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Abstract: *A former head of the American Federation of Teachers, Albert Shanker, once called out-of-field teaching education's "dirty little secret" (Ingersoll, 2003, p. 5). The practice of allowing or assigning teachers to teach subjects or year levels for which they do not have any formal qualifications has lead to considerable debate within the educational community. Such concerns over the possible negative impact of out-of-field teaching on students, teachers and the broader school community led the Western Australian College of Teaching (WACOT) to commission an exploratory empirical study of the extent of the phenomenon in Western Australia. This paper presents the main findings from the empirical study and literature review and seeks to contribute to a greater understanding of the extent, causes, impact and possible solutions to the phenomenon of out-of-field teaching.*

Introduction

Teaching 'out-of-field' refers to the practice of teaching in a subject, field or level of schooling for which a teacher has neither a major or minor tertiary (university) qualification. It occurs, for example, when a teacher who has a major in Mathematics and a minor in Science is assigned to teach another subject area such as Information Communication Technology or Health and Physical Education for which they have no formal qualifications. Another example might be where a Primary qualified teacher is assigned to teach in a Kindergarten or Pre Primary class. In the USA, according to the Elementary and Secondary School Act (2002) 'No Child Left Behind' (NCLB), the term out-of-field refers to the teaching of an academic subject or a grade level for which a teacher is not 'highly qualified.' A 'highly qualified' teacher is defined as having a bachelor's degree; a regular state approved license or certificate and competency in each of the academic subjects she/he teaches. 'Competency' in a subject can be established if the teacher holds an undergraduate or graduate major in the subject, can pass a test on the subject, has an advanced teaching certificate in the subject or meets some other approved state evaluation for the subject (Department of Education Office of Postsecondary Education, 2005, p. 6). Accordingly, the definition of out-of-field teaching used for this research reflects how the term is most commonly conceived in the literature. That is:

> *Teaching in a subject/field for which a teacher has neither a major nor minor tertiary (university) teaching qualification. Also it means teaching at a level of schooling for which a teacher is not formally qualified.* (McConney & Price, 2009, p. 1),

In this study of the phenomenon we used a confidential survey, delivered in both paper-and-pen and online (internet) formats, and offered to a randomly drawn, representative sample of Western

Australian College of Teaching (WACOT) active teacher members. Over 500 teachers from across three school sectors (Government, Catholic and Independent) representing both Country and Metropolitan regions responded to the survey. Based on the responses received, the overall rate of teaching out-of-field in Western Australia (WA) schools for both the 2007 and 2008 school years was estimated at 24%. The survey findings were complimented by a review of the relevant international literature and generally, it can be said that our findings are consistent with previous research on the phenomenon of teaching out-of-field within Australia and elsewhere. This paper is based on an assessment of the phenomenon of teaching out-of-field commissioned and supported by the Western Australian College of Teaching. The complete report of this assessment was released to the public and interested stakeholders in March 2009 and is available at http://membership.wacot.wa.edu.au/Assessment_of_Teaching_Out_of_Field_Final_Report_for_publication.pdf

A Review of Previous Research on Teaching Out-of-Field

A review of previous research indicates that there are many factors contributing to the continuing practice of out-of-field teaching including teacher supply and school organisational issues. This seems to be particularly the case in small schools. Debate continues to revolve around the extent to which out-of-field teaching may be detrimental to student outcomes and teacher professional standards. Given that out-of-field teaching appears to be a common and continuing practice, suggestions for ways to support teachers and minimise any possible negative impact are also prevalent in the literature. This review draws together key themes concerning out-of-field teaching that have been raised in the Australian and international literatures. The review focuses on the prevalence, impact and possible future implications of out-of-field teaching on systems, teachers and students.

