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HIGH-STAKES NATIONAL TESTING: IT'S GLOBAL, IT'S HERE TO STAY, AND GRADUATING TEACHERS NEED TO KNOW ABOUT IT

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Abstract

My oldest daughter recently secured a position as a Science/Geography teacher in a P-12 Catholic College in regional Queensland. This paper looks at the teaching world into which she has graduated. Specifically, the paper will outline and discuss findings from a survey of graduating early childhood student teachers in relation to their knowledge and skills of the current regime of high-stakes testing in Australia. The paper argues that understanding accountability and possessing skills to scrutinise test data are essential for the new teacher as s/he enters a profession in which governments world-wide are demanding a return for their investment in education. The paper will examine literature on accountability and surveillance in the form of high-stakes testing from global, school and classroom perspectives. It makes the claim that it is imperative for beginning teachers to be able to interpret high-stakes test data and considers the skills required to do this. The paper also draws on local research to comment on the readiness of graduates to meet this comparatively new professional demand.

Introduction

Current graduates in education are entering a very different profession to the one in which most of their "baby-boomer" colleagues started. It is a profession in which accountability and national high-stakes testing have become catch-cries, and where the interpretation and use of educational data is a challenge. This has led to schools focusing on performance, and teachers now have to analyse test data and apply the findings to their teaching.

In Australia, all students in Years 3, 5, 7 and 9 undertake the National Assessment Program – Literacy and Numeracy (NAPLAN) tests. Over 1.2 million students from more than 9,000 Government, Catholic and independent schools across Australia participate in the tests which began in 2008. Test results are reported in terms of where each student sits in relation to the national benchmark or national minimum standards, and where they sit on a banding scale of ten levels of achievement. With such intense government accountability, it is therefore necessary that all teachers of students from Years P to 9 (not just teachers of Years 3, 5, 7 and 9) are cognisant of the demands and implications of such testing.

This paper aims to examine final year early childhood education students' knowledge of the national high-stakes testing program and their ability to interpret test data. Initially, the study establishes what the students know about:

- the aim of the national high-stakes tests;
- who administers the tests;
- who takes the tests; and
- how results are reported.

The author then suggests that the graduating student teachers also need some knowledge of reading and interpreting the huge amount of test data which the government returns to the schools post testing. In this study, the graduating student-teachers were tested to establish their level of these basic skills in interpreting educational data. The survey also included the skills of the students to:

- locate the title of a table or graph to understand the purpose of the data;
- use a key or a legend to assist in analysing the data;
- interpret data from a table;
- calculate a range; and
- compare class and state data.

The author has worked with many schools, assisting them to interpret their educational data. She considers that the above skills would be the minimum accepted standard for teachers when analysing and interpreting data in the current environment of accountability.

This paper posits that graduating student teachers need an understanding of current accountability measures in the form of high-stakes testing and also need to possess basic data analysis skills. Issues of accountability, high-stakes testing and educational data will now be considered in the light of current literature.

Accountability

According to Giddens (2002) accountability is about a heightened level of surveillance. Educators, Perry and McWilliam (2007), define accountability as “being answerable to someone for activities that go on in schools” (p. 34). In this study, accountability is defined as being answerable to another level of authority for prescribed responsibilities (Smeed, 2009). Currently, a school is answerable to several bodies or individuals, such as the students and their parents (Lello, 1993) and governments. Over the last decade in Australia, there has been a definite trend towards increasing accountability, especially in relation to curriculum, and this is changing the nature of teacher work (McWilliam & Perry, 2006).

This trend towards increased accountability has also been evident in other Western nations (Flores, 2005; Fullan, 2001). This has led to schools specifically becoming more accountable to governments to justify public investment (Edwards, 2001; Flores, 2005; Greene, 2003). Over the past decade, the process of measuring accountability through high-stakes testing has grown in prominence (Pinar, 2004) and as a by-product of these tests, schools can be rewarded or sanctioned (Amrein & Berliner, 2002).

