# Evidence-Based Interprofessional Practice: Learning and Behaviour

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## ABSTRACT

The purpose of this journal article is to investigate evidence-based practice (EBP) or He Ritenga Whaimōhio, as one of the seven principles outlined in the *Resource Teacher: Learning and Behaviour (RTLB) Toolkit* (2011) that guides RTLB practice; and to critique the principle of EBP through practical reflection

## WHAT IS EVIDENCE-BASED PRACTICE?

Evidence-based practice (EBP) is defined as the selection of clearly defined interventions or teaching strategies with the best empirical evidence (shown to bring about desired outcomes) regarding efficacy which are implemented with consideration of a delineated population of students and their best interests (Digennaro Reed & Reed, 2009; Mitchell, 2008; Mitchell, 2010). The selection of an EBP requires practitioners to make informed decisions about what constitutes evidence, where the evidence has been gathered, and what will best meet the needs of the learner.

Christiansen and Lou (2001) suggest that 'ethical matters' lay beneath judgements and, as such, practitioners need 'objective principles' to avoid 'overlooking' the limitations of evidence, such as design, validity, research bias, and conflicts of interest. Meta-analyses provide practitioners with a synthesis of best practice to help inform teachers and policy makers as to what is the current best evidence supporting various approaches or interventions (Alton-Lee, 2003; Hattie, 2009; Mitchell, 2008). Morrison, Sullivan, Murray and Jolly (1999) also recommend the use of checklists to critically appraise evidence reports, while Lin, Murphy and Robinson (2010) recommend a process for practitioners to follow such as formulating a question, searching for the best available evidence, critically analysing the evidence using a checklist guide, and then integrating the appraisal with the needs of the student before taking action and evaluating the outcomes of that action. Identifying actual outcomes and measuring the benefit of an evidence-based intervention also depends on variables such as consistent implementation to determine whether the intended effects were obtained (Digennaro Reed & Reed, 2007). Practitioners also need to consider the population base from which the research evidence was gathered, and whose voice dominates the research data.

Randomised control trials are referred to as the 'gold standard' for identifying EB approaches or interventions, but in special education other methodologies such as single-subject design studies, correlational methodologies, and qualitative methodologies may be more suited to informing practice (Odom et al., 2005). The debate around what is 'evidence' varies within the literature and care is needed to avoid confusing interventions that have an evidence base, and EBP. Davies (1999) suggests that teachers seek out EBP to inform their daily practice and attempt to solve problems (seek solutions) within 'complex' and 'culturally-diverse' communities. EBP is the basis upon which teachers "make professional judgments and deploy their expertise" (p118). Lin et al. (2010) argue that knowing what an EB approach is will not ensure implementation; while Schlosser and Sigafoos (2008) warn against referring to particular approaches as being EB unless the experiences of the 'stakeholder' and student perspectives are included.

Schlosser and Sigafoos (2009) further explain that EBP requires 'the integration of at least three components: best and current research evidence, clinical [practitioner] expertise, and client [student] perspectives and values' (p. 131). They call these three cornerstones the 'E3'; evidence, expertise, and experience (values) of the client as the key components for EBP. Though each of the corner stones are different, they are equally important – "the sum of the three cornerstones is greater than the parts

in adding social validity to the EBP" (p.135).

