A Scientist-practitioner Model for Inclusive Education: Supporting Graduate Students to Conduct Systematic Reviews for Evidence-based Practice

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ABSTRACT

Evidence-based practices and programmes are premised on the assumption that research plays a role in determining 'what works' for whom, and when. Governments require evidence-based practices and policies in education to service the dual purpose of maximising or rationalising their funding and to ensure children and young people access the type of services most likely to facilitate successful inclusion through supporting positive learning, social and behaviour outcomes. Subsequently, this also means practitioners and specialist teachers need to access the best available evidence to answer their questions of practice. Postgraduate students in education need to become critical consumers of systematic reviews, as well as knowing how to actively engage in them, when determining how they ensure young people's learning opportunities are inclusive and maximised. This article explores the process of engaging postgraduate students in an Evidence-based Practice in Education course within an Education Faculty, undertaking systematic reviews around clinically relevant questions.

Keywords
Evidence-based Practice; Scientist-Practitioner Model; Inclusive Education; Postgraduate Teaching.

INTRODUCTION

Educational practitioners are faced with increasingly complex work environments. Policy initiatives, changing assessment practices following a series of educational reforms, an imperative for inclusive classrooms and schools, and powerful social networking and technological advances continue to influence and change classroom cultures and practices. These aspects of the work environment present challenges to teachers, specialist teachers and other education professionals such as educational psychologists, as they endeavour to meet the needs of their learners and their own changing needs for

professional learning. At the same time, pragmatic solutions need to be forged for the daily dilemmas that arise in such dynamic and complex environments. Teachers, as with specialists, are under pressure to examine 'what works' and 'when' for their diverse groups of students and for those with specific and individual needs. A scientist-practitioner approach has been a traditional model for psychologists working in education. While it relies on research, more contemporary approaches call for culture, context and creative applications of research to be incorporated into the model. An evidence-based model that uses the best available research and also incorporates the knowledge of professionals and the evidence from individual children and their families is advocating for assisting these 'scientist-practitioners' to find 'what works' for an individual teacher, child and their context.

Increasingly, governments require policy makers and practitioners to use evidence-based practices and policies in areas of education, health, and social services. The reasons given for this are frequently articulated as a desire to ensure value for money and establish effectiveness. Evidence-based practice is commonly used in medicine, health, and increasingly, in psychology, education and social work. It emerged as a model in education in the 1990s to show the importance of linking theory, research, and practice. In education, evidence-based practice has come to include the collection and analysis of multiple sources of evidence including: (1) the available current research evidence; (2) a teacher's or educator's professional judgement; and, (3) the collaboration with the team around the learner. It is argued that educational research has been particularly weak in delivering "proper cumulative evidence that could inform policy and practice" (Clegg, 2005, p. 417). To address this, systematic reviews of research have come to have an important role in the process of accessing and assessing the value of evidence from research and establishing areas where further research is needed. Systematic reviews have the benefit of appraising transparently and judiciously selected research evidence around a relevant question to inform decisions around practice.

In this article we begin by introducing evidence-based practice and argue that establishing the 'right' question is critical for evidence-based practice and hence for establishing what research needs to be systematically reviewed. Two different models for establishing a 'well-built' question are examined. We then illustrate aspects of this process as we examine how the authors within this journal's special issue conducted systematic reviews of the literature.

The authors of the articles were students in an education postgraduate course about evidence-based practice. These students were studying for an MEdPsych; some were in their first year while others were in the final stages of completing the qualification. They were not necessarily teachers.

As part of their assessment, these students were required to produce a systematic review. We, the course lecturers, were concerned that the systematic reviews be relevant to practice and could be one of the multiple sources of information that practitioners could use for their (evidence-based) practice. As identified by Hargreaves (1996), evidence-based practice is transformational in that researchers actively identify questions of relevance to the field, and practitioners use research to inform their pedagogical and psychological practice. This 'double transformation' highlights the synergy between research and practice. Hence we asked practitioners within the Ministry of Education, working in the area of inclusive education, to identify

issues for which they required systematic reviews. We conclude the article with some reflections on some potential issues arising from systematic reviews and evidence-based practice that will require further examination.

SCIENTIST-PRACTITIONER MODEL AS A REFLECTIVE PROCESS

A scientist-practitioner model, initially derived from a 'medical' model (Petersen, 2007), is premised on the belief that both research and practice contribute to a practitioner's knowledge base. More recently, the additional recognition of the importance of context and interpretation contributes to a more socially aware and contemporary view of the scientist-practitioner model. Here the emphasis rests on the importance of gaining knowledge in research and educational psychology practice, and also about the social, cultural, and political context within which this practice and research take place. The creative role of the practitioner in interpreting these different sources of knowledge is also emphasised.

The importance of a contemporary view of a scientist-practitioner model captures research rigour *and* creativity or artistry in order for practitioners to be innovative and solution focused when faced with difficult decisions in the classroom. As Lane and Corrie (2006) state, "The scientist-practitioner can no longer be a model in any static sense, but rather a narrative framework in which our discipline is paramount but individualized" (p. 208). In this view, the framework for decisions such as *how* to include young learners, *what* pedagogical and pastoral support is required, and *who* initiates and sustains elements of change, is one of flexibility and collaboration, where both research evidence and the knowledge of practitioners and those most affected by these decisions (e.g., this could be young people and their families) have a legitimate role to play:

> For the modern scientist-practitioner, rigour is not enough. Skills in analysis must be integrated with skills in innovation and design which have traditionally been neglected in the science-practice debate. We need frameworks for developing creative and analytical skills, but the quest for accuracy has sometimes obscured the extent to which we have to invent new maps and tools. The art of telling psychological stories, manifest in formulation, requires an ability to improvise and invent because there are multiple ways through which we can come to know the world.   (Lane & Corrie, 2006, p. 205)

Petersen (2007) argues that "Scientist-practitioner psychologists incorporate a research orientation to their practice, weaving the skills of psychological investigation, assessment, and intervention" (p. 764). This integration of 'science' *and* an in-depth understanding of practice (i.e., how we apply research findings in practice, as well as how practice can be the catalyst for forging new boundaries that we then research) enables teachers and psychologists working in education to fine-tune pedagogical and psychological practices that actively support children and young people. There are three assumptions underpinning this model: (1) those with knowledge of research will facilitate these findings through their practice; (2) research is important to

contribute to understanding practice; and, (3) application of research and practice will promote socially valuable and meaningful outcomes (Jones & Mehr, 2007).

Issues with the traditional model, raised by Chwalisz (2003), identified the need for evidenced-based practices to be incorporated into training programmes in order to respond to the challenges associated with the scientist-practitioner model. One of these challenges included not relinquishing the importance of local context and ensuring interventions represented the needs within the practical day-to-day realities for teachers and practitioners. If we take New Zealand as an example of local context, as a bicultural country, the needs of an individual and groups, coupled with the cultural influences on a young person and their context, create associated expectations, all of which impact on whether a programme will 'work'. Often we will not know if it 'works' until tried out in the local context with the available resources within that setting. The experiences of these teachers and practitioners contribute to the growing collective knowledge and become as important for the 'scientist-practitioner' as a gold-standard research outcome. As Shapiro (2002) argues, "high quality research is required in clinically realistic settings, with *practice-based evidence complementing* evidence-based practice" (p. 233, emphasis added). Here he emphasises the importance of practice in the local context, and in the next section we elaborate on a model of evidence-based practice that captures the spirit of the scientist-practitioner model, while holding true to the 'practice-based evidence'. There is a tension between the notion of 'scientific' or technical knowledge and the creative, artistic expression of knowledge in practice (Lane & Corrie, 2006; Schön, 1987). As Biesta (2007) has argued, "evidence-based education seems to limit severely the opportunities for educational practitioners to make such judgments in a way that is sensitive to and relevant for their own contextualized settings" (p. 5).

In the next section we briefly outline a view of evidence-based practice that was the starting point in supporting the graduate students to explore systematic reviews in order to contribute to their own 'evidence-based' understandings of pertinent educational issues.

EVIDENCE-BASED PRACTICE *IN PRACTICE*

Evidence-based practice in the medical field has been defined as the "conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research" (Sackett, Rosenberg, Muir Gray, Haynes, & Richardson, 1996, p. 71). It also involves the systematic collection and analysis of data alongside the individual's circumstances. In a medical context, this incorporates "applicable patient-reported, clinician-observed and research-derived evidence. The best available evidence, moderated by patient circumstances and preferences, is applied to improve the quality of clinical judgements" (McKibbon, Wilczynski, Hayward, Walker-Dilks, & Haynes, 1995, p. 737). However, there are issues to consider as outlined by Maynard (1996):

This individual medical ethic has to be traded off against the social ethic of the efficient use of scarce resources. While the individual patient might welcome treatment regardless of cost, any health care system is unlikely to be able to afford or condone such behaviour. (p. 70)

The premise of the evidence-based practice model is that clinical decisions to intervene with an individual or group of people in a particular way are sound, in that the proposed interventions have an empirical base and are proven to be successful. The idea is that evidence-based practice interventions have empirical support for the choices made about what to do, when, and how, for the person. Underlying this approach is *that practice is based on valid, reliable, trustworthy and up-to-date research findings,* and that *evidence comes from a clinical expertise*. However, caution is needed to ensure that evidence-based practice is not "unthinking, routine use of what some authority decides is best practice" or that it is viewed as a static one-right answer for all (Mullen, 2002).

When we talk about "existing evidence" within education (see Figure 1), generally we are referring to three broad areas, and as there is no hierarchy within these three inter-related concepts, each holds relevance and importance:

1) Evidence from teaching and professional backgrounds, experience and expertise;

2) Evidence generated from the families and the child/young person regarding their specific and individual circumstances and contexts; and,

3) Evidence from research (national and international; quantitative and qualitative) that informs the assessment, intervention, problem-solving and decision-making about the questions regarding practice.