The reviewed literature identified two aspects of accountability as they pertained to education. Firstly, there was the forensic aspect which Earl (2002) defined as “providing information or justifications in some written form such as an annual report or a press release or even student report cards” (p.7). Secondly, there was the moral or professional aspect which Earl (2002) defines as “being knowledgeable and fair in teaching and in interactions with students and their parents” and engendering “respect, trust, shared understanding, and mutual support” (p. 7). Kogan (1986) also wrote about two aspects in terms of “philosophies and mechanisms governing the relationship between any public institution, its governing bodies and the whole of society” (p. 19). The philosophies could be considered the moral or professional aspect of accountability, while the mechanisms, the forensic.

In reality, this moral accountability has always been part of teachers’ work (Earl, 2002). They have long been accountable for following a prescribed curriculum,

maintaining good order in their classroom and carrying out various duties that extend beyond classroom teaching. It could therefore be argued that teachers are already comfortable with this aspect of accountability. It is the forensic aspect which in recent years has experienced a rapid growth and provided an urgency and pressure for schools to act differently (Bishop & Mulford, 1999; Earl, 2005; Perry, 2006). In relation to the school curriculum, a way of enforcing accountability has been through the surveillance mechanism of high-stakes testing.

High-stakes testing

As stated previously, high-stakes testing is now an educational phenomenon of huge importance in the Western world. In the UK, government educational policies centre on meeting public and government demands for educational accountability and standards monitoring (Rowe, 2000). To achieve this, the government has instituted a program of testing students and publishing the resultant data (Rowe, 2000). School league tables are published showing results from national curriculum tests at ages 7, 11 and 14 years, along with scores for the General Certificate of School Education (GCSE) (at 16 years) and AS and A2 levels (at 17/18 years).

In the USA, the annual testing in all states under the *No Child Left Behind Act* (2001) has led to increased standardised testing of students across the country (Hoff, 2007). However, this is not without its critics. Amrein and Berliner (2002) argue that no clear link has been identified between these tests and increased student learning. They also argue that high-stakes testing has had disproportionately negative and discriminating affects on the life chances of America's poor and minority students. Parkay (2006) concurs and raises doubts about the outcomes of such testing. He considers that the drive for more testing and the setting of benchmarks in the USA have actually led to the lowering of standards. He posits the reason for this as being that the School Districts set benchmarks that also serve as a funding indicator. As a result, the districts have the power to downgrade these benchmarks to retain or attract funding.

In contrast to the UK and the USA, Japan, Malaysia and Singapore are experiencing periods of what Shimizu (2001) refers to as "educational disarmament" (p. 193). In Japan and Malaysia, the emphasis is on lessening the intensity of education by reducing curriculum requirements and the number of weekly hours students spend at school (Rotberg, 2006; Shimizu, 2001). However, Shimizu (2001) questions whether or not this trend will be tolerated if Japan continues to fall from the top position in mathematics and science in the OECD's Programme for International Student Assessment (PISA) ranking.

In Singapore, student standardised national testing is undertaken at specific intervals throughout a ten-year period of their schooling. These results are published in league tables, then used to stream students within the system and reward schools for their performances (Rotberg, 2006). In contrast, public school students in Japan do not partake in high-stakes tests until lower secondary school, when their test results determine which upper secondary school they will attend. Rotberg (2006) and Shimizu (2001) comment that, while education is highly competitive, teachers are not held accountable for students' scores on standardised tests. This is the trend in the UK and USA and one that is currently being debated in Australia (ABC Newsonline, 2007).

Over the last decade, there has been a growing tendency to use educational data to make decisions on a variety of educational matters (Ward, 2006). According to a former Commonwealth Government Minister of Education, The Hon. David Kemp (1999), high-stakes testing was not just about the performance of students. He suggested that it could be used as a means of monitoring school and teacher standards. In Queensland, data from Year 5 literacy/numeracy tests is currently being used by

some schools to screen their Year 8 (secondary school) intake – the brightest students being offered preferential places (Ward, 2006). As a result of government requirements to publish test results on websites, schools are addressing student performances with a high degree of urgency (McWilliam, Taylor & Perry, 2007).