Prevalence of Out-of-Field Teaching

The Staff in Australian Schools (SiAS) 2008 report, based on a large-scale national on-line survey of teachers and school leaders included an investigation of the extent of out-of-field teaching in Australia. The report concluded that there is considerable evidence of out-of-field teaching in both the primary and secondary sectors (DEEWR, 2008i, p. xiii). In particular, SiAS noted the prevalence of out-of-field teaching in the primary specialist areas of Languages Other Than English (LOTE) and Special Needs. In these areas, it was found that only about half of the teachers had at least a one-year tertiary qualification in the field. As well, only 30-40% of LOTE and Special Needs teachers surveyed had undertaken teaching methodology courses in these fields. In the secondary sector, the survey focused on Mathematics, Physics, Chemistry and Information Technology (IT), which were areas of reported teacher shortages. It was found that an overwhelming majority (87–95%) of those teaching senior secondary (Years 11 and 12) Maths, Physics and Chemistry had at least a one-year tertiary qualification in these subject areas and that at least three-quarters had completed teaching methodology training in the area. The incidence of out-of-field teaching was, however, found to be much more significant for IT teachers with only 60% having completed at least one year of tertiary qualifications and only 46% having any methodology training in the field. Incidences of out-of-field teaching were also

found to be much higher in the lower secondary years (7/8-10). Only 75% of those teaching Mathematics, for example, reported having at least a one-year tertiary qualification in the subject and only 50% had a three-year Mathematics qualification. Less than half of those teaching IT had a one-year qualification in the field and only 24% held a three-year qualification in IT.

Ingvarson, Beavis and Kleinhenz (2004), in a survey of teachers at the end of their first year of teaching in the Australian state of Victoria, found that 13-20% of primary teachers reported that they were not qualified to teach at the year level at which they were working. At the secondary level about 15% of Studies of Society and Environment (SOSE) and Science teachers reported they were unqualified to teach in these areas. In all other key learning areas from 25-30% of teachers reported teaching in an area for which they were not qualified.

These statistics are supported by findings in the USA. Ingersoll's research based on the national US Schools and Staffing Surveys (SaSS) for example, drew attention to what he considered to be "the high levels of out-of-field teaching" which were a "leading source of underqualified teaching in American schools" (2003, p. 5). Clearly these findings provide evidence for the existence of out-of-field teaching both in Australia and the USA. Ingersoll (2003), however, also makes the point that there is room for some scepticism regarding the public reporting of the extent of out-of-field teaching because of its politically sensitive nature. He argues that data obtained from school officials who do not want the extent of out-of-field teaching to become public knowledge, is open to question. Like Ingersoll, Thomas (2000) also suggests that determining the extent of out-of-field teaching can be problematic because principals are unlikely to want to publicise its extent if such data might impact on the reputation of their schools. Ingersoll also raises concerns about the validity and reliability of empirical research on out-of-field teaching because of the lack of consensus on how to measure it. In determining the prevalence of out-of-field teaching, Ingersoll argues for the need to include the number of classes a teacher without a specific undergraduate subject degree is teaching out-of-field (2001, 2003; Ingersoll & Curran 2004). So, for example, a qualified mathematics teacher who has an undergraduate major in mathematics and teaches mostly mathematics but takes one class of health per week should be considered teaching out-of-field. Taking such cases into consideration clearly increases the reported incidences of out-of-field teaching.

Professional Standards

Albert Shanker, former head of the American Federation of Teachers, called out-of-field teaching education's "dirty little secret" (Ingersoll, 2003, p. 5). This comment reflects concerns noted in the literature regarding the practice of out-of-field teaching. The existence of out-of-field teaching particularly troubles those who advocate the need for teacher professional standards as a means of ensuring teacher quality (Darling-Hammond, 2002; Ingersoll, 2003). Central to these debates, though, are contested notions about what constitutes 'quality' teaching and what it means to be 'qualified to teach.'