In an educational context evidence based practice involves the integration of different kinds of evidence, and as Bourke, Holden, and Curzon (2005, p. 2) argue, "The challenge is to ensure that the best evidence is considered through the combination of research, clinical judgment and collaboration with the team around the learner". It is the 'integration' of all *three* that positions teaching practice as 'evidence-based' and is distinct from a dual relationship where research, the practitioner's or the family's views are given precedence. For example, if teaching practices were solely influenced by research, or by experts such as teachers, specialists and other educational professionals, or simply based on family and child's needs, then 'evidence-based practice' as an holistic concept would not be evident.
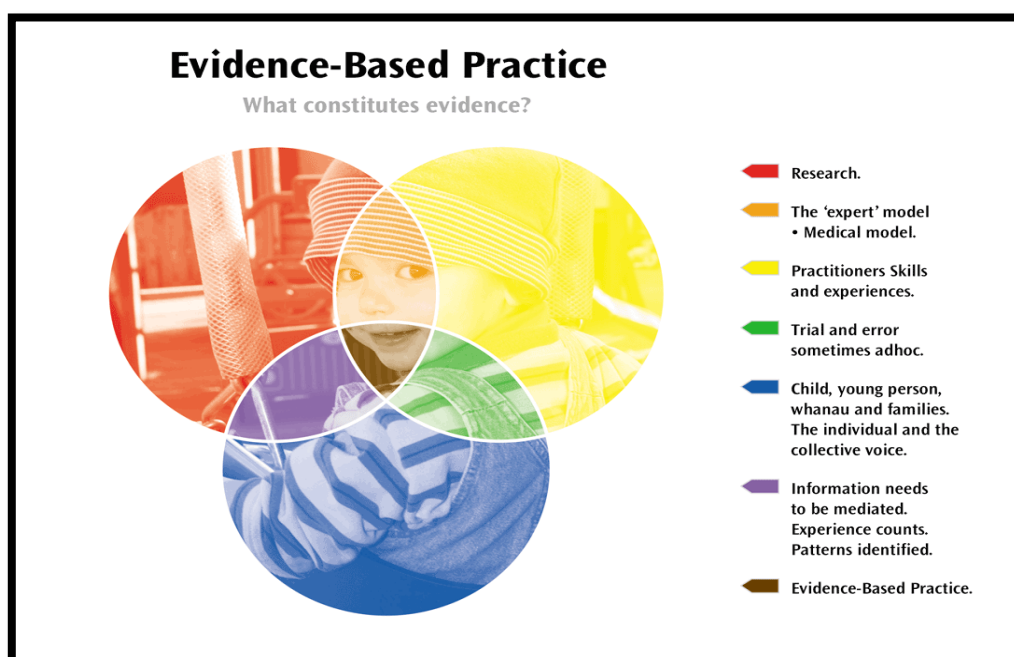
Figure 1 An Evidence-Based Model of Practice Developed in the Ministry of Education (Bourke et al., 2005)

Whether in health, social services or educational contexts, evidence-based practice is a culmination of all three forms of evidence, some taking different weighting according to the presenting problem or intervention required. This is important too for policy, as all forms of evidence are important for decisions so that policies are developed to deliver outcomes that matter, not simply reacting to short-term pressures (Cabinet Office (UK), 1999). Realistically, it is not as simple as this. Teachers know that for every evidence claim, 'reality bites' and their own practices, often under intense scrutiny, are influenced by institutional variables such as class size, school policies, collegial support, access to professional learning and development, as well as individual factors with regards the collection of students they teach.

Asking the right question

Evidence-based practice is not effective or even helpful if the question is not the 'right' one to start with. Holm's (2000, p. 575) question, "How do you know that what you do and how you do it really works?" takes a rather positivistic stance, that is, it assumes that the social sciences should adhere to the same model of enquiry as the natural sciences, looking for regular social laws and universals and insisting on the separation of facts and values. It ignores the possibility that what works in one context may not be effective in another. Rather, a focus on the 'right' question for the individual helps to ensure culture and context are also taken into account. We ask, "How do you know that this is the 'right' question?". Every question is contextually and culturally determined, and research alone will not address the complexities inherent in the actual issue. Indeed, what 'works' tends to be influenced by the kinds of questions asked, by whom and to whom. Given that context is a critical factor

when both asking and answering this question, it is important to attend to the question raised. Behind the question 'What works?' lies a more complex set of assumptions – about the type of research that is legitimised and used to inform policy and practice decisions, and the interests of the user (Biesta, 2007).

From a cultural perspective in Aotearoa/ New Zealand, it is imperative to ask a meaningful and relevant question for both teacher *and* the child. As noted in earlier research, Bevan-Brown (2001) identified the importance of culture in ensuring the *right* person asked the *right* question in the *right* context. In her work, Bevan-Brown illustrates how subtle differences in perceptions and culture affect the way people interpret or respond to questions. Within a New Zealand context, Bishop and Berryman (2006) have also highlighted the importance of including Māori students' voice, through consulting with them and understanding their views on issues that directly affect them. They reported that Māori students respected teachers who knew about Māori life and customs, and "let Māori students be Māori" (p. 76). These young people called for teachers who could walk alongside them and understand "being in our shoes" (p. 77).

Developing a well built, clinically relevant and answerable question in education

When faced with complex educational and social dilemmas, asking the right question is fraught. As we raised earlier, the work of Bevan-Brown (2001) and Bishop and Berryman (2006) highlight the importance of cultural differences when determining the questions: from whose perspectives will the question be framed, and to whose advantage is it to seek a solution? In this section we examine two templates used to develop a well-built clinically/ educationally relevant question. The first template derives from a medical context. In medicine, the process of establishing a 'well-built' question is referred to as PICO (Patient/population / Intervention / Comparison and Outcome) and this is widely used in medical and health settings (Richardson, Wilson, Nishikawa, & Hayward, 1995). The second is the PESICO (Person (problem)/ Environments/ Stakeholders/ Intervention/ Comparison/ Outcomes) template and this is the one more widely used in educational and social contexts (Schlosser, Koul, & Costello, 2007).

These templates were used to effectively gauge how meaningful and useful the questions for the systematic review were, and then to develop 'clinically' or educationally relevant questions. As noted above, without the appropriate question as a starting point, the systematic review could become redundant.