Currently, at a classroom level, accountability in the form of high-stakes testing is affecting both content (Greene, 2003; Luke, 2007 February; Pinar, 2004; Rowe, 2000; Ward, 2006) and pedagogy (Broadhead, 2001; Carlson, 2005; Pinar, 2004). Specifically, it has had a considerable influence on how teachers teach and what students learn (Christensen, 1999; Darling-Hammond, 2002). These practices will almost inevitably influence the performances of young graduates.

The implications for the classroom and the classroom teacher is that as the system, and in particular the curriculum, narrows its focus to meet these external targets, there is a concern that creativity, diversity and individuality will disappear from classrooms, ultimately changing the work of the teacher (Meadmore, 2004). Pinar (2004) concurs with this and suggests that an “educational experience seems precisely what politicians do not want, as they insist we focus on test scores, as the ‘bottom line’” (p. 2). He further suggests that by linking the curriculum to student performance on standardised testing, politicians have, in effect, taken control of the classrooms.

Ultimately, Hargreaves (1994) posits that the outcome for teachers is de-skilling and de-professionalising. Their jobs are becoming “teacher-proofed” as the development of the curriculum is undertaken separately from the teachers and they are left with the delivery of a product to which they have had little or no input. Hargreaves (1994) considers that this is a feature of post-modernity where workplaces are created in which management is separated from workers, planning from execution, and head from hand. The teacher becomes a technician delivering a prescribed and narrowed curriculum (Carlson, 2005; Pinar, 2004).

The stringent accountability measures as a consequence of high-stakes testing have created a pressured environment in some schools. Teachers report anxiety, shame, loss of esteem and alienation associated with the increased instructional pressures of testing (Barksdale-Ladd & Thomas, 2000; Tomlinson, 2001). As a consequence, they are implementing the practice of “teaching to the test” (Amrein & Berliner, 2002, p. 12) in an attempt to ensure good results. Other criticisms of high-stakes testing include increased student drop-out rates (Amrein & Berliner, 2002; Parkay, 2006), teacher defection from the profession (Ingersoll, 2003), and teachers and schools cheating on exams (Amrein & Berliner, 2002; Smyth, 2006).

There is evidence to suggest, however, that to the contrary some effects of high-stakes testing are positive (Ladd, 2008), as in the case study conducted by Hargreaves and Fink (2003) where they found that “one or two courageous leaders responded to high-stakes testing by improving learning for all in the belief that higher scores would follow, rather than letting an obsession with results stifle the learning process” (p. 3). Greene (2003) reports that in the State of Florida, “score levels on high-stakes tests closely track score levels on other tests”. Therefore, he concludes, “high stakes tests provide reliable information on student performance” (p. 1). He suggests that when high-stakes test scores go up, educators should be confident that this represents real improvements in student learning. He therefore draws the conclusion that “if schools are ‘teaching to the test’, they are doing so in a way that conveys useful general knowledge as measured by nationally respected low stakes tests” (p. 1). However, much of the literature also suggests that effects can be less than positive for the student, the teacher and the school (Rowe, 2000).

Use of educational data

The escalation of accountability has led to educational data being of paramount importance in schools (Earl, 2005). A major contributor to this phenomenon is that more and more funding for educational initiatives is being tied to performance data (McWilliam et al., 2007). Contrary to the rhetoric that test data is used to make decisions about students, policy makers are using it to demand school improvement. It has become the comparative yardstick for systems, schools and the public (Fullan, 2006; Perry & McWilliam, 2007). In fact, Luke et al (2004) considers the role of educational data to be so important that it now outweighs history and other factors in school decision making.

Despite the move from the use of data solely to make student-based decisions to its use as school performance indicators, schools still need to address both aspects. To improve publically judged performances, schools ultimately need to improve student performance. To do this, teachers need the ability and skills to transform large amounts of data into useful, specific information about their classes (Earl, 2005). In fact, Earl (2005) points out that data analysis should be fundamental to teacher's planning and classroom decision making. Specifically, she posits the skills of analysis, synthesis, organisation, reflection and investigation are fundamental skills for the classroom teacher in this current data driven regime. To this list, Luke et al (2004) adds the ability to track performances over time.