Researchers such as Darling-Hammond have consistently argued that well prepared, highly qualified teachers have a greater impact on student achievement than other variables including student background and class sizes (Darling-Hammond 2000, 2002; Hattie, 2003). Professional associations often cite such research to support the need for professional standards and subject specialists (for example, the Science Teachers Association of Victoria submission to DEST, 2003, p. 6). Similarly, the Committee for the Review of Teaching and Teacher Education, in its recommendations, prioritised the need for appropriately qualified teachers of all subjects

and all levels (DEST, 2003). The practice of assigning teachers to teach out-of-field has the potential to undermine these recommendations. While there are, as yet, no mandated national standards for teachers in Australia, in keeping with the National Framework for Professional Standards for Teaching, all state based registration authorities have included reference to a certain level of subject content knowledge in their professional standards for registration (MCEETYA, 2003). Support for the need for high levels of subject knowledge is also evident in the development of subject specific teacher standards by various professional associations such as the Victorian Institute of Teachers (ND), New South Wales Institute of Teachers (2008), Queensland College of Teachers (2006) and Western Australian College of Teaching (ND); the *National Framework for Professional Standards for Teaching* (MCEETYA, 2003) has also supported this view.

The importance of content or subject matter expertise is also central to the No Child Left Behind and Higher Education Act Title II school reform agendas in the US. Consecutive US Department of Education annual reports on teacher quality cite examples of educational research that support the notion that along with pedagogical knowledge, subject mastery knowledge is essential for effective teaching. The practice of out-of-field teaching is problematic for those who support the need for such professional standards for teachers. Where professional standards require that a teacher must have a credentialed level of content and pedagogical knowledge to teach effectively, critics ask how and why, for example, can a science teacher be assigned a Society and Environment class or a Chemistry teacher assigned a Biology class. In Australia, the National Inquiry into School History, similarly argued that out-of-field teaching affects the quality of Studies of Society and Environment (SOSE) teaching (Taylor, 2000). It was reported that the problem was particularly acute in small urban secondary schools; medium sized private schools and most rural government schools where non-SOSE trained teachers are often given SOSE as a 'top-up' for their timetables. The report concluded that there is a prevailing notion within schools that anyone can teach SOSE and this is detrimental to the subject.

Inequitable Effects on Students, Schools and Communities

It is also argued that the practice of out-of-field teaching has the potential to have negative and inequitable effects on student outcomes, particularly for those students in poor communities and small, rural or remote schools (Darling-Hammond, 2002; Ingersoll, 2003; Ingersoll and Curran, 2004). For instance, it has been suggested that there is a much higher incidence of teaching out-of-field in poor communities, rural and remote schools and metropolitan schools considered 'hard to staff.' The employment of under-qualified teachers, including the requirement for teachers to teach out-of-field, is argued to be one of the major contributors to the relative underachievement of students in these schools (Darling-Hammond, 2000). Ingersoll's US data showed that there was a much greater prevalence of out-of-field teaching in high-poverty schools than in more affluent schools. Ingersoll's data also indicated that the degree of out-of-field teaching was much higher in small schools including small private schools, which had "among the highest overall levels of out-of-field teaching" (2003, p. 17). This, Ingersoll claims, challenges the widely held view that, in terms of school choice, "small is beautiful" (2003, p. 13).

In the Australian context, Thomas further contends that the economic divide entrenched in the school system will be exacerbated if students in remote rural and 'hard to staff' schools are deprived of well-qualified mathematics teachers (2000). This is a view supported by the Isolated

Children's Parents' Association of Australia in their submission to the Department of Education, Science and Technology (DEST) Review of Teaching and Teacher Education, *Australia's Teachers: Australia's Future* (2002). This submission raised concerns about the extent and impact of out-of-field teaching on student outcomes in rural and remote schools.

