

# **PART B**

## **Presentation Summaries**



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# THEME 1:

## Data needed to inform policy

### Robust data governance: Requirements for informed education policy, program improvement, and research

Jim Van Overschelde | Texas State University

The focus of this talk was to answer two guiding questions: What data are needed to inform education policy? What data collection strategies are needed and by whom?

In answer these questions, I started by discussing the need for data collections to align directly with the government's educational goals. In Texas, four goals for education are codified in state law, for just a few examples. Those goals are: 1) ensuring schools and school districts comply with state and federal laws and state rules, 2) providing schools with adequate funding, 3) ensuring students are learning and that the educational system is equitable, and 4) ensuring teachers are qualified to teach the diversity of students in the state.

The state routinely collects information directly associated with each of these goals. In fact, state law requires all schools to report annually on student demographics, educational services provided to each student, attendance rates every 6-weeks, courses taken and grades earned, state assessment scores, teacher roles, employee salary, and much more. To ensure compliance with state laws, all new education laws include a data collection component. Without the data collection component, compliance is optional. Given the 5.5 million students enrolled annually in 8,200 public schools, Texas has one of the largest State Longitudinal Data Systems (SLDS) in America.

To provide adequate funding to schools, much of the information collected by the state since the 1990s is associated with school funding. Funds provided by the state to schools is based on funding formulas. A school that is educating students who need additional educational services (e.g., special education, bilingual) is awarded additional state funding to help pay for those more expensive services. Schools are also paid for student attendance—the higher the daily attendance rate, the higher the amount paid. This incentivizes schools to increase attendance. It is probably fair to say that if money is provided by the state to a school, then data are provided by the school to the state.

To ensure teacher qualifications, the state collects data on all educator licensure test results, all educator licenses issued and expired, and all classes taught. These data are combined to ensure teachers are teaching the classes and/or subjects they are licensed to teach. These data become part of the teacher's official record.

The state education agency is also required by law, to “conduct research, analysis, and reporting to improve teaching and learning.” As a result, the state produces many reports each year that are designed to enhance teaching and learning and that utilize the data provided by schools.

To encourage and promote educational research that improves teaching and learning, the state also created the legal structure and the data infrastructure needed to make the state's SLDS available to academic researchers. All research conducted in the research SLDS must inform state education or workforce policy. The state's research Preschool through K12 through Post-Secondary and Workforce (P-20W) SLDS includes state-held data on primary and secondary education, data on public and private higher education, and salary and employment data on all people employed in the state in any industry. The data are deidentified to protect the confidentiality of the individuals. No personally identifiable information is included. Names, social security numbers, emails, phone numbers, addresses, and dates of birth are removed.

This personally identifiable information is replaced with special IDs that only exist inside the research P-20W SLDS and allow researchers to longitudinally track an individual from pre-kindergarten through retirement—if they lived only in Texas.

Using this P-20W SLDS, I conducted a study that sought to determine whether teaching out-of-field had a negative impact on student learning. This is an important question because my prior research (Van Overschelde & Piatt, 2020) showed that students in rural communities were taking more classes taught out-of-field than their suburban peers, and students from low-income families were taking more classes taught out-of-field than their wealthier peers, everything else being equal. Therefore, if the effect of that teaching out-of-field is negative, then the Texas education system would be violating both state and federal laws that require the state to provide an equitable education system.

To answer this research question, I built a dataset that contained 235 million unique student-class-teacher records that included only secondary students enrolled between 2011 and 2019 and I then selected records for students enrolled in Mathematics and English, Language, Arts, and Reading (ELAR). The outcome measure was performance on the state's standardized end-of-course exam for each course, and these exams are aligned with the curricula the teachers are supposed to teach in each class.

Using rigorous hierarchical linear models, I found that students were hurt academically by taking classes taught out-of-field in every year and subject, and the negative effects were quite large. In fact, in some years and subjects, the negative effect of teaching out-of-field was equivalent to losing eight months of learning relative to students taught in-field.

I then applied the Texas findings to the Australian context. To do this, I analyzed the Trends in International Mathematics and Science Study (TIMSS) Math scores for Years 4 and 8 that were published in the Australian Council for Educational Research (ACER) report in 2019. I assumed the same negative effect of teaching out-of-field exists in Australia as exists in Texas. If the federal and state governments in Australia eliminated teaching out-of-field, then Australia would see:

- Increases in the Year 4 score from 516 (Rank 27) to 548 (Rank 9), tied with Ireland, and
- Increases in the Year 8 score from 517 (Rank 10) to 571 (Rank 6), ahead of the Russian Federation.

In conclusion, if policymakers want an effective education system, then they must have:

Clear GOALS + high-quality, high-actionable DATA + RESEARCH to inform practice and policy.

# THEME 1:

## Data needed to inform policy



### Evidence informing policy and government responses to out-of-field teaching

Janine Wyatt | Department of Education, Western Australia

#### What evidence is needed to inform which policies? What Government responses are occurring and what else is needed?

The Department of Education Western Australia (the Department) added questions about teaching out-of-area to existing annual surveys of first year graduates and principals to gather evidence of the extent that first year graduates in secondary education were teaching of out-of-area, their capability and the impact.

**Key point 1** — The target population was first year graduates as research shows that it is known first year graduates are assigned to teach subjects out of their field of training more so than experienced teachers (Ingersoll, 1998). According to Weldon (2016), more than one-third of all teachers in their first two years of teaching are teaching out-of-field at Years 7 to 10 at least some of the time, compared to one-quarter of teachers who have more than five years of teaching experience.

**Key point 2** — In collecting evidence it was not just a matter of whether they were teaching out-of-area, as it is far more convoluted which links into specifying the definition and measurement. How teaching out-of-field teaching is defined and measured makes a difference to the amount of out-of-field teaching found Ingersoll (2019).

For the purpose of the surveys, teaching “out-of-area” meant teaching in a subject or field for which the teacher had neither a major nor a minor tertiary (university) teaching qualification. Also, it meant teaching at a level of schooling for which a teacher is not qualified.

This investigation established that a number of secondary education first year graduates were teaching out-of-field as advised by first year graduates self-reporting or by their principal reporting on behalf of the first year graduates. Of the 403 respondents, 52 (13%) secondary education first year graduates indicated they were teaching out-of-area. Of the 334 respondents, 38 (11%) secondary education first year graduates were teaching out-of-area, as advised by their principal.

**Key point 3** — It is not just the number of first year graduates teaching out-of-area, it is their impact and capability as well as knowing:

- Extent—full-time equivalent proportion being taught out-of-area
- What subjects were taught out-of-area
- Why are they teaching out-of-area
- Where—metropolitan and non-metropolitan regions
- What supports do they receive (reported by principals)
- What supports do they require (reported by graduates)

Increasing the credibility and validity of the findings is important. It was possible to match the data from both surveys and assess the results in light of what the first year graduates experienced while teaching out-of-area, and their principal’s viewpoint of their impact and capability.

Of the 59 survey responses from the 2020 Principal Perceptions of First Year Graduates survey and 2020 First Year Graduate Survey that could be matched, 34 were secondary education first year graduates teaching out-of-field. The focus was on secondary education and the additional evidence collected included the principal's assessment of those first year graduates who were teaching out-of-area in regard to:

- Level of preparation in literacy across the curriculum/English curriculum and numeracy across the curriculum/Mathematics curriculum.
- What was the level of impact of first year graduates as advised by their principal on:
  - o student learning
  - o student well-being
  - o school community engagement (staff and parents)
- Whether the principal, if they could, retain their graduate in the following year.