The PICO Template
Problem – Intervention – Comparison – Outcome
(Richardson, Wilson, Nishikawa, & Hayward, 1995)

The first phase involves identifying the 'problem' and examining this from a range of perspectives. This phase, therefore, requires preparation in order to consider what the intervention might require. The 'intervention' phase is, 'What do you plan to do about this?' This may include the types of assessment to be used, the forms of observation and interviewing to be conducted with the child, parents, teachers, and principal, and the examination of records (e.g.,

schoolwork, health records, school attendance record, number of schools enrolled in, history of specialist support if any etc.). The 'comparison' phase is the third phase of developing a 'well-built' question. What are some alternative options for intervention? The reason for this is to establish whether exploring an alternative will provide a broader understanding of the issues. The final stage in developing a 'well-built' clinically relevant question is the 'outcome'. The outcome will identify what you want to achieve, by when, with whom, and how.

It was important to explore this PICO model in order to determine what would be appropriate within an educational context. Without an understanding of how the PESICO template developed, subtle messages for the students would be missed (e.g., why it was critical to include the environment in an educational context). It was through the PESICO template that this could be explored.

The PESICO Template
Person (problem) – Environments – Stakeholders – Intervention – Comparison – Outcomes
(Schlosser, Koul, & Costello, 2007)

This is the second template we examined, and in our view is the more useful one for educational settings because it incorporates the environment and stakeholders as distinct stages (rather than attempting to do so in the first stage, or not making it visible, as with the PICO). This template is used for determining the relevancy and the importance of the 'question' and also contributes to the type of literature that will be sourced to support this.

- *Person (problem)* (P). Describe: (a) the person who is most directly affected by the decision and (b) the problem to be solved.

- *Environments* (E). Delineate the client's current and future environment/s and communication partner/s knowledge, skills, and behaviours.

- *Stakeholders* (S). Describe relevant stakeholders, including the person in P (and their perspectives about and attitudes towards the problem, intervention, or outcome), who may directly or indirectly influence the decision.

- *Intervention* (I). Describe the proposed steps to change persons, interaction, events, procedures, and environments.

- *Comparison* (C). Depict the comparison intervention/ exposure (if applicable) – could be an alternative intervention or a ''do nothing'' (baseline) condition.

- *Outcomes* (O). Delineate the desired outcomes.

SYSTEMATIC REVIEWS

The term systematic review is used to refer to both a method of reviewing studies and the output of the review itself, such as a report or article (Jesson, Matheson, & Lacy, 2011). As a method, it is a systematic transparent approach to evaluate and synthesise evidence from multiple studies. Systematic reviews in education are important because they potentially offer "a methodology using a systematic, transparent process for gathering, synthesizing, and appraising the findings of studies on a particular topic or question. They aim to minimize the bias associated with single studies and nonsystematic reviews" (Sweet & Moynihan, 2007, p. 1).

Hammersley (2001) argues that systematic reviews have four distinctive features. First, the criteria for including and excluding studies are clearly specified as are the data bases that are to be exhaustively searched. Second, the studies are evaluated in terms of an explicit hierarchy of types of research. Both of these features mean that the review process could be replicated by others. Third, the findings of the studies reviewed are combined and it is argued that this makes the conclusions drawn more robust. Fourth, the role that they play in evidence-based practice means they are treated as a bridge between research and policy-making or practice. Systematic reviews are seen as a way of assisting researchers, practitioners, and policy makers manage the sheer volume of new research that is being published and avoid the pitfalls of acting on single case study articles or studies, some of which may be questionable in terms of their design and the way they have been carried out, analysed, and reported. Jesson et al. (2011, p. 108) propose the following key stages:

1) Mapping the field through a scoping review and preparing a review plan which includes defining the question,[1] establishing key words, setting inclusion and exclusion criteria, and designing a sheet for data extraction;
2) Conducting a comprehensive search which includes doing an initial search, documenting the results, refining key words, revising inclusion and exclusion criteria, revisiting the question, screening titles and abstracts, and obtaining papers;
3) Assessing papers using the 'hierarchy of research' and documenting reasons for which papers are in and which are out;
4) Extracting the data and writing down on the pre-designed sheets;
5) Synthesising the data from each article into one so that it is evident what is known and what still needs to be known; and,
6) Writing up a report in a systematic review format and in a manner that would enable another researcher to replicate the review.

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[1] This is where the PESICO template is used.

They emphasise the importance of documenting processes and judgments made at every stage so that inevitable biases are more evident.

It is the process of searching for all relevant studies and evaluating them against predefined criteria that is seen to distinguish systematic reviews from traditional reviews. In bio-medical research, the blind randomised control trials are seen as the gold standard in judging the worth of a study but this is problematic for both ethical and practical reasons in much educational and social research. Quality appraisal within these fields tends to be made more on the basis of the information that is given about the design of the research, the reliability and trustworthiness of data, the rigour and trustworthiness of the analysis and the representation of findings, and discussion of methodological limitations. Systematic reviews are frequently carried out by a team of researchers, drawing on particular members' strengths and using team members to peer review decisions made about inclusion and exclusion of articles and where they fall in a hierarchy of research design. Jesson et al. (2011) suggest that work done by individuals, which is not so comprehensive and exhaustive as team systematic reviews, could be thought of as "rapid reviews" (p. 108).

ETHICAL ISSUES

In addition to the steps that have been outlined above for conducting systematic reviews we also asked the students to include a discussion of ethical issues. Discussion of ethical issues in relation to systematic reviews is difficult to find in the literature. For example, a recent text that focuses on doing both systematic and traditional literature reviews does not mention ethics at all (Jesson et al., 2011) while one that focuses on qualitative research synthesis does not explicitly deal with evaluating ethical issues in sources used but does discuss the issue of researcher stance and reflexivity in terms of establishing plausibility in qualitative research synthesis (Howell Major & Savin-Baden, 2010). We argue that if systematic reviews are to be a bridge between research and policy making or practice then it is important that a discussion of ethical issues is included. In their posters and the systematic reviews, students commented on a variety of ethical issues. They ranged from whether or not authors of articles noted ethical approval for their research or ethical issues that arose in the research to ethical issues that students themselves perceived in the design and procedures of the research and to ethical issues that students thought might arise in the implementation of the findings of the research.