Impact on Teachers

Another concern raised in the literature is the possible negative impact the practice may have on teachers' efficacy and well-being (Pillay, Goddard, & Wilss, 2005). A personal communication from an organiser of the Western Australian State School Teacher's Union (SSTUWA) indicates that teaching out-of-field is a factor that contributes to stress for teachers. It is considered to be a particular problem for new graduates faced with the extra demands of designing and implementing curriculum for an unfamiliar subject for which they have had no university preparation (SSTUWA, Personal Communication, 07/07/08).

There is little empirical evidence in the literature however, related specifically to the impact that out-of-field teaching has on teachers. Ingersoll's data showed that newly appointed teachers are the most likely to be assigned out-of-field which may be a contributing factor in high attrition rates for new graduates (Ingersoll, 2001). However, while the literature on early teacher attrition cites workload, problematic student behaviour, lack of influence over school policy, salaries and poor induction processes as contributing factors to teachers leaving the profession, out-of-field teaching is not specifically mentioned (Feng, 2005; Croasmum, Hampton, & Herrmann, 1997; Alliance for Excellent Education, 2005). Feng suggests that the impact of out-of-field teaching on attrition rates is an area in need of further investigation (2005).

Pillay, Goddard and Wilss, did however, investigate the relationship between teacher burnout and competence. Based on data collected from a sample of mid-career teachers in primary and secondary schools in Queensland, they assert that 'teaching competence' can be compromised if a teacher has to teach a subject for which they have little discipline knowledge (2005). Teacher competence is defined, in this case, as teachers believing they have the prerequisite knowledge of the subject/s they teach and the skills to teach effectively (Little, 1995). With regard to the impact on administration staff in schools, Taylor notes that the practice of managing and supporting out-of-field teaching provides a major distraction for Subject Coordinators who are required to provide extra support, mentoring and resources for out-of-field teachers in the SOSE learning area (2000). The specific impact of teaching out-of-field on teachers and their professional efficacy and the extent to which it may contribute to burn-out or early attrition would appear to also be an area for further research.

Masking Teacher Shortages

Other critics have contended that out-of-field teaching is problematic because it has the potential to mask the realities of teacher shortages (Thomas, 2000; Webster, Wooden & Marks, 2006), particularly in certain subject areas. Webster, Wooden and Marks, for example, make the point that many current labour supply indicators for teacher shortages, which are based on the number of people who have recognised teacher qualifications, hide the extent of teacher shortages (2006). These authors suggest, that given the complexity and segmented nature of the teacher labour market, more accurate indicators of teacher shortages should include the numbers

of teachers teaching subjects for which they are not fully qualified. They argue that, "having a teacher in front of every class does not necessarily mean there are no shortages" (2006, p. 189). Similarly, Thomas (2000) has contended that estimating the extent of the shortage of qualified mathematics teachers is problematic because little is known about who exactly is teaching Mathematics. In this regard, attempts to estimate current shortages and forecast future needs are complicated because they fail to take account of existing hidden shortages masked by out-of-field teaching.

The SiAS report similarly found that out-of-field teaching often hides teacher shortages, as school administrators use a variety of strategies to ensure classes are not left without a teacher. Almost half the Principals surveyed in both secondary and primary sectors acknowledged using strategies to overcome teacher shortages, including requiring teachers to teach out-of-field (DEEWR, 2008i, p. 21).

Alternative Views on Out of Field Teaching. Whilst much of the literature points to the possible negative effects of out-of-field teaching, there is also literature that argues that teaching out-of-field may not be as problematic as suggested. Skilbeck(2003), for example, questions the evidence to support taken for granted assumptions that teaching out-of-field is necessarily detrimental to student learning. His scepticism is supported by Becker's (2000) research which found that teachers with a mixed academic subject load, some of which could be assumed to be teaching out-of-field, demonstrated more constructivist approaches in their teaching. Using measures to study levels of constructivist approaches to teaching, Becker found that conventionally assigned teachers (i.e. those who neither taught out-of-field nor had a mixed academic subject load) had the lowest mean score on each of these measures. Conversely, teachers who taught a very mixed-subject teaching load consistently scored the highest on each of these measures.