The results showed:

- 88% first year graduates had a positive impact on student learning
- 82% first year graduates had a positive impact on student well-being
- 88% first year graduates had a positive impact on school community engagement (staff and parents)
- 88% of principals would retain their first year graduate in 2021

The majority of first year graduates were assessed by their principal as working towards proficient against the Australian Professional Standards for Teachers. While the majority of first year graduates were confident with the Australian Professional Standards for Teachers.

Of the 34 secondary education first year graduates, 23 (67%) were located in metropolitan regions and 11 (33%) in non-metropolitan regions. Most first year graduates felt supported (16, 64%) and effective (22, 88%) in their role when teaching out-of-field. The majority of the graduates (27, 80%) were undergraduates with a Bachelor of Education degree. More than half (20, 65%) of the first year graduates were intending to stay 10 years or more.

**Key point 4** — Use the evidence to determine the response. Importantly, out-of-area teaching needs to be interpreted in terms of understanding actual in-school demand and the complexities of variables such as school location, size and timetabling in determining who teaches what subject. Understanding the reasons behind out-of-field teaching is important, because there could be implications for solving the problem (Salleh & Darmawan, 2013). The evidence then becomes the evaluation measure to judge the impact of the responses.

## References

- Ingersoll, R. M. (1998). The Problem of Out-of-Field Teaching. *Phi Delta Kappan*, 79(10), 773-776.
- Ingersoll, R. M. (2019). Measuring out of field teaching In L. Hobbs & G. Törner (Eds.), *Examining the Phenomenon of "Teaching Out-of-field"*. Springer, Singapore.
- Salleh, U. K. M., & Darmawan, I. G. N. (2013). Differences between In-Field and Out-of-Field History Teachers Influence on Students Learning Experience in Malaysian Secondary Schools. *Creative Education*, 4, 5-9.
- Weldon, P. R. (2016). *Out-of-field teaching in Australian secondary schools*. Australian Council for Educational Research. <https://research.acer.edu.au/policyinsights/6/>

# THEME 2:

## School leadership and management



### Out-of-field teaching and considerations for school leadership

Dr Amanda Heffernan | Monash University

President Andrew Pierpoint | Australian Secondary Principals' Association

Our perspectives in this summary are informed by our ongoing program of research into the changing nature of principals' work, and the intensification and extension of principals' work. We are particularly interested in the consequences for principals' wellbeing and issues of attraction and retention.

#### **What are the pressures that school leaders face when staffing schools and classrooms, with what implications for the whole school community?**

It is important to think about this through two different lenses:

- The significant pressures and practicalities in the day-to-day of leading a school and staffing schools and classrooms
- The effects on the bigger picture work of school leadership and school improvement efforts.

It is important to first recognise that these challenges are added on top of the work of principals and to set that context from principals' perspectives. Before we seek to understand the pressures of staffing a school, we need to also recognise that these pressures are adding to and existing alongside already pressurised workloads and intensity for principals. It is also important to recognise that the principal role is increasingly hard to staff as well. There are jobs going with no applicants or no suitable applicants, higher levels of turnover and more precarious contract positions. Fewer people want to take on a leadership role, in large part because of the recognition of these pressurised environments and the challenging nature of the work of being a leader today—and the well-publicised consequences for leaders' health and wellbeing.

Principals in our studies largely feel overworked, and that their workload is unmanageable. Philip Riley's work suggests that 1 in 3 Australian principals' health and wellbeing is at serious risk (Riley et al., 2021). In Victoria principals are at greater risk of mental health injury than other school staff (Victorian Department of Education, 2017). We share these statistics to recognise that the pressures created by out-of-field teaching and hard to staff schools are not occurring in a vacuum—they are just adding further pressure and workload to already overwhelming workloads.

#### **The challenges of finding principals for hard to staff schools really matter for several reasons**

First, because the evidence tells us that hard-to-staff schools face higher rates of principal turnover that results in a higher likelihood of inexperienced leaders (Béteille, Kalogrides, & Loeb, 2012). Principal turnover also has serious effects on community cohesion and student achievement (Bartanen, Grissom & Rogers, 2019; Kelchtermans, 2017), and higher principal turnover also results in higher teacher turnover (Boyce & Bowers, 2016).

Principal turnover therefore has significant effects on student outcomes, given the established importance of longevity and stability of leadership and teachers for school improvement (Bartanen, Grissom & Rogers, 2019; Snodgrass Rangel, 2018). You need time for school improvement initiatives to really be embedded within a school. We also know that principal turnover has more harmful effects on vulnerable communities. Research from the United States in particular has highlighted the negative consequences of higher turnover in marginalised

communities (Bartanen, Grissom & Rogers, 2019; Boyce & Bowers, 2016). The students who would most benefit from stable and experienced leadership and its flow on effects, are most often experiencing the negative consequences of principal turnover.

Turning back to issues of hard-to-staff schools, if these schools have higher rates of inexperienced leaders it also means they might not have strong networks to draw on to know how to deal with these issues. They may lack the body of experience to draw upon for supporting teachers who are teaching out-of-field, and they do not have the same sense of autonomy that experienced principals do in dealing with these issues.

In policy, principals generally have a fairly significant amount of autonomy. The reality of this does not always reflect the rhetoric of autonomy for a number of reasons. Issues affecting principal autonomy include their career stage and experience, knowledge of how far a rule can be bent before it is broken, and the bank of goodwill that is needed when making difficult decisions or trying to do something different. Participants in our studies particularly talk about knowing (or not knowing) the hidden rules or tricks of staffing—how to ensure they get prioritised, or how to have more autonomy over the process and the selection of particular teachers.

### **Additional work for leaders in supporting teachers teaching out-of-field**

One of the critical things principals see as being their role is to create environments where students can successfully engage in learning. They have a sense of responsibility for creating the conditions where good teaching and learning happens—this is embedded in policy which requires them to act as instructional leaders—and part of this is either directly or indirectly developing teachers' skills and capacity.

Research has previously emphasised the importance of leaders in these circumstances—for example Anna Du Plessis's work on the importance of school leaders in guiding and professionally developing teachers who are out-of-field. Leaders who demonstrate an in-depth understanding of the challenges and implications of out-of-field teaching for teachers' lived experiences and students' learning experiences can be most supportive and help develop them into confident and expert teachers (Du Plessis et al., 2015). If we think about that through the lens of the issues and circumstances we described above—the time pressures, the challenges of often being inexperienced themselves, and so on—they are less likely to be able to have that understanding of different experiences. They are also less likely to have the actual time to deal with those implications and to do that intense development work that is so important. In fact, our research has shown that principals are consistently frustrated by administrivia that takes them away from these kinds of tasks and 'leadership' work and pulls them back into administration and 'management' of the school instead. They want to be able to do that work with teachers, but the time pressures mean that when they must distinguish between urgent and important, urgent often wins out.

The experiences of principals in our research show us the challenges of these issues but they also remind us that at the end of the day people want to be able to do the best they can by their students and their communities. These issues are systemic and it is vitally important to understand the pressures and contexts on principals when thinking about how they might be dealt with both in terms of how we get teachers into schools, and then how they can be best supported.