LOCATING THE SYSTEMATIC REVIEWS IN PRACTICE: THE MINISTRY OF EDUCATION QUESTIONS

Within the Ministry of Education in New Zealand, the majority of field-based professionals working in the area of inclusive education have undertaken graduate and postgraduate studies in their chosen occupational fields, and include a range of occupational groups: registered psychologists, occupational therapists, physiotherapists, advisers on deaf children, special education advisers, speech-language therapists, and early intervention specialists. There are also educational professionals and managers who have additional expertise

in working with Māori learners: Kaitakawaenga (a facilitator/adviser/mediator), Pouarahi-ā-takiwā (District Māori Advisor), Pouwhakarewa (Regional Māori Strategy Advisor) and Kaitohutohu ā Rohe (Regional Practice Advisor).

These 'front-line' educational professionals amass a wealth of experience and have opportunities to learn about the impact of their practices in a range of contexts. The evidence accumulated and analysed by these staff is critically important in ascertaining effective evidence-based practices.

To determine issues that could be the focus of systematic reviews, it was appropriate that we collaborate with the Ministry of Education professional staff. We asked field-based professionals to send in questions to provide the focus for a systematic review that would be relevant to their practice. The responses included: broad areas of effectiveness of teacher-aides; intervention strategies for assisting children and adolescents with high anxiety levels, particularly, although not exclusively, those on the autistic spectrum; cultural responsiveness support for teachers; and, effective classroom-based strategies for working with children aged 5-8 years with Foetal Alcohol Syndrome. They were not necessarily posed as questions but rather indicated areas of interest, focus, or current policy issues, and included:

1) Effectiveness of teacher aides working with children with challenging behaviours.

2) Percentage of students put forward for behaviour referrals who are also failing academically.

3) Effective evidence-based interventions for managing sexualised behaviour in schools (both boys and girls – differences etc).

4) Referral rates of girls vs. boys to external agencies in NZ – are girls being under-referred for learning and behaviour? Why?

5) What are good intervention strategies for assisting children and adolescents with high anxiety levels, particularly, although not exclusively, those on the autistic spectrum?

6) What components of video feedback for teachers are critical for success?

7) Cultural responsiveness – how do you get teachers and others involved with children and families to be culturally responsive – what works for training?

8) What classroom-based strategies are the most effective for working with children aged 5-8 years with Foetal Alcohol Syndrome?

As part of the first stage of conducting a systematic review, these broad areas were developed into 'clinically relevant questions' by the postgraduate students using the PESICO template. From these eight broad areas, they developed 29 specific 'clinically relevant' questions. Some examples of relevant questions included:

- What interventions are effective in promoting the social skills of primary school-aged children with Foetal Alcohol Syndrome Disorder FASD in mainstream settings?

- What parent-based or parent-mediated interventions are effective in reducing high anxiety levels amongst children under 13 years old with a diagnosed anxiety disorder?

- How effective are the practices that teacher aides use to support students with challenging behaviours?

- What variation of cognitive-behavioural therapy is most effective for reducing the high anxiety levels of children and adolescents aged 7-14?

- What are the most effective classroom-based interventions for primary school aged autistic children who engage in self-injurious behaviour?

The students conducted the first phase of their systematic review through the PESICO process to examine the relevancy of their questions. They then commenced the next process of the systematic review to determine the literature they would explore. To assist them in the subsequent phases of their systematic review, students participated in seminars on: identifying search key words; critically assessing quantitative and qualitative research designs; analysing and synthesising themes; interpreting findings; hierarchies of evidence; transparency and reporting of the process of the review; ethical issues in conducting and reporting research; ethics in inclusive education; professional codes of ethics; and, critically examining a range of systematic reviews.

The *initial* findings of their systematic reviews were prepared and presented in poster form for their peers and faculty staff to read and comment on. The students presented detailed, comprehensive and visually appealing posters. We have provided examples (see Figures 2, 3 & 4) from a range of the student work, and these reflect the general standard across the cohort.[2]