Olitsky (2006), in a small ethnographic study of a Physics teacher who taught Physics to a diverse urban year 8 class in one semester and then Chemistry (for which she was not subject qualified) in the next semester, found more students participated and reported enjoying science when the teacher was teaching out-of-field. While teaching in-field, analysis of classroom interactions revealed greater social distance between teacher and students as the teacher often engaged in 'front stage' performances accentuating her role as expert and as science as an elitist discourse. When teaching out-of-field, while clearly less organised and knowledgeable, this teacher was able to engage students in her 'backstage' performances as she openly struggled with the content. These practices, it is asserted, lessened the social distance between teacher and students, made science language more achievable and encouraged the development of science identity and group membership. Such research is indicative of debates within the education literature as to what attributes or characteristics a 'quality teacher' demonstrates (Kleinhenz & Ingvarson, 2007; OECD, 2005; Webster et al., 2006). While some characteristics are measurable - such as qualifications and subject or content knowledge - others such as the ability to create effective learning environments for different types of students; to be enthusiastic and creative; and to work effectively with colleagues and parents, although harder to quantify and measure are no less significant (OECD, 2005). Educators within the constructivist or critical traditions argue that there is more to quality (or 'good') teaching than imparting defined knowledge and skills. As important, is the ability to facilitate students' learning through inquiry and to enable students to create knowledge, develop arguments, communicate and apply understanding to solve real problems (Becker, 2000, Kincheloe, 2003).

Reasons for the Occurrence of Out of Field Teaching

One economic/staffing reason, posited in the literature, for the continuing occurrence of out-of-field teaching is related to teacher supply and demand issues. Current and projected teacher shortages in particular subject specialisations, in many rural and remote and some metropolitan locations, both within Australia and internationally, are well documented (see for example: Department of Education, Employment and Workplace Relations (DEEWR), 2003; 2008; Western Australian Department of Education and Training (DET), 2008i; DET 2008ii; Ministerial Council for Employment, Education, Training and Youth Affairs (MCEETYA), 2004; OECD, 2005; Teaching Australia, 2007). Such shortages, combined with fluctuations in student numbers, clearly create staffing problems both at the local school level and for education systems generally.

The Organisation for Economic and Cooperation and Development (OECD, 2005) recognises that one solution adopted by many systems to address teacher shortages in particular subject areas or year levels is to assign teachers to teach in areas for which they are not fully qualified. Ingersoll (2001; 2003) goes further to suggest that school organisation and staffing management contribute as much to the problem as issues of supply. He maintains that principals and administrators make staffing decisions in the context of often-limited time and resources and little regulation of how teachers are assigned once on the job. In these cases choices are made, for example, between employing a new science teacher or LOTE teacher, relocating someone or doubling class sizes. Assigning teachers to teach out-of-field under these conditions becomes a pragmatic and acceptable administrative practice.

Possible Solutions

Those concerned by the practice of out-of-field teaching have offered a range of possible solutions. Most short-term solutions acknowledge that within the current context of teacher shortages and demands for flexibility in staffing profiles to meet changing workforce and community demands, the practice of out-of-field teaching is likely to continue.

Teaching Australia's Advice to the Minister (2007), for example, advocates alternative approaches to school staffing organization to address teacher supply issues and the changing nature of schooling. This report suggests a range of initiatives including associate teachers and pathways for qualified teachers to retrain in areas of high need. Sophisticated on-line delivery of curriculum content to isolated schools where teachers may have limited expertise in a particular subject area is another suggestion. The report cites a number of examples of current solutions to general and specific teacher shortages where teachers are required to teach out-of-field. As an example South Australia offers a professional development pathway that counts towards a Graduate Certificate or Masters in Education for existing teachers to re-train as Maths teachers. Course costs and teacher relief are paid for, but not other expenses. New South Wales offers re-training programs for qualified teachers in various areas of shortage.