In Figure 1 below, Bourke, Holden and Curzon (2005) identify three types of 'evidence': those of the research; those of practitioner knowledge, skills and experiences; and those of the collective voices of students, whānau and families. The two diagrams illustrate the 'three cornerstones' or the three types of evidence necessary to calling a practice 'evidence-based'.
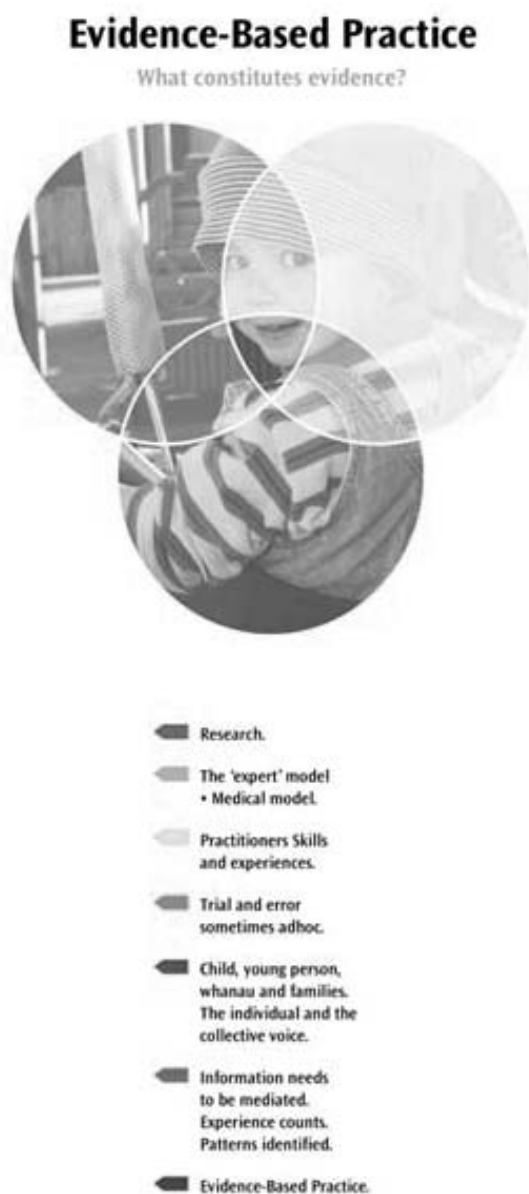
## Evidence-Based Practice

### What constitutes evidence?



◀ Research.

◀ The 'expert' model · Medical model.

◀ Practitioners Skills and experiences.

◀ Trial and error sometimes adhoc.

◀ Child, young person, whanau and families. The individual and the collective voice.

◀ Information needs to be mediated. Experience counts. Patterns identified.

◀ Evidence-Based Practice.

**Figure 1.** *Evidence-based practice: What constitutes evidence?* (Bourke, Holden & Curzon, 2005)

In Figure 2, Macfarlane (2010) expands on the model to depict the Kaupapa Māori approach model (He

Ritenga Whaimōhio) in order to provide a culturally-responsive perspective to working within EBP. Here the three components or 'cornerstones' are respectively aligned to the Māori concepts of **tika** (research and literature that is culturally-grounded), **aroha** (respectful consultation and relationships with student and family) and **pono** (practitioner knowledge and expertise that is ethical). These three concepts remind practitioners to consider the context of the research evidence; their own levels of cultural competency, and the views and aspirations of the whānau. The area of overlap or intersection between the three circles of evidence is depicted, described by the Ministry of Education (2005) as 'effective practice' (see the Springboards to Practice initiative). In this model of EBP the sum of the three is again stronger than the parts.
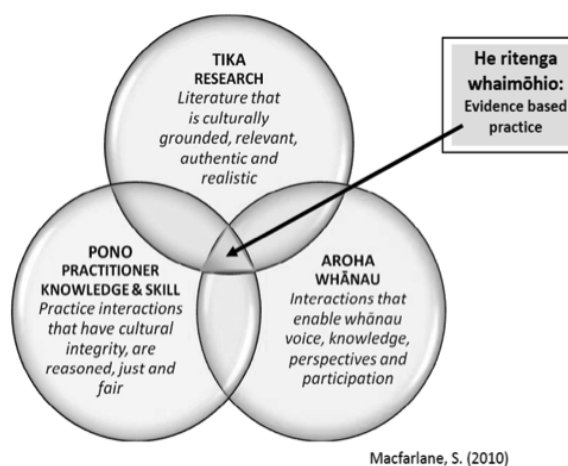


Macfarlane, S. (2010)

**Figure 2.** *He Ritenga Whaimohio*

Considering EBP from the three components raises further questions about what is then the nature and purpose of educational evidence. Hattie (2009) argues that "evidence is not neutral; that what is effective depends on judgements about what is educationally 'desirable'" (p. 254). Educational interventions might appear neutral but the purpose of the intervention is to bring about change in learning or behaviour which makes the act of teaching a 'moral profession' and involves personal relationships to affect change. Davies (1999) maintains that there is no such thing as context-free evidence, and what constitutes 'relevance' in research depends on what questions are asked, in what context, and for what practical end.

The demands of practice in one context may make a seemingly narrow and esoteric piece of research highly relevant and very enlightening for those who use it. Similarly, research that is apparently more

generalisable, cumulative, and based on highly representative samples for some purposes, may be of little value to those in which the research took place" (p111).