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[2] The figures are presented in full-page view to display the posters more effectively, however, given the font size of some of the text, the figures are for illustrative purposes only.
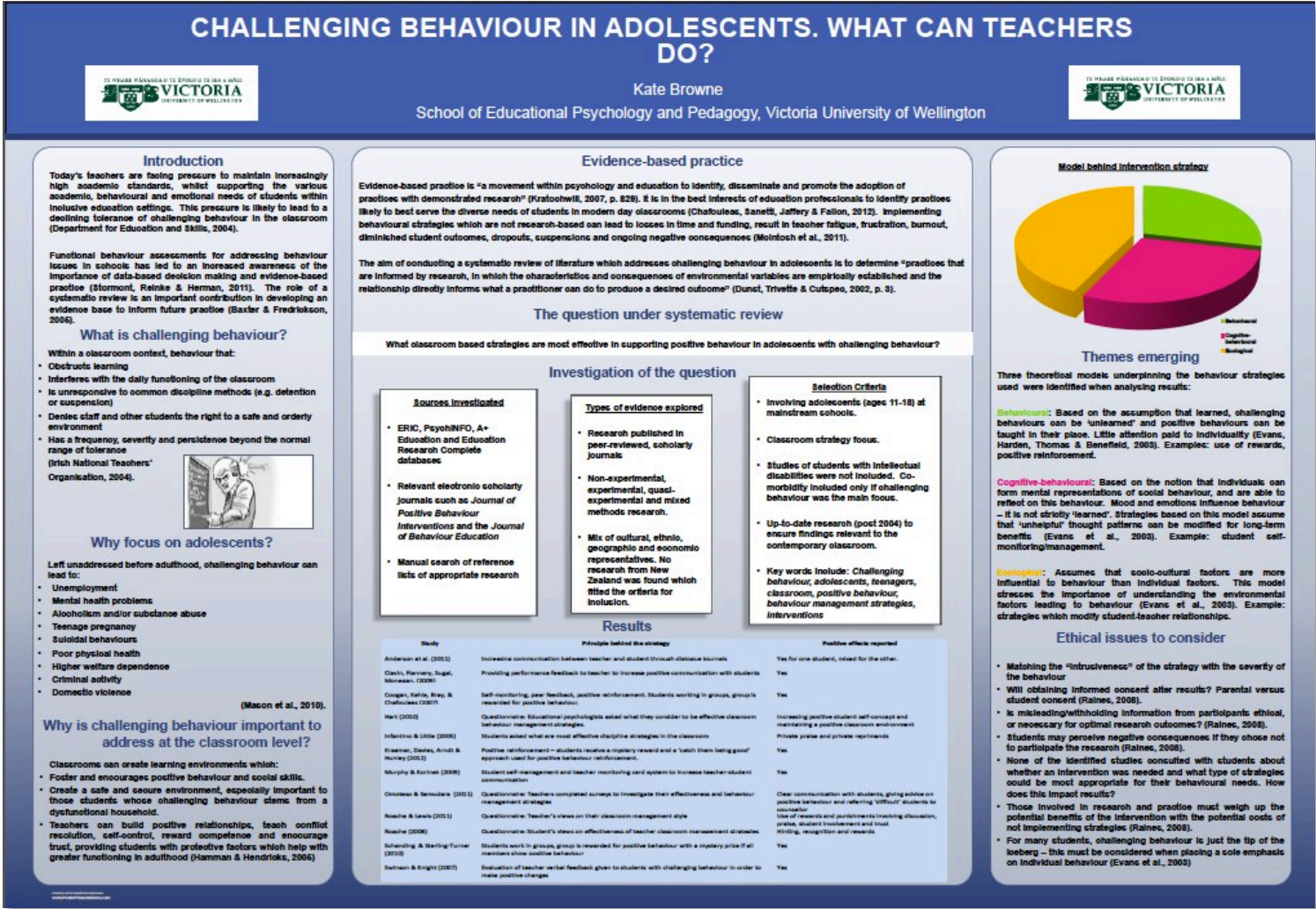
Figure 2 Challenging behaviour in adolescents: What can teachers do? A systematic review poster by Kate Browne.
(Provided with permission)
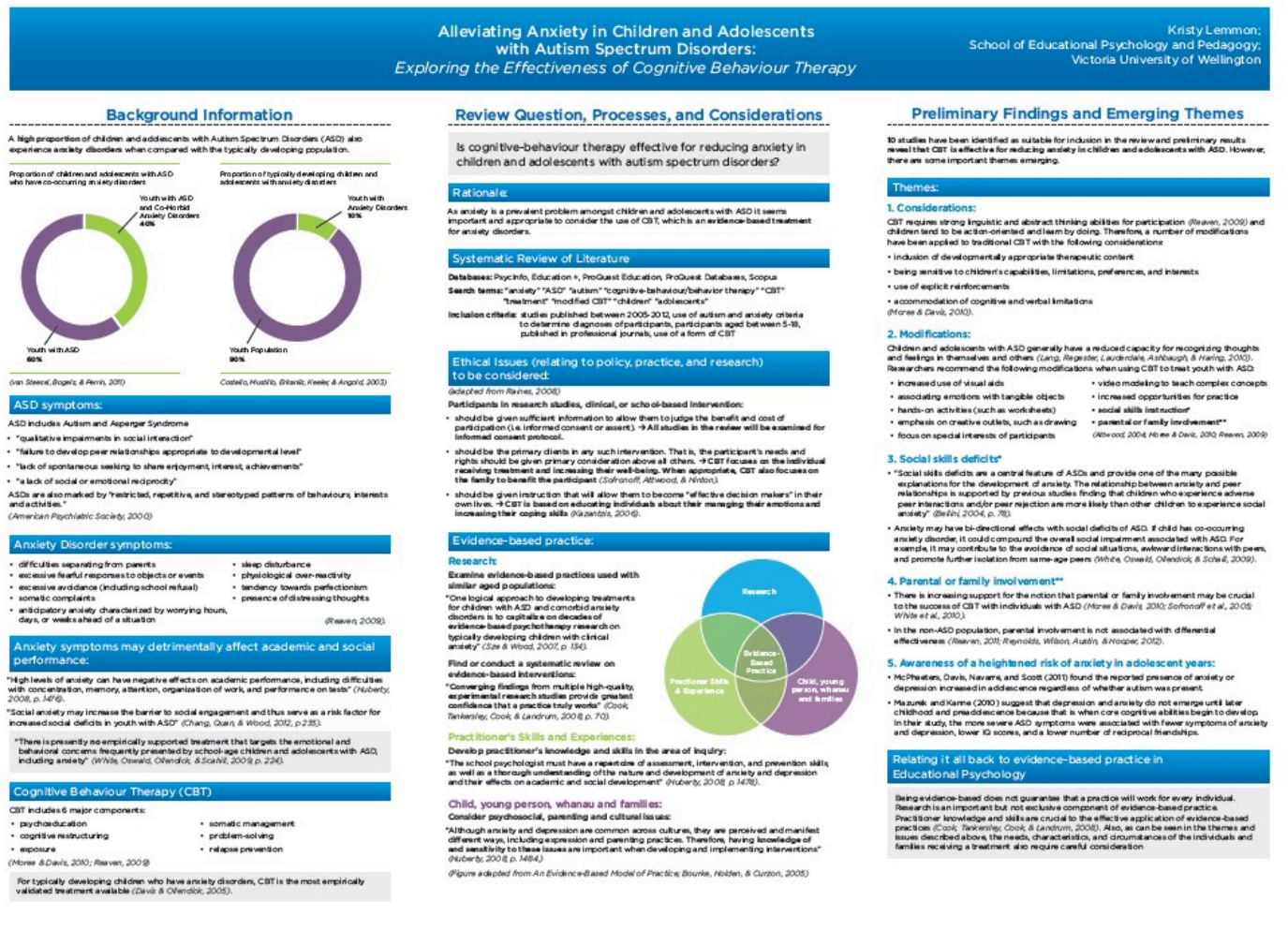
Figure 3 Alleviating anxiety in children and adolescents with autism spectrum disorders. Exploring effectiveness of cognitive behaviour therapy. A systematic review poster by Kristy Lemmon. (Provided with permission)