Though Earl writes about the higher-order thinking abilities of analysis and synthesis, Fullan (2006) considers educational data to be an evaluative tool. He suggests it can be used in goal setting, evaluating and as a performance indicator. In *Turnaround Leadership* (2006), Fullan comments that indicators can be set and teachers need help to use data to meet specific targets. He considers that in time, teachers become comfortable with the use of data and ultimately seek it to make informed decisions. However, literature suggests that this process of becoming familiar with data to maximise student performance is causing considerable pressure and some anxiety among teachers (Barker, 2006; Barksdale-Ladd & Thomas, 2000; Fullan, 2001; McWilliam et al., 2007; Tomlinson, 2001).

The reviewed literature indicates that accountability and high-stakes testing are an important part of the current educational landscape. In response to this, teachers must become increasingly aware and skilled in the use of data generated by this phenomenon.

Methodology

This study aimed to establish the students' basic knowledge and skills in relation to the national high-stakes testing program. To achieve this, data was drawn from a larger survey of student-teachers which also investigated their knowledge of assessment and reporting. The students participating in the survey were in their final year of a Bachelor of Education (Early Childhood) at a University in Australia.

Data source – cohort analysis

Seventy-nine students participated in the survey. Most were aged in their early to mid twenties; the youngest being 20 and the oldest 57. Overwhelmingly, the surveyed group was female. Males made up only 4% of the cohort.

The tested graduates came from diversified background in terms of previous education. There were a particularly high number of Degrees and Certificates with smaller numbers of Traineeships, Diplomas and PhDs. The most common previous qualification was a Diploma in Community Services (Children's services) (12 students), followed by a Bachelor of Arts (5 students), then Bachelor of Science (3 students), and Certificate III Children's Services (3 students). The remainder of the previous

qualifications had been attained by only one or two students in each case. In terms of the types of previous qualifications, a large proportion of credentials were in community-based areas with a specific focus on youth services, particularly in the Certificate qualification category.

In the state of Queensland where this study took place, school students who wish to graduate and attend University are awarded an Overall Position (OP). The top 2% of students obtain an OP of 1 and the bottom an OP of 25. A large number of the surveyed students scored between 7 and 12. The OP scores most commonly attained were 12 (10 students), followed by 10 (7 students), and 7 (6 students). The number of scores between 13 and 19 were small. Only small numbers of students attained OP scores at the extremities of the spectrum with single students receiving scores of 1 and 20.

In Queensland, students who study for an OP generally study either Maths A or B. Maths A is considerably easier than Maths B. Students in the cohort who studied Maths A in their senior years of high school generally achieved above average grades. The majority of Maths A students attained a High level of achievement (21 students), closely followed by students who attained a Very High level of achievement (16 students), and students who attained a Sound level of achievement (12 students). Only one student in the cohort achieved a Low level of achievement, and no students achieved a Very Low level of achievement.

Those students who did not study Maths A studied Maths B. They all achieved average (Sound Achievement) or above average grades (High Achievement). In contrast to the students who studied Maths A, the most popular grade attained was overwhelmingly a Sound Achievement (12 students). The next most common grade attained was a High level of achievement (6 students) followed by a Very High level of achievement (3 students). No Maths B student achieved a Low or Very Low level of achievement.

Data gathering

Data for this study was obtained from a larger short answer survey on micro and macro aspects of assessment which the students completed under test conditions. The survey had been previously piloted with two groups of primary education students over the preceding two years. Only minor adjustments were made after the trial.

Findings

This study aimed to examine two distinct features in relation to knowledge of high-stakes testing programs and the use of educational data generated by these. Firstly, it examined the students' knowledge of the current system of testing for accountability. Secondly, it aimed to establish the students' levels of skills in interpreting educational data. Each of these will now be considered.