Ingersoll (2003) also advocates the need to change the way schools are managed once teachers are on the job. He asserts that states and districts need to rethink how school staffing decisions are made and by whom. Ingersoll also suggests that rural schools need to share itinerant specialists and there should be a greater use of distance education and technology as well as administrative support, in addition to extra professional development and mentoring support for out-of-field teachers. The US-based Centre for the Future of Teaching and Learning (2007)

advocates the establishment of accurate databases to provide policy makers with a clear picture of the extent of out-of-field teaching. This would help to ensure particular schools and students are not inequitably exposed to out-of-field teaching. The need for more accurate databases on the teacher workforce in Australia is also a key recommendation of the recent DEEWR (2008ii) report on Teacher Workforce Data and Planning Processes.

Thomas (2000) also proposed the need to provide study leave to secondary teachers teaching Mathematics out-of-field, arguing that teachers should not be expected to obtain proper qualifications in their own time and at their own cost. Rather, she suggests Commonwealth funding for tertiary places and state funding for leave. The Science Teacher's Association of Victoria submission to DEST (2003) made similar recommendations for teachers required to teach out-of-field including the need for well-designed professional learning, short courses and mentoring from qualified teachers. The Western Australian Department of Education and Training, Education Workforce Initiatives Report (DET 2008i), recommended the use of ICT, flexible learning and 'expert teachers' to support teachers out-of-field, particularly in regional and remote areas where staffing profiles limit the number of subject specialists a school can employ.

In the USA, concerns over the impact of out-of-field teaching have lead to mandatory requirements for schools to publicly disclose to parents the numbers of students taught by underqualified teachers under the NCLB legislation (Ingersoll, 2003). In some states in the USA it is a requirement that teachers with an out-of-field permit undertake a prescribed number of coursework hours per year toward the appropriate certification for the out-of-field assignment (Pasco County, 2008).

Methodology

The survey used to gather data regarding teachers' out-of-field teaching experiences in Western Australian schools during 2007 and 2008 was developed by the study's lead author, in consultation with a Working Group of the WACOT Board. The 23-item survey comprised mainly closed-ended (fixed response) demographic and Likert-type items. These items interrogated teachers' years of experience, qualifications held and main areas of tertiary study in addition to assessing their views and feelings regarding teaching out-of-field. As well, the survey comprised a few contingent and open-ended (free response) items that allowed respondents some latitude to further explain their responses. The survey was made available to potential respondents in both paper-and-pen and on-line modalities.

In all, 2,275 invitations to participate in the survey were sent to a randomly drawn stratified sample of WA teachers, proportionally representative of the various levels of schooling, the State's three school sectors, and major regions (Metro and Country). By the close of the survey period, 535 active teachers (or 23.5%) had responded. This represented an at-best modest response to the invitation to participate that ultimately limits the confidence that can be placed in some of the finer-grained estimates of rates of teaching out-of-field in WA schools.

Findings of the Empirical Study

Based on the 535 survey responses received, we estimated the overall rate of teaching out-of-field in WA for both the 2007 and 2008 school years at 24%. More specifically, with regard to the *overall rate* of teaching out-of-field for both 2007 and 2008, we can say that we are

95% sure that the true percentage of the actively teaching population teaching out-of-field in WA schools was between 20% and 28% (i.e., 24% ± 4%).

We further disaggregated survey responses by region (Metro vs. Country WA), School Sector (Government, Catholic and Independent) and Level of Schooling (Early Childhood, Primary, Middle School and Secondary). As a result, for 2007, we estimated the overall rate of teaching out-of-field for Government schools in the Perth Metro region was 13.6%, as contrasted with 28.8% for Catholic schools and 29.7% for Independent schools in the Metro area, respectively. For 2008 in the Perth Metro region, the rates of teaching out-of-field were similarly estimated at 16.4% for Government schools as contrasted with 26.9% for Catholic schools and 29.7% for Independent schools, respectively.