## References

- Bartanen, B., Grissom, J. A., & Rogers, L. K. (2019). The impacts of principal turnover. *Educational Evaluation and Policy Analysis*, 41(3), 350-374..
- Beusaert, S., Froehlich, D. E., Devos, C., & Riley, P. (2016). Effects of support on stress and burnout in school principals. *Educational Research*, 58(4), 347-365.
- Béteille, T., Kalogrides, D., & Loeb, S. (2012). Stepping stones: Principal career paths and school outcomes. *Social Science Research*, 41(4), 904-919.
- Boyce, J., & Bowers, A. J. (2016). Principal turnover: Are there different types of principals who move from or leave their schools? A latent class analysis of the 2007-2008 schools and staffing survey. *Leadership and Policy in Schools*, 15(3), 237-272.
- Du Plessis, A., Carroll, A., & Gillies, R. M. (2015). Understanding the lived experiences of novice out-of-field teachers in relation to school leadership practices. *Asia-Pacific Journal of Teacher Education*, 43(1), 4-21.
- Heffernan, A. (2021). Retaining Australia's school leaders in 'challenging' contexts: The importance of personal relationships in principal turnover decisions. *International Journal of Educational Research*, 105, 101716.
- Heffernan, A., & Pierpoint, A. (2020). *Autonomy, Accountability, and Principals' Work: An Australian Study*. Canberra: ASPA.
- Kelchtermans, G. (2017). 'Should I stay or should I go?': Unpacking teacher attrition/retention as an educational issue. *Teachers and Teaching*, 23(8), 961-977.
- Riley, P., See, S. M., Marsh, H., & Dicke, T. (2021). *The Australian Principal Occupational Health, Safety and Wellbeing Survey 2020 Data*. (IPPE Report). Sydney: ACU.
- Victorian Department of Education. (2017). *Principal Health and Wellbeing Strategy: Discussion Paper*. [https://www.education.vic.gov.au/hrweb/Documents/PrincipalHWBStrategy\\_DiscussionPaper.docx](https://www.education.vic.gov.au/hrweb/Documents/PrincipalHWBStrategy_DiscussionPaper.docx)

# THEME 3:

## Initial teacher education



### Preparing teachers for the realities of teaching out-of-field

Laureate Professor Jenny Gore | University of Newcastle

<https://www.youtube.com/watch?v=6cL2ZWBgA1U>

Laureate Professor Jenny Gore's presentation provided a summary of her 20-year program of research on quality teaching<sup>1</sup>, homing in on a recent study focused on graduating teachers and arguing how this work can strengthen the resilience, confidence, efficacy and the quality of teaching delivered by graduating students, even when teaching out-of-field.

#### The challenge for Initial Teacher Education—overview of the current landscape

- Preparing initial teacher education students
  - The initial teacher education curriculum can be crowded and fragmented, addressing pedagogical knowledge, curriculum knowledge, knowledge of the disciplinary foundations of education, opportunities for practical experience and meeting the standards required of “classroom-ready” graduates.
- Curriculum knowledge vs pedagogy
  - We tend to think of the demands of teaching out-of-field in terms of disciplinary knowledge and curriculum knowledge, but a strong focus on pedagogy<sup>2</sup> can be an important mechanism to ensure graduates are confident in their teaching no matter the curriculum context.
- What is quality teaching?
  - As a profession we still haven't come to terms with what we mean by quality teaching. With diverse views about quality among teacher educators, graduating teachers end up with substantial breadth of knowledge but often without confidence in the quality of their teaching. We hear this repeatedly in our research, even from experienced teachers<sup>3</sup>.
- Learning experiences are key
  - What shapes student learning in any subject is the quality of the teaching. Disciplinary and curriculum knowledge matter but, in the end, it is the quality of the teaching provided, whether in-field or out-of-field, that really matters.

#### Towards quality and equity

Five major studies<sup>4</sup> across two decades have shaped our idea of quality teaching – we have demonstrated proof of concept and efficacy, and conducted several randomised controlled trials that demonstrate the impact of our approach on teaching and learning. The Quality Teaching Model<sup>5</sup> (QTM) is at the core of the work. Developed in 2002 for the New South Wales Department of Education, QTM built on our work on productive pedagogy in Queensland and Newmann's work on authentic pedagogy in the US.

QTM is a powerful way of framing how student teachers and teachers understand good teaching. For those teaching out-of-field, the emphasis tends to be on intellectual quality—disciplinary knowledge and curriculum. But teaching out-of-field also depends on being able to relate lessons to the wider world (significance) and to engage students (quality learning environment).

QTM prepares graduates for all contexts of teaching and helps them develop real confidence in providing powerful learning experiences through intellectual quality, a quality learning environment and high levels of significance, or making learning meaningful to students.

### **Assumptions about quality teaching**

There is little empirical evidence on the quality of teaching, although it is often assumed that teaching quality is poorer from beginning teachers, in disadvantaged schools, and in rural and remote schools.

These are contexts in which teaching out-of-field is common. We've been able to use QTM to provide quantitative evidence about the quality of teaching to test these assumptions.

**On Experience**—three separate studies over a 15-year period found no difference between beginning and experienced teachers in the quality of teaching provided. Two possible explanations that both have merit: a) universities are doing a good job at preparing graduates, and professional development is not having a meaningful impact on teaching.

**On Index of Community Socio-Educational Advantage (ICSEA)**—we found a statistically significant relationship between quality of teaching and ICSEA<sup>6</sup>. However, when schools with an ICSEA < 950, where community disadvantage is significant, are removed from the sample, the relationship no longer exists. Acknowledging that school and community contexts contribute to the difficulty of delivering quality teaching in low ICSEA settings, we shift the blame from teachers and advocate for looking at how we address structural forms of disadvantage.

**On Location**—a relationship exists between the quality of teaching in rural and urban schools, however, in our sample there were no urban schools at the lower end of ICSEA range and no rural schools at upper end. When you only look at schools with overlapping ICSEA, the relationship is no longer significant, suggesting that community disadvantage is more important than school rurality in understanding quality teaching.

These studies challenge assumptions about the quality of teaching that graduates can deliver and the quality of teaching delivered by teachers out-of-field.

### **Improving teaching quality**

We have found that having a pedagogical model is not enough to improve teaching. Quality Teaching Rounds<sup>7</sup> (QTR) is a form of professional development that revolves around observation and deep analysis of teaching through the lens of QTM.

Our research has consistently demonstrated that QTR improves the quality of teaching, teacher morale<sup>8</sup>, school culture, confidence, collegiality and efficacy. Our most recent randomised controlled trial found that when teachers participated in QTR their students achieved an additional 25% learning growth in mathematics compared to the control group, with even greater effects in disadvantaged schools.

According to an independent Deloitte Access Economics cost benefit analysis<sup>9</sup>, this result leads to an estimated return of at least \$40 in gross state product for every dollar invested in QTR.

In July 2021, we conducted a pilot study with 34 graduating initial teacher education students from the University of Newcastle. Just prior to their final year internship, these students participated in a two-day QTR workshop and were surveyed before workshop, after workshop and after internship.

Our analysis of the data showed: gains in understanding QTM, efficacy and confidence; a reduction in pre-internship stress; and enhanced readiness for and connectedness to the profession, with very few participants indicating an intention to leave within the next five years.

## Concluding thoughts

What exposure to QTM can do for graduating teachers:

- Provide a strong foundation for quality teaching in any grade or specialisation
- Build capacity for ongoing refinement of practice, increased efficacy and job satisfaction
- Support teachers to go beyond a focus on content delivery
- Assist teachers to establish their credibility for teaching out-of-field

What exposure to QTR can do for graduating teachers:

- Increase confidence in approaching colleagues for assistance
- Build respect for each other's capacities even when teaching out-of-field
- Strengthen teachers' valuing of collaboration

Current opportunities to engage with QTM and QTR:

- Free membership<sup>10</sup> is available for all Australian initial teacher education students in the Quality Teaching Academy, which includes access to the Quality Teaching: Classroom Practice Guide and Assessment Practice Guide
- Present experiences of teaching out-of-field at the Quality Teaching in Practice conference
- Attend the Quality Teaching in Practice conference<sup>11</sup> to learn more about QTM/QTR
- Hold QTR workshops for initial teacher education students at other institutions
- Cross-institutional research on effects of QTR on graduating students teaching in- or out-of-field.