Students' knowledge of the current regime of educational accountability

To establish the students' knowledge of the current regime of educational accountability, students were asked about the following:

- Purpose of national high-stakes testing (What the tests are about)
- Administration of national high-stakes testing (Who administers the tests)
- Year levels tested (Who sits for the test)
- Benchmarking or national minimum standards (How is the test reported)

Figure 1 below indicates that 22% of students knew the stated purpose of testing; 5% knew which body was responsible for administering the test; 71% knew which year levels undertook the tests; and 5% knew how the test was reported. In reverse, 78% of

students did not know the purpose of the testing; 95% did not know which local body was responsible for administering the test; 29% did not know that Years 3, 5, 7 and 9 were tested; and 95% did not know how the tests were reported.

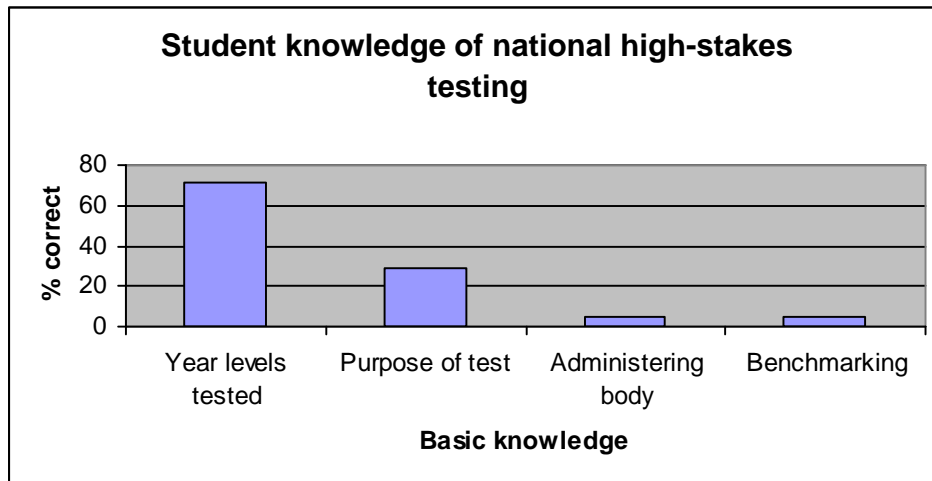


Figure 1: Student knowledge of national high-stakes testing

Students' ability to interpret educational data

The second area of consideration was the skills base of the students in relation to interpreting educational data. Five basic interpretation skills necessary for successful interpretation of data were examined. The skills addressed the students' ability to:

- Identify the title of the graph (What data was being presented)
- Use a key or legend
- Read school data from a table
- Calculate a range
- Compare class and state data

Figure 2 indicates that 71% of students were able to state the title when asked what the graph represented; 68% were able to use a key or legend; 58% were able to interpret data from a table; 20% were able to calculate a range; and 17% were able to compare class and state data. In reverse, 29% of students did not realise that the title represented what the graph was saying; 32% were unable to use a key or legend; 42% were unable to correctly read data from a table; 80% were unable to perform the basic statistical process of calculating a range; and 83% were unable to compare given sets of data.