Additionally, survey responses consistently indicated that overall rates of teaching out-of-field were higher in the Country regions of WA as compared to rates for Metro-area schools. For country-area Government schools in 2007, the overall rate of teaching out-of-field was 25.9%, as contrasted with 44.4% for Catholic schools and 38.5% for Independent schools, respectively. Similarly in 2008, overall rates of teaching out-of-field for country-area Government schools was 23.1%, as contrasted with 44.4% for Catholic schools and 46.1% for Independent schools, respectively. Particularly noticeable for Country region WA schools were the much higher rates of teaching out-of-field in Secondary schools, as compared to the rates seen for Metro area secondary schools. For example, in Government secondary schools in Country WA, the rate of teaching out-of-field in 2007 was 50%. This was seen to be similarly high for Catholic (45.5%) and for Independent (57.1%) secondary schools in Country WA.

In general therefore, as the sample of respondents was further disaggregated by region, school sector and level of schooling additional patterns emerged. Generally, observed rates of teaching out-of-field tended to be higher in Catholic and Independent schools as compared with Government schools. Similarly, rates of teaching out-of-field were observed to be considerably higher in Country WA schools, across all three school sectors, while maintaining the pattern that these rates tended to be higher in Catholic and Independent schools as compared to Government schools.

Despite the consistency of these patterns we strongly emphasize that many of the estimates for rates of teaching out-of-field associated with smaller groups carry with them quite large confidence intervals that must be read with prudence and caution. Clearly, in addition to reporting these survey-based *estimates* for rates of teaching out of field disaggregated by WA region, level of schooling and school sector, it is also important here to interrogate the level of confidence that we can justifiably place in these estimates. As noted above, for the *overall rate* of teaching out-of-field for both 2007 and 2008 we can say that we are 95% sure that the true percentage of the actively teaching population teaching out-of-field in WA schools in 2007 was between 20% and 28% (i.e., 24% ± 4%).

However, as the sample of respondents was disaggregated according to the strata of interest for the study, we become somewhat less confident about the point estimates we have reported. For example, 78 Metro-area teachers working in Government secondary schools responded to the survey. Given a population of 4,802 secondary Government school teachers in Metro WA, a 95% level of confidence would mean that the confidence interval for this estimate would grow to ±8 points. That is, we can be 95% confident that the true rate of teaching out-of-field in Metro WA Government secondary schools lies between 7% and 23% (i.e., 15.4% ± 8%). Alternatively, if we are willing to accept a slightly lower—although not unusual—confidence level, we can be 90% confident that the true rate of teaching out-of-field in Metro WA Government secondary schools lies between 9% and 21% (i.e., 15% ± 6%).

Similarly, 38 Country-area teachers working in Government secondary schools responded to the survey. Given a population of 2,216 secondary Government school teachers in Country WA, a 95% level of confidence would mean that the confidence interval for this estimate would swell to ±16 points. That is, we can be 95% confident that the true rate of teaching out-of-field in Country WA Government secondary schools lies between 34% and 66% (i.e., 50% ± 16%). Alternatively, if we are willing to accept a slightly lower confidence level, we can be 90% confident that the true rate of teaching out-of-field in Country WA Government secondary schools lies between 37% and 63% (i.e., 50% ± 13%). In other words—in large part due to the poor response rate for some groups of teachers—as the final sample of WA teachers responding to the survey is disaggregated to more and more stratified groups, greater levels of prudence must be applied in judging the accuracy of the observed rates of teaching out-of-field.