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<sup>1</sup> <https://www.newcastle.edu.au/research/centre/teachers-and-teaching/quality-teaching-rounds>

<sup>2</sup> <https://www.tandfonline.com/doi/full/10.1080/19415257.2020.1725904>

<sup>3</sup> <https://link.springer.com/article/10.1007%2Fs10833-020-09386-z#Abs1>

<sup>4</sup> <https://www.newcastle.edu.au/research/centre/teachers-and-teaching/quality-teaching-rounds#relatedstudies>

<sup>5</sup> <https://qtacademy.edu.au/what-is-the-quality-teaching-model/>

<sup>6</sup> <https://link.springer.com/article/10.1007%2Fs13384-021-00460-w>

<sup>7</sup> <https://qtacademy.edu.au/what-is-qtr/>

<sup>8</sup> <https://www.sciencedirect.com/science/article/pii/S0742051X17304225?via%3Dihub>

<sup>9</sup> <https://qtacademy.edu.au/wp-content/uploads/2020/10/Deloitte-Access-Economics-QTR-Cost-Benefit-Analysis-Final-report-9-Sept.pdf>

<sup>10</sup> <https://qtacademy.edu.au/become-a-member/>

<sup>11</sup> <https://qtacademy.edu.au/quality-teaching-in-practice/>

## THEME 3:

# Initial teacher education



### The lived experience, constraints, and consequences of out-of-field teaching during a time of transition

Dr Susan Caldis |Macquarie University

Focus is given to the realities of out-of-field teaching faced by practitioners who are entering and transitioning into the teaching profession. Findings are shared from my recent doctoral research. My doctoral research was a qualitative longitudinal study about transition into the profession and transformation of practice, conceptualised around pedagogy and reflexivity. The study was conducted in three phases: Phase 1: Professional Experience; Phase 2: Profession-entry; and Phase 3: Positioned in schools. There were five participants—Anna, Emily, Grace, Karen and Matt—who were five, purposely sampled final year pre-service teachers from the same geography methodology unit in an initial teacher education program, a university in Sydney. Out-of-field teaching was not a pre-determined research focus, however, it became evident this phenomenon was a prominent part of entering and transitioning into the profession.

To align with questions for the session, the participant lived experience will be addressed first, followed by what they describe as the constraints and consequences of teaching out-of-field. Possibilities for support will conclude the paper.

Lived experience, constraints and consequences: The lived experience, constraints, and consequences relate to out-of-field teaching being noted by four participants as a distinct entry point into the profession and characteristic of their first year of teaching. Teaching out-of-field was identified as a constraint to teaching practice due to a lack of preparation from the initial teacher education program, the incidence of precarious employment and whole school timetabling decisions. Feeling stressed and overwhelmed together with difficulties in managing the classroom compared to when teaching their in-field subjects were mentioned as the main consequences of teaching out-of-field.

- *An entry-point into the profession.* Anna, Grace, Karen and Matt identified teaching out-of-field as being a distinctive entry-point into the profession and a feature of their first year of teaching. Grace, Karen and Matt taught in Sydney; they each entered the profession as a casual relief teacher and then quickly gained a short-term contract within the HSIE department at a given school (approximately 10–12 weeks). Anna relocated to regional New South Wales for employment on a 12-month contract as a HSIE teacher at a Kindergarten to Year 12 school.

As an entry-point into the profession (Phase 2 of the study), Grace, Karen and Matt experienced out-of-field teaching as part of their day-to-day casual relief teaching appointments during Term 3 (July–September) where they were either teaching across several schools or teaching across different departments in one school. Grace, Karen and Matt soon had their casual appointments extended into a short-term contract as a HSIE teacher at a designated school for the remainder of Term 3 and throughout Term 4 (October–December). The short-term contract requirements meant they took on the teaching load of a HSIE teacher who was on leave. Whilst there was a small amount of geography on their timetable, the HSIE subject combination did not match participant subject specialisations. For example, during Phase 2: Profession-entry, Matt taught commerce, business studies and geography yet his subject specialisations were geography, history and modern history. Karen taught “multiple subjects: arts, geography, commerce, legal studies and future learning [but] I’m only trained in one of those subjects”. Anna was hired as a HSIE teacher, yet Anna’s timetable included agriculture, design and technology, Stage 3 (primary), geography and history. As a result, teaching out-of-field beyond HSIE was a dominant component of Anna’s entry into the profession and first year teaching.

Emily did not experience teaching out-of-field in Phases 2 and 3. Due to a vacancy arising in the Social Sciences department, she was hired as a geography teacher at the school where she completed her professional experience. Although her Head Teacher mentioned the possibility of also teaching commerce, Emily, a career-change teacher, had developed a strong subject-identity for geography, and had confidence to cite recent research about the impact of out-of-field teaching to her colleagues. As a result, her timetable remained in-field throughout her entry into the profession and first year of teaching.

- *Lack of preparation from initial teacher education program and whole school timetabling decisions.* Phase 1 of the study focused on professional experience and the final stages of candidature in an initial teacher education program, at no time throughout this phase did the participants mention or experience teaching out-of-field. Phase 2 of the study focused on entry to the profession and Phase 3 on the first school year of teaching. It was during Phases 2 and 3 that participants spoke frequently about the out-of-field teaching phenomenon in response to feeling “overwhelmed” and “underprepared” from the initial teacher education program. Matt withdrew from the study after Phases 1 and 2 citing that his timetable for the new school year (Phase 3) did not include geography although he was hired as a HSIE teacher, and he would mostly be teaching out-of-field.

Anna, Grace, Karen and Matt self-identified as out-of-field teachers, even within a HSIE context depending on the subject being taught. They reported out-of-field teaching as a constraint to their feelings of being able to cope with the demands of entering and transitioning into the profession. They also reported the initial teacher education program as not sufficiently preparing them for teaching out-of-field whilst also attributing this experience to timetabling decisions, faculty organisation and precarious employment.

Matt said he “felt constrained by teaching commerce [because] I’ve never been prepared for that ... it comes with a level of stress and expectation so that reduces my excitement [about teaching]”. When elaborating about ‘expectation’, Matt explained the students don’t know you are teaching out-of-field, only you do, but the students are still expecting a comprehensive and detailed lesson for the given subject, and that placed additional stress on him as a teacher who is new to the profession.

Anna had the largest out-of-field teaching load compared to the other participants and referred to this phenomenon as being “indicative of my year in review”. Anna also explained how she felt lack of preparation in the initial teacher education program was a contributing factor to her struggle in coping effectively with the move away from her networks to a regional school and community; also her difficulty in adapting to a co-educational context when all her professional experience placements had been in all-girls schools. Overall, Anna said her transition into the profession was “a LOT”, but she felt she managed the out-of-field teaching experience by just “keep[ing] going” despite it being “debilitating and draining”, and that she “survived under pressure so that is a success”.

There were varying degrees of scale of out-of-field teaching, for example, Grace had a history and geography teaching specialisation which accredited her as a HSIE teacher, yet within a HSIE faculty during Phases 2 and 3, Grace also taught commerce and business studies. As mentioned previously, Anna taught several subjects beyond HSIE and at the end of Phase 3 when her contract was extended for another 12 months, there was “another twist, teaching languages in 2021”. Grace and Karen often questioned why they had to teach business studies or commerce when there were HSIE colleagues who were teaching geography out-of-field. As Grace and Karen were the specialist geography teachers in the HSIE faculty, they were expected to help and provide advice to their non-geography-specialist HSIE colleagues about how to teach geography. Grace wondered “why can’t I have a full teaching load of geography?” when there were enough geography classes to fill her timetable.