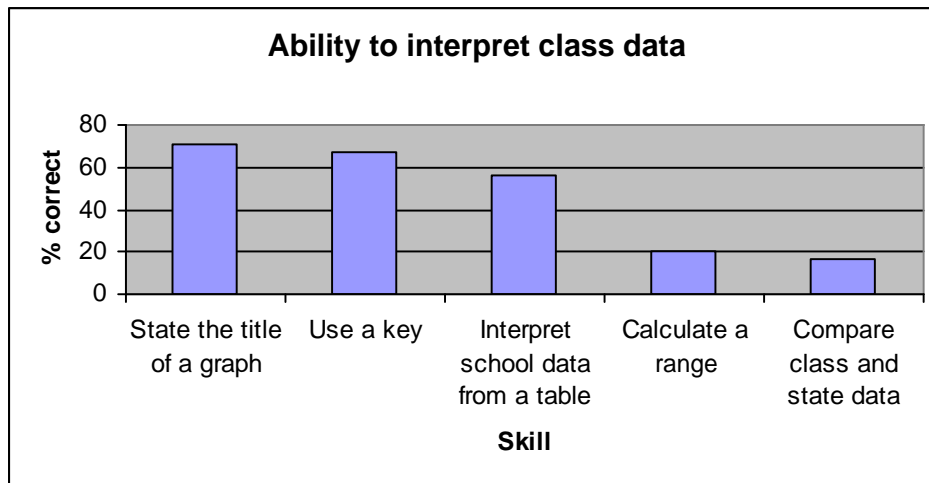


Figure 2: Ability to interpret class data

Discussion

The above results indicated that the graduating early childhood students were overwhelmingly unable to provide adequate information about the current system of high-stakes testing and interpret educational data. In times when testing is a government priority and commands a large degree of media interest, these results would be alarming to both Universities and the teaching profession. Even though the analysis of the cohort in the methodology section showed that the graduates were from a variety of backgrounds, this previous work experience(s) does not appear to have impacted on their knowledge of what may be considered basic national current affairs.

The reviewed literature indicated that, at present, being able to interpret educational data is an important part of teacher work. In relation to the beginning teacher, it needs to be asked if this should be addressed in the student's under-graduate degree, or should it be something which is addressed by the school and the profession once the student has started teaching? Anecdotal evidence from the author's discussion with principals suggests that they expect graduating teachers to be able to interpret data on graduation. In this current climate, failure by the Universities to give their graduates such skills could be interpreted as shirking responsibilities to the profession.

Teacher-educators need to give students the skills to be able to analyse data and the confidence to make sound educational decisions as a result of the analyses. Some of the skills they need to perform include: performing basic numerical and statistical operations; organising and re-organising data; identifying trends; spotting anomalies; applying the data to the relevant part of the curriculum and addressing problem areas back in their teaching.

The analysis of the cohort revealed that all students had studied either Maths A or B to exit level at school. Statistics is an important part of the Maths A course, and in Maths B it is studied for approximately six weeks. All surveyed students had been out of school for at least four years. Therefore, questions would need to be asked about both the learning and the retention of this knowledge and skills. If students are unable to remember basic mathematical calculations, Universities may be forced to address this deficiency in their teacher training courses.

Many researchers, principals and authors (Greene, 2003; Luke, 2007 February; Pinar, 2004; Rowe, 2000; Ward, 2006) have stated that accountability has impacted on

teacher work. It influences both what and how they teach (Christensen, 1999; Darling-Hammond, 2002). If understanding the notion of test-based accountability and being able to interpret and manipulate data are basic tools for the 21st century teacher, the profession as a whole needs to consider where this will be taught.

Conclusion

To either accommodate or combat the affects of this current regime of accountability, classroom teachers need to be aware of the relevant agendas. They particularly need to be able to understand and hopefully even debate the concept, extent and effects of accountability. They also need to be able to “survive” efficiently within the system by analysing educational data to inform their practice. It is necessary for teachers to know that data can be used to confidently inform both what to and what not to teach. This then would empower teachers. To reach this level, teachers need to be able to understand and manipulate data. Specifically, some of the new teaching skills revolve around:

- knowing exactly what was tested;
- unpacking information from table or graph form;
- understanding graphing conventions such as the use of a legend or key;
- identifying trends over several years;
- spotting anomalies – students who perform highly in test but lack motivation in the classroom;
- knowing where in the curriculum problems can be addressed;
- translating problems into knowledge through teaching;
- being able to compare class data with school, state or national data; and
- working out statistical concepts such as mean, median, range and standard deviation.

Currently, schools have access to large amounts of educational data. However, findings in this research showed that graduating student-teachers are experiencing difficulty knowing what to do with it. The author suggests that by addressing the above knowledge and skills at University, graduating teachers would be more prepared to enter the world of educational accountability.

In conclusion, the current climate of accountability requires beginning teachers such as my daughter to possess an array of additional and different skills from those needed by their professional predecessors. The graduates will need to draw on such knowledge and skills to make successful starts to their careers. This study highlighted that early childhood University graduates are unfamiliar with the knowledge and skills needed for teaching in this climate. If Universities were to adjust their curriculum so as to provide opportunities to learn these new skills, the young graduates may indeed be able to make an important contribution to the teaching and learning in our schools in this current climate of educational accountability. Failure by the Universities to address this will leave the profession, and specifically the schools, with yet another professional development issue to address.

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