For the group of 123 teachers that reported teaching out-of-field, further analysis was conducted to identify what learning areas or levels of schooling were potentially impacted. The most frequent explanation given for out-of-field assignments was simply the fact of relief teaching. The second most frequent reason cited within this group was teaching in a primary school setting without appropriate qualification (in many cases teachers holding a secondary school teaching qualification had decided to move to teaching at the primary level). For the reportedly "high need" learning area of Mathematics, 7 teachers (6% of those who reported teaching out-of-field) cited a lack of appropriate training in Mathematics. From a proportional perspective, 7 of the 43 teachers (16%) who reported teaching some form of Maths as a discrete subject also reported teaching out-of-field in 2008. This rate seems relatively consistent with that reported in the 2008 SiAS, which noted that an overwhelming majority (87%–95%) of those teaching senior secondary (Years 11 and 12) Maths, Physics and Chemistry had at least a one-year tertiary qualification in these subject areas and that at least three-quarters had completed teaching methodology training in the area. For the similarly high-profile learning area of Science, 6 teachers (5% of those who reported teaching out-of-field) cited a lack of appropriate training in Science. From a proportional perspective, 6 of the 34 teachers (18%) who reported teaching some form of Science as a discrete subject also reported teaching out-of-field in 2008. Similar to Mathematics, this rate is an order of magnitude relatively consistent with that reported in the 2008 SiAS.

Generally, these findings are consistent with previous research on the phenomenon of teaching out-of-field within Australia. For example, the Staff in Australian Schools (SiAS) 2008 report concluded that there was considerable evidence of out-of-field teaching at both the primary and secondary levels of schooling. The findings of this descriptive study are particularly consistent with those of Ingvarson, Beavis and Kleinhenz (2004) in Victoria. In the current study, in addition to a quantitatively similar overall rate of 24% teaching out-of-field, we also estimated out-of-field teaching rates of 16% and 18% in Maths and Science (including Physics, Chemistry and Biology). In Victoria, Ingvarson and his colleagues reported that up to 20% of primary teachers reported they were not qualified to teach at the year level at which they were working. At the secondary level about 15% of science teachers reported they were unqualified to teach in these areas, while in all other key learning areas from 25-30% of teachers reported teaching in an area for which they were not qualified.

On the question of years of experience for those teachers who report teaching out-of-field, this study found a plurality to have a high level of experience in the schools, most often 21 years or more. Although, because of the relatively modest response rate, we are not able to conclude with certainty that this is indeed the case across WA schools, this finding does call into some

question the conventional wisdom that it is most often new teachers who are disproportionately assigned to out-of-field roles.

Conclusions

Our review of the literature concerning out-of-field teaching indicates that it is a common and continuing practice in Australia and overseas. The findings from this empirical study are consistent with this literature, with an estimated 24% of teachers in WA reporting that they had been teaching out-of-field during 2007 and 2008. The study also found that the phenomenon of out-of-field teaching occurs across school sectors in WA, although it was found to be higher in non-government schools. Perhaps most surprisingly it was also found that a large proportion of teachers engaged in out-of-field teaching have at least 20 years teaching experience. Such findings appear to be in contrast to a widely held belief that it is Early Career Teachers who are most likely to be assigned to teach out-of-field.

There is continued debate as to the extent to which out-of-field teaching is detrimental to student outcomes depending on pedagogical beliefs, how student learning is measured and what is considered quality teaching. There is little in the literature that is concerned directly with the impact of out-of-field teaching on teachers and the extent to which it may be causally linked to teacher stress, burnout or attrition. This would appear to be an area for further research. In particular the extent to which Early Career Teachers may be adequately prepared to teach out-of-field and the impact this may have on their professional efficacy and emotional well-being are important areas for investigation given high rates of beginning teacher attrition.

Various commentators have put forward a range of solutions to provide support for teachers teaching out-of-field, acknowledging that given continued teacher shortages, the realities of staff to student ratios in small communities, changing workforce patterns in a globalised economy and the need or desire for greater staffing flexibility in the teaching workforce, the practice is likely to continue. Further investigation is also required into the impact of teaching out-of-field on students, teachers and the community and if the phenomenon is to continue, ways to ensure that teachers are better prepared, students are not disadvantaged and the community is fully aware of the practice.

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