## APPLYING EVIDENCE-BASED PRACTICE

### Background

The context of the example of EBP that I have chosen to explore is embedded in the writers' case work as an RTLB. I had been providing classroom teachers, parents, and fellow RTLBs with advice and support around social skills and the inclusion of students who are on the autism spectrum. I had previously trained in and trialled an evidence-based social intervention programme called the *Secret Agent Society (SAS) - Solving the Mystery of Social Encounters Programme* (Beaumont & Sofronoff, 2008), developed for use with children eight to twelve years of age who have high-functioning autism or Asperger's. The programme aims to improve social skills, build self-esteem, improve relationships, reduce bullying, offset the development of depression in later years, and build the social capacity of students. These aims were consistent with the goals set for a particular group of students.

### SAS target skills:

- Recognising simple and complex emotions
- Expressing feelings appropriately
- Managing anger and/or anxiety
- Conversation and play skills
- Detecting and dealing with bullying
- Coping with change and mistakes.

### Programme details:

- Runs over 9 weeks with one 2 hour session per week (broken into two 1 hour sessions with either morning tea or lunch as a break between the sessions).
- Group sessions teach students how to apply the content of a structured computer game to everyday context; with a 3 and 6 month follow up session.
- Weekly sessions with parents to show how to support the generalising of skills at home and in the community.
- Weekly tip sheets for teachers to help show how to include goals in their class and the playground.
- The programme consists of a virtual reality computer game for the students to work on at home throughout the training. As students complete each level of the game they earn gadgets to move onto the next level.
- The group sessions (of 2-6 students) are designed

to help students develop individual strategies to work on at home and school over the week. Students collect cards that summarise their strategies and earn points towards a reward as they complete their 'missions' (apply individual strategies).

- There are role plays, a game board, walkie-talkie activities, and other fun games during the sessions.

### SAS Evidence base:

A randomised-controlled trial of 49 children who have Asperger's were randomly assigned to intervention (n=26) or wait-list control (n=23) conditions over a two month intervention period. Students in the intervention group showed significant improvements in social skills across settings compared to the control group over a two month intervention period. Relative to children in the wait-list group, programme participants showed greater improvements in social skills over the course of the intervention, as indicated by parent-report measures (76% improved to within the range of typically developing children with skills maintained at a 5 month follow-up check). Teacher-report data also confirmed that children receiving the intervention made significant improvements in social functioning from pre to post treatment. Treatment group participants were better-able to suggest appropriate emotion-management strategies for story characters at post-intervention than at pre-intervention, whereas control participants were not. The study concluded that the SAS programme was effective in enhancing the social and emotional skills and understanding of children with Asperger's Syndrome (Beaumont & Sofronoff, 2008).

The main weaknesses of the Australian-based study were firstly the small number of participants (n=49) which makes the outcome data of 76% social skills improvement less significant generally; and secondly, the involvement of the programme developer in the study. Potential bias could have been controlled by using a double blind approach of having unconnected research assistants gathering the pre and post data (Katzer, Cook & Crouch, 1991). However, there is a second randomised trial occurring with 27 children (20 males, seven females), two with ADHD and one with dyspraxia. This yet to be published study is also using the Spence Child Anxiety Scale (SCAS) as an additional outcome measurement.

### Writer's Experience with SAS Programme

The involvement of parents and whānau through the use of pre-course training, questionnaires, and regular parent and whānau meeting sessions during the programme enabled aroha. Pre-training for

the classroom teachers, teacher-aides, and other interested staff expanded the pono of the writer; while the sharing of the evidence around the programme with parents, whānau and education staff reflects tika or sharing of new knowledge. Although there was no explicit evidence of kaupapa Māori, the programme used a *He Ritenga Whaimōhio* framework (Macfarlane, 2010) by bringing together parents, teachers, and research for the purpose of enabling students who have ASD to better generalise their learning during the programme.

