline, or a second degree or a relevant Graduate Diploma in an appropriate discipline (Brisbane Catholic Education, 2011).

End of schooling outcomes for all students

Part two of the data analysis explores end of schooling outcomes for all graduating students. The newly developed 'Tracking and Academic Management Index' developed by Smeed (Author 1) and known as TAMI was introduced. TAMI is specific to Queensland and measures how well a graduating cohort achieves in four (4) evenly weighted elements: (i) the percentage of students in the school's graduating cohort who achieved an Overall Position of between OP1 - OP15; (ii) the percentage of students who received a Queensland Certificate of Education; (iii) the percentage of students who exited with qualifications; and, (iv) the percentage of students who were offered a place in a tertiary institution. Each element is scored out of 100, providing a total score per school out of 400. Each of the elements will be explained and their inclusion in the TAMI formula will be justified.

- **Overall Positions**, as stated above, are a Queensland-wide "rank order of students, starting at OP1 (highest performance) and continuing to OP25 (lowest performance) based on achievements in Authority subjects" (Queensland Studies Authority, 2011a, p. 3). For the TAMI formula, the OP score out of 100 is made up by the number of OP eligible students who achieve in the OP1 - OP15 range. The logic for using this range is that an OP1 - OP15 will almost certainly guarantee that a student is eligible for tertiary placement. The mantra is that when schools encourage students into Authority subjects, the student and the school should share the vision of tertiary entrance for that student.
- The **Queensland Certificate of Education**, hereafter QCE, is Queensland's senior schooling qualification awarded to eligible students at the completion of the senior phase of learning. The Queensland Studies Authority (2011b) states that the QCE "confirms achievement in contributing studies of a significant amount of learning at a set standard and pattern while meeting literacy and numeracy requirements" (p. 1). Thus, the focus is on a minimum standard of competency across a variety of learning options. "A wide range of

learning can contribute towards the QCE, including senior school subjects, vocational education and training, workplace learning recognised by the QSA and university subjects undertaken while at school” (Queensland Studies Authority, 2011b, p. 2). In the TAMI calculation, the percentage of graduating students who achieve a QCE is factored into the score. The logic for using this item is that when schools encourage students to remain at school for the senior secondary years (rather than pursuing employment), the student and the school should share the vision that all students will graduate with a QCE.

- **Qualifications** take into consideration the percentage of graduating students from a single school who gain qualifications, be it an academic qualification such as an OP, an International Baccalaureate or a vocational certificate. The logic for using this item is that when schools encourage students to remain at school for the senior secondary years (rather than pursuing employment), the student and the school should share the vision that all students will graduate with a qualification that offers post-schooling choices.
- **Queensland Tertiary Admission Centre Offers** (hereafter QTAC Offers) consider the percentage of students from each school who apply for a tertiary placement post school and are successful in obtaining an offer. The logic for using this item is that when schools encourage students to remain at school for the senior secondary years (rather than pursuing employment), the student and the school should share the vision that all students who apply for a tertiary place will be offered a place.

The internal logic of the TAMI model is that schools which do not have the resources (economic or symbolic) to attract high ranking scholars as a means of maintaining their powers of attraction, are still able to be scored on their competitive position in line with the MCEETYA goal discussed earlier, that is, the overarching goal of Australian schooling for 2009-2012 would be the promotion of “equity and excellence” where “all young Australians become successful learners, confident and creative individuals and active and informed citizens” (MCEETYA, 2008, p. 3). By controlling for other factors, the TAMI model is more comprehensive and holds principles of social justice at its core. For example, as the market contingencies of the student base alter, the ‘new’ permutations of curriculum, pedagogy and

assessment of and for learning can also be constructed by the school. Table Three documents the TAMI score and the correlation with teachers' post-graduate qualifications.

Table Three: TAMI score and correlation with teachers' post-graduate qualifications

	Catholic Systemic Secondary Schools	Catholic Independent Secondary Schools	Education Queensland Secondary Schools	Independent Secondary Schools
Outcomes for all students based on TAMI (score out of 400)	335.4	365.6	331	352.7
Correlation between % of teachers with post-graduate qualifications and TAMI score	-0.13	0.16	0.12	0.39

This time and in comparison with their scores for top-end student (Table Two) outcomes, a reduced positive effect on outcomes is found in Independent schools (0.39) but a larger positive effect for Catholic Independent Secondary Schools (0.16). The Catholic Systemic Secondary School Sector (-0.13) was the only system to record a larger negative correlation for teachers' postgraduate qualifications and overall student achievement on the TAMI scores.

Concluding discussion

Whilst it is challenging to attribute trends in student outcomes to any one variable given the web of policies being implemented around this time, we believe it is instructive to consider some of the data presented in this analysis. The reliance on these two data sets sheds light on the exploration of the mechanisms through which teacher postgraduate qualifications exert their impacts on particular end of schooling outcomes. Taken together,

these findings raise important questions about the transference of teachers' postgraduate qualifications for progressing teaching and learning outcomes for both top-end student groups and all students in all sectors, save for the Catholic Independent Secondary sector which was the only sector to achieve a larger positive effect for all graduating students. Subtle differences in model specification resulted in different interpretations of the correlation between teachers' postgraduate qualifications and the learning outcomes of students in their final year of schooling in different schooling contexts throughout Queensland. The findings point to a troubling prospect that warrants further examination and the possibility of school- and system-level policy intervention to work towards the overarching goal of Australian schooling.

The limitations of the present study include the absence of a more refined description of teacher skill to include subject specific teacher degree information and the linking of particular teachers to particular classes. Another limitation is that the evidence presented here provides little indication of how teacher quality can be enhanced. Future research should focus on the identification of specific teacher attributes or practices that enhance student achievement for end of schooling outcomes. Another limitation is that this data set is drawn from a single period (i.e. one academic year), thereby precluding an examination of changes in the level and distribution of variables over time.

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