Figure 4 Can computers deliver effective treatment for children and teens with anxiety? A systematic review poster by Nina McCullum-Clark.
(Provided with permission)

GETTING THE SYSTEMATIC REVIEWS TO 'MAKE A DIFFERENCE'

These posters were developed and set up in rooms within the Faculty to enable the 28 students the opportunity to present to each other, and gain formative feedback from academic staff. They developed these further into systematic reviews (eight of which are published within this volume).

A systematic review of the literature creates a starting point for practitioners to determine what 'might work' for a young person given all other information that contributes to the decision (meaningfulness, relevancy, validity) and the child's own motivation towards the action. The systematic review is an important starting point because it collates the range of the best available literature around a specific question, and provides guidance for solutions. Using both quantitative and qualitative research to inform these decisions, the practitioner is in a stronger position to create their own narrative to inform decisions along with those they affect.

The course itself involved student self-assessment activities, and at the end of the course the students were encouraged to explore whether they felt that understanding evidence-based practice and embarking on a detailed systematic review *changed* an aspect of their teaching, study, thinking or other activities. While all 28 students had quite different views on how it changed or would influence their way of working, the critical thoughtful stance, aligning with individual context, was generally highlighted. For example, responses included:

- *When I read about research in the media I wonder about the study's methodological quality, how this might have influenced the results, and how the study compares to other research.*

- *The systematic review highlighted the importance of the practitioner in deciphering and evaluating the validity of research, along with the family in determining its contextual applicability in evidence-based research.*

- *I believe this course has helped me to re-evaluate my definition of the word 'evidence'. It has given me more of an open mind when evaluating research, and has highlighted the importance of balancing research with stakeholder opinions.*

- *I ask more questions – about what I am observing, what I am doing, why? In research I am more critical of what I am reading.*

- *I have now developed more critical and investigative thinking and practical tools when trying to find and implement suitable programmes, forms of therapy, interventions for the special needs students I work with.*

- *Because of this course I now not only look at the evidence supporting the research I read, but I also think about how that evidence was obtained.*

- *This course has provided me with the tools to gather my own best practice evidence which will include the expert but will also include my own research and listening to stakeholders. (Responses are provided with permission.)*

CONCLUSION

In this journal issue,[3] eight postgraduate students in education have created their own systematic reviews. While they have individually learned from these experiences, some of them have used this knowledge in practice, and perhaps teachers can find ideas from these to employ in their own pedagogical practices. This act alone takes creativity and artistry (Schön, 1987), and relies on the ability of teachers or psychologists working in the education sector to get inside the evidence-based nexus. Evidence-based practice does not rely on research alone; it requires the *intentional and creative* integration of research, and the experiences of the young person and their family and their team of practitioners if we are to successfully influence, in a positive and culturally responsive way, the life of a young person. As Wiggins, Austerberry, and Ward (2012) note, when determining what *might work* for a young person, the evidence associated with the programme must be aligned with the knowledge of the young person and their local context. Those identifying a programme that is 'evidence based', they suggest, need to also:

> assess whether the evidence that exists suggests the programme could work with their local population, and with the existing agencies, referral structures, and resources available. It is worth checking whether a programme has been shown to be effective when conducted by a group other than the programme developers and when carried out in different settings.   (p. 11)

This paper has outlined an approach to support postgraduate students to develop systematic reviews as a starting point for evidence-based practice. There are some potential issues arising from systematic reviews and indeed, evidence-based practice. Hammersley (2001) critiques the implicit assumption in many systematic reviews of the superiority of the positivist model of research and also questions whether the positivist model can be successfully applied to the task of producing reviews. Underlying this critique is a concern with the strong belief in procedural objectivity. He notes that, along with a vast literature in the social sciences, some of those involved in the natural sciences have now questioned the extent to which a positivist model of science captures accurately the practice of natural scientists. Some of those working in the area of the natural sciences acknowledge the role of personal or tacit knowledge in the production of science and have argued that science does not only "operate on the basis of fully explicit procedures" (p. 545). Therefore, while Hammersley does not suggest that systematic reviews hold little value, he does argue that they should not be privileged, particularly in relation to the allocation of resources. Given there is now a growing body of literature that examines the ways in which interpretivist qualitative research can be included in systematic reviews or qualitative evidence synthesis (e.g. Howell Major & Savin-Baden,

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[3] Volume 10, Issue 1, 2013 of *New Zealand Journal of Teachers' Work*

2010), the results from systematic reviews are being broadened to include qualitatively important contributions.

