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An evidence-based approach to teaching and learning

Michele Bruniges
ACT Department of Education and Training

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Department of Education and Training, Australian Capital Territory

Michele Bruniges (Dip T., Grad Dip Ed. Studies., M.Ed. Ph.D.) has experience teaching in both primary and secondary schools. She has also held the positions of Senior Curriculum Adviser, Assessment and Reporting, Chief Education Officer, Mathematics and Assistant Director of School Assessment and Reporting for the NSW Department of Education and Training.

During 1999, Michele received an award for excellent service to public education and training in NSW. The following year, Michele was appointed Director of Strategic Information and Planning with responsibility for leading and directing systems performance, information systems and corporate and strategic planning. In the same year, she was awarded a Churchill Fellowship to study the analysis, monitoring and reporting of student achievement in education systems and research studies in the United States and the Netherlands.

Michele was appointed Assistant Director-General, School Education Services NSW in 2003 with a strong interest in educational measurement issues, school culture and the process of managing change. In early 2004, Michele was appointed Regional Director, Western Sydney with priorities including a renewed focus on supporting frontline teachers and school staff and the provision of quality responses to local issues. In January 2005, Michele took up the position of Chief Executive of the ACT Department of Education and Training.

A Greek philosopher might suggest that evidence is what is observed, rational and logical; a Fundamentalist – what you know is true; a Post Modernist – what you experience; a Lawyer – material which tends to prove or disprove the existence of a fact and that is admissible in court; a Clinical Scientist – information obtained from observations and/or experiments; and a teacher – what they see and hear.

The past decade has seen a high level of engagement and commitment by Australian schools to the collection, analysis and interpretation of information about students to inform teaching and learning. Rapid changes in society, economics and technology, the increased demand for accountability, and the need to prepare all students to be citizens in an increasingly globalised world, has cultivated the increased requirement to inform and improve education through various evidence-based approaches.

However, while evidence is one way to support the core business of schools –maximising student learning and outcomes – evidence in and of itself is not sufficient to maximise student outcomes. If we are serious about developing and maintaining an evidence-based culture of improvement in teaching and learning, the unique and specialised knowledge, skills, experience and professional capacity of teachers must be valued as fundamental components of any evidence process. That is, the way in which evidence is obtained, collated, interpreted and results strategically utilised, must be interlinked with, and influenced by, the profession.

What is evidence?

Evidence is obtained through various forms of assessment – which may include teacher observation, tests, peer assessment and practical performance – and constitutes the information and data that is used to gauge the educational attainment and progress of individuals; groups; and cohorts; and increasingly, the effectiveness of programs and performance of educational systems.

Information and assessment data are increasingly used for multiple purposes, including national and international comparisons of standards of learning and educational attainment (Timmins, 2004). Increased pressures at a local level to meet accountability requirements, and to deliver improved results across the cohort have 'put data to an increasing array of use' (Timmins, 2004, p. 2) in schools.

Why is an evidenced-based approach to teaching and learning important?

As realised by many educationalists, an evidence-based approach to teaching and learning is crucial to maximising student outcomes. We need to 'know' – to have evidence about the performance of our students in order to support them to achieve high quality educational outcomes.

There are four major ways in which we can use the information we gain from assessment (our evidence) to maximise student learning and outcomes. These include using evidence to:

- improve the focus of our teaching (a diagnostic capacity)
- focus students' attention on their strengths and weaknesses (a motivation capacity)
- improve programming and planning (a means of program assessment)

- report on an assessment (a means of communicating student achievement)

In order to most effectively support students to achieve quality educational outcomes, the process of evidence to inform teaching and learning must be an explicit and accountable one, which is equitable, representative, valid, and reliable.

Sharing the secret

The increased use of information and assessment data to inform teaching and learning brings a largely recognised increased need for assessment that is an open and accountable process about what really matters, what students should know, and a process that provides the best information to them on how they can improve.

Assessment should not be a covert mission, but rather a process defined by the importance of transparency and information sharing which is directed by positioning the needs of students as paramount. Providing students with minimal and nondescript information about assessment is an antiquated approach, which has the potential to disengage students from an important aspect of their learning experience and limit their capacity for achievement. Being open with students about the once held secrets of assessment, and engaging students in associated questioning and conversation, provides a greater opportunity for all students to achieve high quality educational outcomes.

The development of assessment that makes explicit the standards, criteria and feedback for students has been recognised as a significant development in describing and quantifying student achievement and progress. The adoption of criterion-referenced reporting (in favour of, or in collaboration with, the more traditional norm-referenced assessment) by Australian education systems as the primary means to describe students' achievements and progress has enabled the use of data to identify particular strengths or weaknesses in curriculum terms at the classroom, school and system levels. One example of this has been the development of assessment rubrics. Rubrics have been powerful in supporting student learning in their simplistic form by providing a list of criteria, or 'what counts' in a project or assignment; and in providing a scale describing the characteristics of a range of student work. This tool creates the structure for important conversations about assessment by providing students with informative feedback about their work and detailed evaluations of final products (Department of Education Tasmania).