- *Stress, feeling overwhelmed, and difficulties with classroom management.* Anna, Grace, Karen and Matt identified an increasing amount of classroom management problems occurring with their out-of-field classes compared to when they were teaching geography. They also mentioned experiencing heightened levels of stress and often feeling overwhelmed by teaching out-of-field, which affected their wellbeing and also contributed to Anna's development of serious problems with anxiety.

Possibilities for support: There were three areas of support mentioned by the participants which they felt enabled them to navigate the complexities of out-of-field teaching as part of their entrance and transition into the profession. One area of support was the creation of a dialogic safe space through the doctoral study group which provided a mentoring structure using explicit theory-practice reflection activities with a recurring question in every data generation activity in each phase. For example, the use of reflexivity theory to interpret context was noted as being helpful for participants to understand what enables and constrains their practice so that they can develop a viable plan for action to respond to the identified constraint of teaching out-of-field. The recurring question, 'What makes your geography lesson geographical?' became a point of understanding what was distinctive about teaching geography as a specialist teaching subject, however, this question also became a point of application for participants to delve into the distinctiveness of other subjects. For example, Anna started to insert the name of other subjects she was teaching into the question, such as 'what makes this agricultural lesson agricultural?'

Another area of support for learning how to teach an out-of-field subject was related to engaging with expert others. This occurred through either joining a professional teacher association, or through accessing social media such as subject-specific FaceBook groups, or by developing relationships with other teachers in their school or department who teach the given subject as their specialist area.

Participants also drew heavily on their personal values and beliefs about what it means to be a teacher to propel them through the difficult moments of teaching out-of-field. For example, Anna had a strongly-held belief that "country kids should be able to access the same quality of education as city kids ... and this is my responsibility to provide them with the best possible education".

In conclusion, teaching out-of-field was a prominent experience of entering and transitioning into the profession for five early-career HSIE teachers. Difficulty in responding to and managing the out-of-field teaching phenomenon was attributed to a lack of preparation in the initial teacher education program, school-based timetabling decisions, and precarious employment. Feeling stressed, being overwhelmed, and having to manage an increased incidence of classroom management issues were identified as the results of teaching out-of-field. Support structures to help navigate the complexities of out-of-field teaching were named as being the use of explicit theory-practice reflection activities within a mentoring structure, engaging with expert others, and harnessing and acting upon the personal values and beliefs about what it means to be a teacher.

Susan is a recently appointed Lecturer in the Macquarie School of Education at Macquarie University, Sydney, Australia. Susan convenes and teaches the geography and economics-business methodology units at undergraduate and postgraduate levels. Susan completed her doctoral thesis as a qualitative longitudinal study about transition into the profession and transformation of pedagogical practice, contextualised around geographical education. At the time of Susan's presentation at the Summit, her thesis was under examination. Susan's doctorate has since been awarded.

# THEME 4:

## Teacher registration and accreditation policies



### Teacher registration and accreditation policies: Implications for out-of-field teaching and upgrading teaching qualifications

Professor Merrilyn Goos | University of the Sunshine Coast

#### Implications of state and territory teacher registration and accreditation policies, practices, and requirements for out-of-field teaching

It is helpful to use consistent terminology to describe the process of credentialing teachers:

- *accreditation* of initial teacher education programs by an external authority: in Australia, state/territory authorities apply AITSL's program accreditation requirements.
- *registration* of teachers who have graduated from an accredited program: without specifying which subjects they have been formally prepared to teach.
- *certification of teachers* to teach specific *subjects*.

Certification of teachers to teach particular subjects is common in many countries. However, amongst Australian jurisdictions, this process only occurs in New South Wales where it is referred to as *accreditation of teachers*.

Program accreditation requirements are ideally informed by research on what teachers need to know and are able to do, for example, by referring to the knowledge categories proposed by Shulman (1987). But there are also cultural assumptions about what makes a good teacher, which can be observed in the different content and structures of initial teacher education programs around the world (Tatto, Lerman, & Novotna, 2010). In some countries, for example, higher emphasis is given to developing teachers' subject matter knowledge (knowing the content) than pedagogical content knowledge (knowing how to teach the content), while in other countries this emphasis is reversed.

Just as program accreditation and teacher registration policies (and, if present, teacher certification policies) specify who is a fully qualified teacher, then so too are these policies implicated in the construction of out-of-field teachers. Table 1 compares accreditation requirements between Australia (AITSL, 2019) and Ireland (Teaching Council, 2020), and within Ireland when these requirements changed.

#### Comparison of ITE program accreditation requirements in two countries

Knowledge type	Australia	Ireland (2017)	Ireland (2023)
<b>Content</b>	6 semester-long courses in first teaching area; 4 courses in second teaching area. No prescribed topics.	10 semester-long courses in one teaching area. Prescribed topics and minimum credits for each course.	10 semester-long courses in one teaching area. Prescribed topics but no minimum credits for each course.
<b>Pedagogy</b>	2 semester-long courses in first teaching area; 2 courses in second teaching area.	1 semester-long course in one teaching area.	No requirement for any courses.

A teacher who graduates from an Australian university with a qualification in secondary school mathematics may not satisfy teacher registration requirements in Ireland, nor be certified as being “fully qualified” to teach mathematics, due to inadequate subject matter knowledge. Yet they might be hired in Ireland to teach mathematics out-of-field.

In Ireland, recently announced changes in program accreditation policies have somewhat relaxed subject content requirements and removed subject-specific curriculum and pedagogy studies. This change will have implications for how well graduates are prepared to teach a subject, but may also affect how out-of-field teaching is defined, how data on the incidence of out-of-field teaching are interpreted, and the eligibility of teachers to participate in programs designed to upgrade the qualifications of out-of-field teachers.

### **How can a culture of developing, endorsing and credentialling programs for upgrading teacher qualifications in new specialisations be fostered?**

We can consider what it means to “upgrade” qualifications along two dimensions.

(a) Upgrade how far?

- Full: lifting an out-of-field teacher’s subject qualification to the same level as a fully-qualified subject specialist, as defined by program accreditation requirements)
- Partial: building some additional subject matter knowledge and/or pedagogical content knowledge.

(b) How is the upgrade certified?

- Formally: university Diploma or Certificate; microcredential that provides a badge or counts as credit towards a formal qualification
- Informally: short term professional development workshops or webinars.

Fostering a culture of support and endorsement requires consideration of questions such as:

- What motivates teachers to participate in upgrading programs (salary, certification, permanency, confidence, identity)?
- What are the costs (funding, time, in-school support)?
- How can upgrading programs be quality assured?
- How should participation in upgrading programs be recognised (especially if there is no process for recording and certifying subject qualifications)?
- What are the consequences, for teachers and students, of not developing and endorsing upgrading programs?

### **Key messages**

Initial teacher education program accreditation and teacher registration requirements, and their variation across jurisdictions, are implicated in the construction of fully-qualified and out-of-field teachers.

A variety of upgrading programs and pathways could be considered to meet the varying needs and aspirations of out-of-field teachers.