The writer had delivered the SAS Programme on three separate occasions. One occasion was with two eight year old male students who had ASD (this data is incomplete as one student moved before the six month follow up session); the other was with a fellow-RTLB with a group of five male students aged 11-12 years (one who had autism, one who had high functioning autism, one who had Asperger's, one who had ADHD, one who had specific learning disabilities). My most recent delivery was with a 10 year old male who has Asperger's (this data is still being gathered). Data used for this report comes from the second group of five students. The RTLB sub-cluster decided to pilot the SAS programme with intermediate-aged students and review the pre and post data to determine the benefits of the programme for the students, their parents, and their teachers. Our contextual goal was to determine if the SAS programme offered the types of social outcomes we hoped for, for the target students, with the view of offering the intervention to other students and possibly training more RTLBs in the delivery of the programme. The data presented from the trial is not, therefore, context-free (Davies 1999) and the selection of this intervention above others was informed by the limited research (Beaumont & Sofronoff, 2008), the writers' 15 years of experience with other social-skills interventions and cognitive behaviour therapy approaches (Attwood, 2004; Callesen, Moller, Nielsen & Attwood, 2005; Gutstein & Sheely, 2004; McAfee, 2002; LoGiudice & McConnell, 2004; Quill, 2000; Schroeder, 1997; 2001; 2008).

Pre, post, and follow-up data was gathered through an observational checklist, parent and teacher interviews, and the 'Social Skills Questionnaire' (parent & teacher); Emotion Regulation and Social Skills Questionnaire (ERSSQ) (parent and teacher), plus Attwood's student vignettes 'James and the Maths Test', and 'Dylan is being Teased' (Attwood, 2004). Data was also gathered during the programme through a home-school diary sheet that had individual goals at the top and space for daily entries of progress below.

A pre-course two-hour training session was delivered

to parents (who also met for a further hour weekly session during the course to discuss progress and ideas for generalising skills). Teachers also received a two-hour pre-course training session and weekly summary tip sheets of strategies with ideas of how to include other class peers in the missions. The tip sheets also covered using comic strip conversations, social buddies, and class-wide strategies for dealing with bullying.

## Participants

There were three Year 8 students and two Year 7 students, with five teachers and the parents of the five students. The student participants were male, three were on the autism spectrum and two were identified by their RTLBs as needing social skills intervention.

## RESULTS

### Table 1
**Pre and Post Programme Parent Teacher Expectations and Concerns**

| Pre-programme parent and teacher expectations and concerns: | Post-programme parent and teacher comments: |
|---|---|
| Build or gain friendships (do what other kids do) | Better understanding of other people's emotions |
| Build confidence (learn how to deal with bullies) | Listening and eye contact improved |
| Build relationships (peers and siblings; interact more, join in or initiate games) | Discusses frustrations |
| Build social communication skills (join in a conversation, share more about his feelings) | Explains himself with more detail |
| Develop coping strategies (less fired up when misreads social situations) | Developed friendships with other children from the group, is more confident and more talkative. |
| Work cooperatively | Recognises my face and tone in my voice a lot easier than before |
| | Less volatile in a situation that flares up, much more settled, calm, confident with his behaviour, he's more happy and feels he belongs |

**Child Pre and Post Questionnaire Data:**

Pre-programme child questionnaires were used to identify the students' prior social problem-solving abilities. They needed to read or listen to two stories: 'James and the Maths Test' and 'Dylan is Being Teased', and then respond to questions about 'What could James do and think to feel less anxious?' and 'What could you do and say to help Dylan keep cool and not get mad with them [bullies]?'

The pre-programme responses from the students were to 'move away from the bullies' or to 'try their best on the test'. Only one of the five students recommended 'talking to the relief teacher' about the maths test. Although they all mentioned 'walking away' from the bullies, many of their actions or comments would have made the situation worse. For example, telling the bully to 'get a life' might escalate a social conflict; and another student responded that he was 'unsure what he could do to be less anxious'.

From the post-programme child questionnaire four of the five students identified going to the relief teacher and explaining the concern about the maths test; the student who didn't know what to do about feeling anxious said "You can ask for help if you feel anxious" as a strategy. In addition, there was evidence that the students were able to apply the strategies in their post-programme responses:

- 'Tell him to breathe and keep calm and walk away' (O2 Gadget)
- 'Think of a good comeback, as long as it won't make them mad' (DECODER and Bully-guard armour gadgets); for example, 'As long as you do your best you'll be fine' (helpful thought gadget).