Criterion-referenced assessment sheds light on many of the previously protected secrets of assessment. In the past, the details of assessment have usually remained teacher-only information. However, increasingly so, teachers and students are engaging in conversations about assessment that involves a common language. These conversations are crucial to provide the learner with an opportunity and impetus to discuss how goals are set, how performance is measured, and how performance can be improved. Significantly, they enable the learner to experience an active role in the assessment process. They also provide important feedback for teachers that can be used to respond to students' particular needs.

Advances in educational measurement have paved the way for the introduction of progress maps or achievement scales that articulate a continuum of typical development in a specified domain. Once defined, these maps can be used to describe quality student achievement at both a point in time and over time. This development has also provided the means to establish where individual students are in a continuum of learning the essential starting point from which to develop a relevant and appropriate learning pathway.

Quality teachers make the difference

We know that quality teachers make a significant difference to the learning outcomes of students. John Hattie's (2003) recent rigorous and exhaustive research has provided profound and powerful evidence to support this conviction – 'excellence in teaching is the single most powerful influence on achievement'. The design, collection and response to findings are intimately linked to the art of effective teaching and will impact significantly on student educational achievement.

In many disciplines, field professionals are predominantly identified as having the most astute and profound knowledge, skills, experience and professional capacity to make judgements about the most effective way to obtain, collate, interpret and apply evidence. Professional educators have a unique and specialised capacity to lead and contribute to evidence-based approaches to teaching and learning – because, it is they who know best, the 'subject' matter and the individual. Teachers are distinguished from other professions by their deep knowledge of how the learning process occurs. This places teachers in an inimitable position to utilise a range of

profession-specific, as well as locally specific, skills, knowledge and experiences, to improve the educational outcomes of their students.

While it is necessary to value, or at least consider, all sources of evidence, we must not hesitate to recognise that teachers are often in a leading position to identify and act on the best way in which to obtain and assess the worthiness and weight of the diverse range of evidence collected about students. Just as the judgement and authority of a doctor is respected in the assessment he/she makes of a patient, and the medication he/she prescribes to achieve an outcome of health and well-being, so too should the professional expertise of teachers be valued and trusted, in the quest for high-quality educational results.

Teachers are in a unique position to have an extensive and well-developed range of strategies and techniques that can be used to identify and meet the current needs of a diverse range of students – and, moreover, to match the future desired achievements of the students to a plan for action. No, teachers cannot necessarily predict the future! However, they do have a rich capacity to accumulate a broad-ranging repertoire of strategies that enable them to match a strategy to a student's needs. With this knowledge base, teachers are able to make informed judgements about how best to work towards further developing students, selecting assessment strategies that accurately reflect what it is that our students know; use evidence to support students for further achievement; and prepare students to be active and contributing citizens, now and into the future.

Furthermore, teachers are in a distinctive position to be able to interrogate evidence. The value of evidence does not necessarily lie solely in the description that it provides of student achievement – but rather, the way in which this description is interrogated and understood in order to develop and apply appropriate strategies to improve student learning. It is fair to say that traditionally the role of the teacher in this process has been undervalued. However, if evidence is to be used most effectively, the capacity of the teacher to ask the right questions of evidence, to examine the how and why of evidentiary results, and to respond with the most effective strategies, must be realised as paramount.

While it is critical to realise and support the role of teachers in leading and contributing to evidence-based approaches to teaching and learning, it is also important to consider that teachers have a responsibility to the profession, as well as a broader social responsibility, to account for decisions that are made. In times of increased change, it is necessary that the teaching profession builds strong links with research communities in order to understand the most current developments about learning and development to enhance and sharpen their knowledge. For, if we are to support the notion that the creativity, ingenuity and expertise of teachers be valued and prioritised, the thinking and instruction of teachers must be relevant, perceptive, dynamic and forward looking.

Alan Luke (1999) argues that effective education requires alignment of the three key message systems that exist in education: curriculum, pedagogy and assessment. Luke's argument is a powerful one, and teachers, enabled by professional autonomy and collaboration, are in a powerful position to direct and sustain this alignment, in order to provide effective education.

In identifying the variables that impact on student learning, Hattie (2003) confirms that within schools, teachers account for about 30% of the variance in student achievements – the major source of 'within-school' variance. There is also a 'growing body of evidence that the use of high-quality, targeted assessment data, in the hands of school staff trained to use it effectively, can improve instruction' (Protheroe, 2003) and consequently, student outcomes. Furthermore, Nancy Protheroe suggests that educators who have learned to effectively use assessment data have often ignited change and achieved positive results. This evidence provides a compelling argument of the importance of continuing development of the teaching profession, and that in particular, teachers are supported to play a leading role in evidence-based approaches to teaching and learning. This includes supporting teachers to see and learn from each other's work and experiences, in order to expand the circle of professional collaboration directed towards student achievement, and developing ways to ensure that the best teachers are retained in the area of greatest impact – the classroom.

Conclusion

It is the 'evidence' that we are presented with that often informs decisions that are made about student learning, and about the health of education. However, evidence alone is not sufficient to maximise student outcomes. Quality teachers are a fundamental part of the recipe for successful evidence-based approaches to teaching and learning. The knowledge, skills, experience and

professional capacity of teachers must be valued as essential ingredients in meeting the goals of the core business of education systems and ensuring that educational attainment across the nation continues to rise.

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