## References

- Australian Institute of Teaching and School Leadership (2019.) Accreditation of initial teacher education programs in Australia. <https://www.aitsl.edu.au/deliver-ite-programs/standards-and-procedures>
- Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, 57(1), 1-22.
- Tatto, M. T., Lerman, S., & Novotna, J. (2010). The organization of the mathematics preparation and development of teachers: A report of the ICMI Study 15. *Journal of Mathematics Teacher Education*, 13, 313-324.
- The Teaching Council (2020). Standards for initial teacher education. <https://www.teachingcouncil.ie/website/en/teacher-education/initial-teacher-education/ceim-standards-for-initial-teacher-education/>

## THEME 5: Teacher professional learning



### Disciplinary teaching in the life of teachers — professional growth and regeneration

Alfred Deakin Professor Russell Tytler | Deakin University

Across teachers' working lives there will inevitably be multiple and often major changes to the purposes of curricula and evidence-based advocacy of ways of teaching the subject, so that professional regeneration for teachers within their discipline is a system and personal responsibility. The support of professional growth that takes into account the busy lives of teachers' needs to animate system policy.

Further, across teachers' lives there are inevitably shifts in the balance of subjects they are teaching, sometimes across major and sub-major discipline areas without any out-of-field implications, but often teachers will be asked, or volunteer to teach outside their primary discipline. This might well be due to an interest in the out-of-field subject perhaps including accumulated knowledge; it may be a desire for variety and the challenge of new teaching skills; it may be to respond to calls for interdisciplinary practices; or it may be a request or demand from school leadership which could be viewed positively or negatively.

Thus, one might question the reasonableness of a system that demands that teachers' practices be constrained over a lifetime by their initial degree. Out-of-field teaching needs to be acknowledged as a reality that is not necessarily pathological in nature.

#### Disciplinary teaching in the life of teachers—professional growth and regeneration

If teachers are assigned classes outside their qualifications, especially if this occurs on a regular or semi-regular basis, then the concerns for teacher knowledge and competencies that drive the initial teacher qualifications should to some extent drive any form of professional learning or professional accreditation for the subject. Any serious recognition of the out-of-field 'problem' needs to be accompanied by the design of professional learning aligned with in-field qualifications.

This alludes to the inclusion of content sufficient to support quality teaching and interpretation of planning documents, and pedagogical content knowledge around understanding of student difficulties with aspects of learning (including alternate conceptions), ways of supporting students through planning and classroom interactions.

Given that subject traditions are constantly developing in terms of core purposes, evidence-based pedagogies, and contemporary content and contexts, professional learning should concern itself with advocacy of and support for best practice, and not simply procedural skills for duplicating established practices. This includes, for instance, contemporary views of supporting mathematical thinking, and critical and creative thinking, advocated in the curriculum but not often practised adequately in Australian classrooms.

#### Subject culture

Each secondary school subject has its particular culture in terms of the organisation of curricula, teaching and learning practices such as approaches to practical work, story-telling, worked examples, argumentation or open problem solving. Professional learning for out-of-field teachers should include these cultural elements that enable teachers to productively engage with in-field teachers at their schools.

## **Experience of the Graduate Certificates in Secondary Mathematics and in Secondary Science**

These courses each involve 4 units over one year, with teachers' schools allocated funding to support teachers' absence from classes for attending workshops and studying.

### **Subject culture and community**

The teachers in the course over time developed a sense of being a community, discussing in breakout groups and supporting each other with particular knowledges and ways of engaging students in classrooms. The graduate certificates were taught across one year, and this seemed important for developing familiarity with course processes, developing habits of reading and interpreting practices, and getting to know each other and lecturers to enable the community to build over time. This community building would be hard to accommodate over short time frames.

### **Content and pedagogical content knowledge**

Some teachers came into the course expecting a delivery model of content, arguing they already were experienced pedagogues. However, we argue that there are subject specific pedagogies and pedagogical content knowledge that need to be engaged with. In many cases teachers' in-field pedagogies can be drawn upon and engaged with to enrich subject practices. The approach to content in the course was to engage with content discussions in the context of consideration of pedagogical content knowledge, especially dealing with student conceptions and ways to orchestrate teaching and learning to establish strong conceptual learning.

Teachers came to appreciate this over time. Short term courses may have difficulties with this issue.

### **Engagement with contemporary purposes and practices**

The curriculum in Victoria and Australia increasingly emphasises a wider set of proficiencies/capabilities that take time to establish in schools since they go beyond prevailing subject culture traditions. Problem solving and inquiry in mathematics, sustainability, creative and critical thinking and indigenous knowledges were all part of the Grad Certs, which often went beyond practices in participants' schools. A number of teachers felt they were able to productively introduce these new ideas to colleagues, but some felt opposition from experienced colleagues to these ideas and approaches

### **Professional learning model**

There is strong evidence that short term PD situated outside the school is ineffective for supporting change. The Grad Certs incorporated activities and assessments that had teachers trying out ideas in their classrooms, or interviewing students about their learning. This was sometimes problematic if teachers did not have classes at the time that coincided with the unit content.

### **Return to study**

The Graduate Certificate is a level 8 course with demands on high level interpretation of teaching and learning, analysis of practice and engagement with the research literature. These requirements are also part of the Victorian Department of Education and Training's (DET) formulation of professional growth. Some teachers experienced considerable challenge in engaging productively with the literature and needed substantial support. This support was provided through the creation of a team dedicated to working with teachers who required this, individually and in groups, and online through a facebook group.

Pitching the intervention at postgraduate level is important to establish the principles of professional growth, and to support teachers to understand the theoretical underpinnings of approaches to teaching and learning and assessment.

### **Practicalities of timetabling**

The support for schools from DET was crucial for teachers to enable them to attend intensives and to carve out space in their working lives. Even then, it was sometimes difficult for teachers to consistently free up time for attendance at workshops, for engagement with literature, and for trying ideas out in classrooms.

Other models of higher qualifications for out-of-field teachers, in Ireland for instance, involve weekend workshops and summer schools. The professional learning culture in Victoria does not support this tradition, such that need to provide support for schools is embedded in Secondary Mathematics and Science Initiative model. If there was sufficient incentive for out-of-field teachers to requalify, through registration policies and a culture of support in schools for qualifications, then such a model is possible.

### **Outcomes**

While the courses experienced some initial issues with teacher expectations and difficulties with returning to study and with school support, over the year a growing cooperative culture developed and many teachers were very positive about what they had learned that increased their confidence and competence, about the quality of ideas they had engaged with, and about the support of the teaching staff and their fellow students.

# THEME 5:

## Teacher professional learning



### Geography teacher professional learning

Director, Immediate Past Chair Trish Douglas | Australian Geography Teachers Association (AGTA)

#### **How can the professional learning needs of out-of-field teachers at various stages in their careers be recognised and accommodated?**

The subject of Geography has one of the highest percentages of teachers out-of-field in Australia. Forty percent of Year 7-10 Geography classes are taught by teachers who lack specialised content and pedagogical knowledge (Caldis & Kleeman, 2019).

One of the main contributing factors to this has been the incorporation of Geography as one of the subjects under various Humanities umbrellas such as Studies of Society and Environment (SOSE), Human Society and its Environment (HSIE) and, more recently, Humanities and Social Science (HASS). Therefore, early career teachers in particular are likely to be faced with teaching Humanities involving Geography, History, Commerce/Economics and Civics and Citizenship. Schools and subject associations therefore have a key role in helping meet the professional learning needs of early career teachers via a mentoring system to support them across all these areas.

Initial Teacher Education courses also must play a role. Many tertiary institutions are unlikely to offer courses which cover distinct Geography methodology, a key recommendation by AGTA (Caldis & Kleeman, 2019). The need for this is highlighted by the process of geographical inquiry, an essential component of which is undertaking fieldwork. Collection of primary data via fieldwork requires a particular approach and skill development—it is not an excursion—and definitely something which pre-service teachers need to understand and be confident in delivering.