**Social Skills Questionnaire - Parents Versions**

This questionnaire was used pre and post intervention and parents scored 0 = not true, 1 = sometimes true, and 2 = mostly true, to a series of 30 questions. The areas of greatest gain in this questionnaire were made by the three students who have ASD:

- Reacts appropriately if other kids tease him or say unkind things (increase from scores of '0-1' to scores of '1-2')
- Asks to join in activities with other kids in an appropriate manner (increases from a score of '0' to a score of '1')
- Controls his temper when told off or criticised by parents (increase from scores of '0-1' to scores of '1-2')
- Shares things with other kids his age (increases in scores from '0-1' to '1-2')

- Has an appropriate facial expression - not excessive grinning or aggressive (increases from '0-1' to ' 1-2')
- Apologises when he does something wrong (increases from scores of '0-1' to '1-2')
- Expresses sympathy or concern to others who are hurt or upset (increases from scores of '0-1' to '1-2')
- Shows that he is listening to others during conversations (increases in scores from '0' to '1')
- Can express his feelings of anger but without losing his temper (increases in scores from '0-1' to '1-2').

**Emotional Regulation and Social Skills Questionnaire - Parents & Teachers Versions**

This questionnaire was used pre and post intervention and parents scored 0 = never, 1 = rarely, 2 = sometimes, 3 = often, 4 = always, to a series of 27 questions. The areas of greatest gain in this questionnaire were again made by the three students who have ASD with 1 to 2 point gains in the following areas:

- Is aware of other people's thoughts and feelings (correctly identify other people's feelings from their facial expression, voice tone, and/or body posture)
- Controls his anger/anxiety effectively at school and at home
- Reduction in using comments that embarrass others
- Recognises when someone is bored by his conversation, and changes the topic (recognises when other are being sarcastic)
- Deals with social problems successfully and chooses appropriate solutions to social problems (effectively with bullying/teasing)
- Copes effectively when he makes a mistake, apologises when he does something wrong or hurt someone's feelings
- Tries new tasks or activities.

Areas where the other two students (who do not have ASD) scored most strongly (ie. they improved) were in:

- choosing appropriate solutions to social problems
- dealing with social interactions/issues successfully
- coping effectively when making a mistake.

**SAS Observer Coding Form Results:**

The Secret Agent Society 'Observer Coding Form' is used to examine the child's competency in specific skill domains targeted by the programme. The observation schedule is used pre and post intervention to track improvements in, and the areas requiring, further skills development. The five domains covered by the form are non-verbal communication, conversation skills, cooperation skills, conflict resolution, and emotional regulation. The scores from each domain are then averaged for a total social skills score (the lower the score the greater the level of social skill).

**Table 2**

*Pre and Post Programme Scores*

| Student/Domains | Student A | | Student B | | Student C | | Student D | | Student E | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pre | Post | Pre | Post | Pre | Post | Pre | Post | Pre | Post |
| Non-verbal Communication | 1.3 | 1.1 | 2.2 | | 1.5 | 1.5 | 1.75 | 1.5 | 2.75 | 1.0 |
| Conversation Skills | 1.7 | 1.5 | 2.5 | | 2.25 | 2.0 | 1.5 | 1.5 | 1.37 | 0.25 |
| Cooperation Skills | 1.2 | 1.3 | 0 | | 2.14 | 2.0 | 0.57 | 1.83 | 1.0 | 0.14 |
| Conflict Resolution | 1.5 | 1.0 | 1.1 | | 2.85 | 2.28 | 1.0 | 1.16 | 2.28 | 0.43 |
| Emotional Regulation | 1.0 | 1.0 | 1.2 | | 2.66 | 2.0 | 2.75 | 2.0 | 1.5 | 1.75 |
| **Score** | **1.3** | **1.8** | **1.2** | | **2.3** | **1.9** | **1.5** | **1.5** | **1.8** | **0.7** |

NB: Student B had a long stint in hospital so data was incomplete, however comments from his mother were:

> "For the first six weeks he found new people to talk to in [hospital] class and organised play dates to watch DVDs and play battleship against them … we used them [gadgets] as survival strategies in difficult situations that were mostly out of our control".

The students with ASD showed improvements in communication skills (non-verbal and conversation), and conflict resolution. The students without ASD both had improvements in emotional regulation. As a group there were improvements for all students in the areas of communication (non-verbal and conversational).

**Intervention Conclusions**

The pre and post data collected from teachers, parents, and the students during the (SAS) programme has resulted in all of the students making gains in the following target skills:

- Recognising simple and complex emotions
- Expressing feelings appropriately
- Managing anger and/or anxiety
- Conversation and play skills
- Detecting and dealing with bullying
- Coping with change and mistakes.