Systematic reviews contribute an integral aspect in determining the types of intervention that research has shown may support, facilitate or engage learners in an area of need. As discussed, evidence-based practice involves systematic research and the ability to systematically review the best evidence available, *as well as* involving practitioners (front-line staff) and those with whom they work to ensure the decisions are meaningful and relevant for each local context. In asking the right question to commence a systematic review, the authors of the systematic reviews in this issue, will also need to consult carefully with those with whom they work to ensure that for each individual it is a valid question: "It is the responsibility of educators, evaluators and researchers to find out exactly what 'right' means for the children and families with whom they work" (Bevan-Brown, 2001, p. 145).

To fully understand each child and their learning, our role as educational professionals and teachers requires us to constantly ask new questions and then search for evidence, for solutions, for generating new possibilities of practice.

REFERENCES

Bevan-Brown, J. (2001). Evaluating special education services for learners from ethnically diverse groups: Getting it right. *Journal of the Association for Persons with Severe Handicaps*, 26(3), 138–147.

Biesta, G. (2007). Why 'what works' won't work: Evidence-based practice and the democratic deficit in educational research. *Educational Theory, 57*(10), 1–22.

Bishop, R., & Berryman, M. (2006). *Culture speaks: Cultural relationships and classroom learning.* Wellington: Huia.

Bourke, R., Holden, B., & Curzon, J. (2005). *Using evidence to challenge practice. A discussion paper.* Wellington: Ministry of Education, New Zealand.

Cabinet Office (UK). (1999) *Modernising government.* London: Stationery Office. Retrieved from: www.cabinet-office.gov.uk/moderngov/whtpaper/index.htm

Chwalisz, K. (2003). Evidence-based practice: A framework for twenty-first-century scientist-practitioner training. *The Counseling Psychologist, 31,* 497–528.

Clegg, S. (2005). Evidence-based practice in educational research: A critical realist critique of systematic review. *British Journal of Sociology of Education*, 26(3), 415–428.

Hammersley, M. (2001). On 'systematic' reviews of research literatures: A 'narrative' response to Evans & Benefield. *British Educational Research Journal, 27(5),* 543–554.

Hargreaves, D. (1996). *Teaching as a research-based profession: Possibilities and prospects*. London: Teacher Training Agency.

Holm, M. B. (2000). Our mandate for the new millennium: Evidence-based practice, 2000 Eleanor Clarke Slagle lecture. *American Journal of Occupational Therapy, 54*, 575–585.

Howell Major, C., & Savin-Baden, M. (2010). *An introduction to qualitative research synthesis: Managing the information explosion in social science research.* London: Routledge.

Jesson, J. K., Matheson, L., & Lacey, F. M. (2011). *Doing your literature review: Traditional and systematic techniques.* London: Sage.

Jones, J. L., & Mehr, S. L. (2007). Foundations and assumptions of the Scientist Practitioner Model. *American Behavioral Scientist, 50*(6), 766–771.

Lane, D. A., & Corrie, S. (2006). *The modern scientist-practitioner. A guide to practice in psychology.* London: Routledge.

Maynard, A. (1996). Cost effectiveness and equity are ignored. *British Medical Journal, 313*(2), 70.

McKibbon, K. A., Wilczynski, N., Hayward, R., Walker-Dilks, C., & Haynes, B. (1995). The medical literature as a resource for evidence-based care. *Journal of the American Society for Information Science, 46*(10), 737-742.

Mullen, E. J. (2002, July). *Evidence-based knowledge: Designs for enhancing practitioner use of research findings (a bottom up approach).* Paper presented at 4th International Conference on Evaluation for Practice, Finland.

Petersen, C. A. (2007). A historical look at psychology and the scientist-practitioner model. *American Behavioral Scientist, 50*(6), 758–765.

Richardson, W., Wilson, M., Nishikawa, J., & Hayward, R. (1995). The well-built clinical question: A key to evidence-based decisions. *ACP Journal Club, 123*, A12–A13.

Sackett, D. L., Rosenberg, W. M. C, Muir Gray, J. A, Haynes, R. B, & Richardson, W. S. (1996). Evidence based medicine: What it is and what it isn't. *British Medical Journal, 312*, 71–72.

Schlosser, R., Koul R., & Costello, J. (2007). Asking well-built questions for evidence-based practice in augmentative and alternative communication. *Journal of Communication Disorders, 40,* 225–238.

Schön, D. A. (1987). *Educating the reflective practitioner*. San Francisco, CA: Jossey-Bass.

Shapiro, D. (2002). Renewing the scientist-practitioner model. *The Psychologist, 15*(5), 232–234.

Strategic Policy Making Team. (1999). *Professional policy making for the twenty first century.* London: Cabinet Office. Retrieved from: www.cabinet-office.gov.uk/moderngov/policy/index.htm

Sweet, M., & Moynihan, R. (2007). *Improving population health: The uses of systematic review.* New York: Millbank Memorial Fund. Accessed May 2013, from www.milbanj.org.

Wiggins, M., Austerberry, H., & Ward, H. (2012). *Implementing evidence-based programmes in children's services: Key issues for success.* Childhood Wellbeing Research Centre. Retrieved from: www.cabinet-office.gov.uk/moderngov/policy/index.htm

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