An additional area of need for out-of-field Geography teachers is the use and application of geospatial technology. This Science, Technology, Engineering, and Mathematics (STEM) component of Geography is playing an increasing role in the application of geographical skills and understanding of content. This is a rapidly changing aspect of the subject and a distinct professional learning need for all teachers of Geography regardless of their background and career stages.

#### **How can a variety of stakeholders be involved in supporting the professional learning of out-of-field teachers?**

Firstly, there needs to be recognition by relevant education authorities of the extent of the issue across of a range of subjects. It is not just an issue confined to subjects such as maths where we often see much of the publicity. In addition, there are variety of contexts, such as rural versus urban, which mean a one size fits all model is not appropriate to address the professional learning needs out out-of-field teachers.

Subject associations play a key role in supporting out-of-field teachers. One positive aspect of the COVID-19 pandemic has been the extensive provision of online professional learning. This has been particularly beneficial for those in rural and remote locations. Many of the state-based affiliates of AGTA extended their after school professional development opportunities, running more frequent, shorter sessions, made possible without the need for members to travel. Subject associations also play a key role in mentoring and facilitating links between members

and schools; at senior level in particular, teachers may be the only teacher of Geography in their school, so forming these connections are vital, especially for out-of-field teachers. In turn, subject associations need to be supported in terms of funding provision. Geography associations across Australia have limited paid staff and depend largely on volunteers. Recognition of the importance of professional associations as vital stakeholders and involving them actively in solutions to out-of-field challenges is an essential component of this (Caldis & Kleeman, 2019).

Links between tertiary providers of teacher education programs and schools also need to be developed. Aspects such as determining the timing of in-school practicum blocks or immersing a pre-service teacher over a more extended period of time should be able to be negotiated to suit both tertiary and secondary stakeholders. In addition, universities could develop appropriate professional learning aimed at non-specialist teachers of Geography who wish to expand their subject content and pedagogical knowledge so that further accreditation can occur (one of the recommendations of the National Committee for Geographical Sciences, 2018).

### **References**

- Caldis, S. and Kleeman, G. (2019). Out of field teaching in Geography, *Geographical Education*, 32, 11-14.
- National Committee for Geographical Sciences (2018). *Geography: Shaping Australia's future*. Canberra: Australian Academy of Sciences.

# THEME 5:

## Teacher professional learning



### Science teacher professional learning

**Councillor Sue Colman | Science Teachers Association New South Wales (NSW) Representative**

#### **What is needed to promote a culture of teacher professional learning and re-specialisation?**

The Science Teachers Association NSW exists to provide leadership and promote excellence in science education. We are a dynamic community of science educators inspiring future scientists and citizens.

Our purpose is to advance the teaching and learning of science across NSW through:

- Fostering professional networking and nurturing a community of science educators
- Being leaders of excellence in science education;
- Using our cross-sectoral voice to advocate for science education.

Addressing the needs of science teachers is a key strategic direction (Goal 2.1) for the Association and out-of-field teaching has been identified as a significant need. The Association is led by science educators who volunteer their time and expertise to run the Association. Councillors have been consulted on this position regarding teaching out-of-field.

We run professional learning for qualified Science teachers throughout the state of NSW. We have a small number of identified out-of-field teachers that attend our professional learning. They are welcome to join the Association and participate in our activities, but we currently have no program that is designed to cater specifically to their needs.

We see there are three specific groups of out-of-field teachers:

1. Teachers from within the school staff that are allocated to take a science class
2. Those that self-identify who want to move into the Science field.
3. Those recruited to a new or vacant position by school management to address a lack of physics and chemistry applicants.

The NSW Education Standards Authority (NESA) Subject Content Knowledge Requirements Policy states that a Science Teacher requires Higher Education qualifications within their subject area.<sup>1</sup> In practice once a teacher is employed by a school, upper management often reallocates staff to a different subject and or science discipline from what they have been trained in, often dependent on the funding formula for the school.

Our professional learning is designed to increase the skills and knowledge in both content and pedagogy and in most cases provides NESA accreditation at the Proficient Level. This support enhances the quality of science teaching but does not provide a qualification in the subject area.

There needs to be a culture change where out-of-field teachers feel comfortable and safe to self-identify and are made to feel welcome. This requires a concerted effort from a number of stakeholders across NSW to enhance the current professional learning opportunities to account for this group, the development of NESA accredited professional learning as well as the development of Higher Education Qualifications for this cohort. Our initial thinking is that it would need to cover Pedagogy Content Knowledge, scientific literacy and, working scientifically.

This professional learning could be delivered as an on-demand online course and could involve the development of a database of resources. This would require a funded program.

A link between these cohorts and existing Science Teachers Association NSW professional networks that would enabling ongoing support and possible mentorships is recommended.

It is also recommended that a grant program be developed that enables a pathway for teachers to gain the necessary qualifications to move from another teaching area into Science. We welcome the opportunity to work in partnership with Higher Education Institutions to develop these qualifications.

### **How can a variety of stakeholders be involved in supporting the professional learning of out-of-field teachers?**

As the state Science Teachers Association we welcome the opportunity to play a key stakeholder role in this conversation and would be happy to facilitate coordination with a variety of stakeholders. Given the requirement of qualifications, there is a key role for universities and TAFEs in the development of the qualifications, these would need to be targeted to the academic level of the teacher and built around current scientific knowledge.

Ongoing coordinated support would increase the confidence of teachers and so encourage a positive learning environment. This is something we could provide.

In partnership with Education Faculties of Universities we can provide recent research in 'how children learn science' especially over the last 2 years and the different implications for students.

There is a role of NESA and sector leaders to play in advocating for the necessary policy, budgets, relief teachers and release from teaching to enable out-of-field teachers to undertake the qualifications.

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<sup>1</sup> <https://educationstandards.nsw.edu.au/wps/wcm/connect/ae7db0fc-4a6d-4904-b635-f70147e0dc3c/Subject+Content+Knowledge+requirements+%28abridged%29+Nov+2015.PDF?MOD=AJPERES&CVID>

## THEME 5: Teacher professional learning



### Teaching professional learning for out-of-field teachers

Associate Professor Judy Anderson | The University of Sydney

Teachers who are required to teach out-of-field, (i.e. teaching subjects without completing formal training and qualifications), are likely to have limited knowledge of the content, curriculum, and pedagogical content knowledge of the out-of-field subject area. Identified by Shulman (1987) as components of knowledge for teaching, these aspects of teachers' knowledge are essential for providing quality teaching and learning in schools. Although Hobbs (2012) notes from her research that those who label themselves out-of-field teachers also identify context, support and personal factors as contributing to their identity. This highlights the complexity of support needed for out-of-field teachers at the school level and an acknowledgement that care must be taken in assigning classes to teachers by considering their career level, experience and confidence, their willingness to teach across a range of subject areas, and their personal dispositions.

Based on their own schooling experiences, out-of-field teachers will have 'common content knowledge' in many school subjects but this is not necessarily sufficient for quality teaching, rather, teachers require 'specialised content knowledge' (Ball, et al., 2008) which can take several years of intensive university-based study to develop. So, how do teachers acquire sufficient knowledge if they are to provide quality learning experiences for students when they are teaching out-of-field? Who should support their professional learning? How can the balance between professional learning and qualifications be managed? These questions formed the basis of presentations and discussions during the last session of the Summit.

Preparation to teach out-of-field requires professional learning which can take many forms and can be provided by a range of colleagues, leaders, and experts from schools, universities and professional associations. It can be 'one-off' or sustained over a longer period, it can be formal or informal, it can be teacher-driven or school and/or system-driven, it can be in situ or off-site, or it can be virtual or face-to-face (Darling Hammond et al., 2017; Goos et al., 2018; Lantz-Andersson, et al., 2018). Extensive evidence suggests in-situ, ongoing support from trusted colleagues is ideal for supporting out-of-field teachers, particularly if a community of practice can become part of the culture of the teaching group within the school (Riordain et al., 2019).

For teachers teaching out-of-field, developing their knowledge for teaching the new subject would typically be supported by colleagues within the school context to provide advice on the curriculum, the teaching program, as well as assessment requirements. However, support within the school context requires leadership and mentoring capability, particularly from middle leaders such as subject-specific coordinators in secondary school contexts, and it requires time and experience in managing teachers with different subject-expertise, different years of teaching experience, and potentially varying levels of willingness to undertake out-of-field teaching. So, establishing the necessary culture and developing a community of practice requires a commitment from all stakeholders including fellow teachers, middle leaders, and the leadership group in the school—indeed addressing the professional learning needs of out-of-field teachers is everyone's responsibility.

Professional associations play a key role in providing additional support since through their membership, they have access to highly experienced and knowledgeable teachers working in a diversity of contexts. They can support teachers from many different schools since some may feel isolated in their school context or the required support may be unavailable due to staffing

shortages. In regional and remote schools, or in schools in ‘hard to staff’ areas, there may be few teachers in some subjects so connecting with colleagues from other schools is critical to obtaining support and advice. Members of professional associations are frequently willing to act as mentors, share resources, and provide on-line programs for ‘beginning’ as well as out-of-field teachers—they understand the issues associated with teacher shortages and tend to be highly motivated to support ‘new’ teachers to fill staffing gaps. With ongoing support through such professional connections, a community of practice can be formed with colleagues across schools, particularly through online professional learning programs or by using social media platforms (Anderson & Swanson, 2021).

Clearly the supply of qualified teachers impacts the extent of the need for out-of-field teaching leaving schools to navigate the complex territory of assigning a teacher to each class each year from the available pool. As noted by Vale and Drake (2019), out-of-field teaching is inevitable in schools and hence requires investment in professional learning and the acknowledgement that all teachers have the potential to contribute in meaningful ways, helping to reshape practices within and across subject boundaries. If an “opportunity position” rather than a “deficit position” is adopted (Hobbs & Torner, 2019, p. 13), and out-of-field teachers have some agency in relation to their subject allocation, they can develop interests and passions in new subject areas. In the humanities, where teachers are frequently asked to teach out-of-field, Selvakumaran (2019) describes the experience at her school where working collaboratively to develop understanding of a range of subject pedagogies led to valuable opportunities to develop expertise in a supportive school culture. In addition, having knowledge across subject areas has the potential to support integrated curriculum approaches, something attracting considerable interest in the more recent integrated Science, Technology, Engineering, and Mathematics (STEM) and project-based learning initiatives in Australia and elsewhere (Anderson, 2020).

Given the shortage of teachers in some subject areas in secondary schools, as well as the oversupply in others, teachers may be willing to embark on a learning journey to qualify to teach new subjects. Some education sectors have provided support in this regard with scholarships to complete qualifications through a graduate certificate or similar program delivered by universities or subject associations. For example, Deakin University in partnership with the Victorian Government, Australia, delivers graduate certificates in secondary mathematics and science (Tytler et al., 2021). However, given the inflexibility of many school timetables and teachers’ commitments, it can be a challenge to provide time and space for teachers to commit to such programs, particularly if delivered during school hours. A flexible approach to any form of professional learning is critical to support out-of-field teaching both within the school context but also for programs delivered by other stakeholders. School systems also need flexibility to address shortages and to provide opportunities for reaccreditation of teachers since for some, oversupply in their area of expertise may result in them leaving the profession altogether. Unfortunately, in Australia, there are differences in accreditation requirements between states and territories, adding to the complexity of finding solutions to these issues. A more consistent approach is desirable if we want teachers to consider seeking new credentials and to remain as valuable members of the teaching profession.

Providing funding to professional associations would further support their efforts in developing high quality programs for both teaching in, as well as out-of-field. Given many members of professional associations volunteer to support teachers, they provide extremely cost effective professional learning but would benefit from more recognition of their efforts and are keen to work in partnership with other stakeholders. Given the commitment by many members of the education community to help support teaching out-of-field, it seems timely to seek further government support to address teacher shortages and oversupply in creative ways, and to streamline accreditation requirements.

## References

- Anderson, J. (2020). The STEM education phenomenon and its impact on school curriculum. *Curriculum Perspectives*, 40(2), 217-225.
- Anderson, J., & Swanson, B. (2021). Secondary mathematics teachers use of Facebook for professional learning. In M. Inprasitha, N. Changsri, & N. Boonsena (Eds.), *Proceedings of the 44th Conference of the International Group for the Psychology of Mathematics Education*, (Vol. 2, pp. 1-8). Khon Kaen, Thailand: PME.
- Ball, D. L., Thames, M. H., & Phelps, G. (2008). Content knowledge for teaching: What makes it special? *Journal of Teacher Education*, 59(5), 389-407.
- Darling-Hammond, L., Hyler, M., Gardner, M., & Espinoza, D. (2017). *Effective teacher professional development*. Palo Alto, CA: Learning Policy Institute.
- Goos, M., Bennison, A., & Proffitt-White, R. (2018). Sustaining and scaling up research-informed professional development for mathematics teachers. *Mathematics Teacher Education and Development*, 20(2), 133-150
- Hobbs, L. (2012). Teaching out-of-field: Factors shaping identities of secondary science and mathematics. *Teaching Science*, 58(1), 21-29
- Hobbs, L., & Torner, G. (2019a). Teaching out-of-field as a world-wide phenomenon and research problem. In L. Hobbs & G. Torner (Eds.), *Examining the phenomenon of "teaching out-of-field": International perspectives on teaching as a non-specialist* (pp. 3-20). Singapore: Springer Nature.
- Hobbs, L. & Törner, G. (2019b). The out-of-field phenomenon: Synthesis and taking action. In L. Hobbs & G. Törner (Eds.), *Examining the phenomenon of "teaching out-of-field": International perspectives on teaching as a non-specialist* (pp. 309-322). Dordrecht: Springer.
- Lantz-Andersson, A., Lundin, M., & Selwyn, N. (2018). Twenty years of online teacher communities: A systematic review of formally-organized and informally-developed professional learning groups. *Teaching and Teacher Education*, 75, 302-315.
- Riordain, M. N., Paolucci, C., & Lyons, T. (2019). Teacher professional competence: What can be learned about the knowledge and practices for teaching? In L. Hobbs & G. Torner (Eds.), *Examining the phenomenon of "Teaching out-of-field": International perspectives on teaching as a non-specialist* (pp. 129-149). Singapore: Springer Nature.
- Selvakumaran, Y. (2019). From weakness to strength: Turning the challenge of 'out of field teaching' into a team that thrives. In D. M. Netolicky, J. Andrews & C. Paterson (Eds.) *Flip the System Australia: What matters in education* (pp. 89-92). New York: Routledge.
- Shulman, L. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, 57(1), 1-21.
- Tytler, R., et al. (2021). Theory and practice relations in design-based research: Designing professional learning with teachers teaching mathematics and science out-of-field. In P. White, R. Tytler, J. P. Ferguson, & J. Cripps Clark (Eds), *Approaches to STEM education research*, Volume 2 (pp. 40-65). England: Cambridge Scholars Publishing.
- Vale, C., & Drake, P. (2019). Attending to out-of-field teaching: Implications of and for education policy. In L. Hobbs & G. Torner (Eds.), *Examining the phenomenon of "teaching out-of-field": International perspectives on teaching as a non-specialist* (pp. 195-216). Singapore: Springer Nature.