The longer term goals of building self-esteem and social capacity have recently become apparent with Student C who has ASD, developing friendships within his class group, participating in social dancing, and involving himself with his typical peers during break times (previously he would withdraw and walk circuits around the fringes of the playground). Student E showed the greatest social gains (total score improved from 1.8-0.7) indicating that the SAS programme has been successful in building the social capacity of the student; he also went on to joining the school production and inter-school literacy competitions. Based on the data gathered, the SAS Programme appears to be a valuable resource for students who struggle with social skills. The following comments are taken from the post-programme student satisfaction questionnaire:

**Post-Programme Satisfaction Questionnaire: Student Version Data**

| Student | Scale<br>* 0-5 | Responses to:<br>(1) What did you like about the SAS Programme?<br>(2) What helpful things have you learned in the programme?<br>(3) How would you make the programme better?<br>(4) Is there anything else that you would say about the programme? |
|---|---|---|
| A | 5 | • Teaches to prevent other people bullying you. To keep calm and brother and sister and my family.<br>• Keep calm when bullied. |
| B | 4 | • It really helped with my social skills and helped against bullies and stress. Thank you.<br>• O2 Gadget [deep breathing]. |
| C | 5 | • Everything!<br>• The gadgets. |
| D | 5 | • Enjoyable.<br>• If somebody teases you walk away.<br>• I really wish I could do it again! |
| E | 4 | • Fun games and telling me how to deal with situations.<br>• How to deal with situations of people being angry.<br>• More levels on the game [computer].<br>• It is fun. |

*0 = Not at all; 1-2 = A little bit; 3-4 = A moderate amount; 5 = A lot.

## CONCLUSIONS ABOUT APPLYING EVIDENCE-BASED PRACTICE

The writer followed a process of EBP by addressing the three cornerstones of effective practice. This was done firstly by critically drawing on current evidence-based research about the intervention. Secondly, this was done by considering the potential benefits of the intervention against prior experience with other intervention approaches and considering what the new approach offered above the other programmes:

• Randomised trial with controls

• Virtual reality computer programme

• Generalisation structure through 'missions' and diary sheets, and

• Weekly parent training and teacher support sheets.

Thirdly, consideration was paid to the participants themselves by including parents directly with personal goal-setting through the weekly 'missions'.

### Reflection on Practice

Findings from this example of EBP are not able to be generalised beyond the target students and the context in which this study occurred. The study is not able to determine what specific components of the SAS programme were responsible for the gains made by the students. However, the SAS programme brings together several key components of EB approaches such as the use of cognitive behaviour therapy and social skills training (Hattie 2009; Mitchell 2008), parent involvement and student self-regulation (Mitchell, 2008), and a metacognitive approach (Alton-Lee, 2003; Hattie, 2009; Mitchell, 2008). There are many variables around what worked for which students such as the timeliness of the intervention to meet needs of the students, the level of parent and teacher commitment to the programme, the nature of the group sessions and the eclectic approach of the programme, the role of the virtual reality computer programme and student motivation, the skill of the facilitator, and the relationships of the students with the adults and each other during the programme.

The SAS programme uses many cognitive strategies and teaches the skills through 'gadgets':

• 'imagery relaxation gadget' involves visualising relaxing or happy scenes

• 'DECODER gadget' practices defining a problem and the emotional and body cues of the situation, exploring possible solutions, considering the consequences by predicting outcomes of choices, organising a plan, doing it, evaluating how it went, and rewarding yourself for using the gadget, planning, predicting, practising, using cues, and

• 'Play gadget', 'conversation gadget', and 'damage control gadget' require students to detect both situational and internal cues when engaging socially.

Students also acquire summary cards of each gadget to refer back to as they apply their personal 'mission' goals each week. The SAS programme encourages students to set goals that are of interest and motivating, and the group sessions (through fun activities and a board game) require students to role play various social responses and provide feedback to each other about what skills (gadgets) the student was using. The missions are recorded in their cadet journals or electronically by recreating episodes from the week when the student had used a skill or gadget (successfully or not successfully) and what they might change.

Areas of change for the writer delivering future SAS programmes would include:

• Formative data gathering (narrative stories of the students' progress through the SAS programme and after the programme

• Extending the follow-up from three and six months to a nine and/or 12 months (using the same pre/post measures)

• More support for class teachers to implement ideas into classrooms, and

• Encouraging the students, parents, and teachers to develop their own Comic Strip Conversations (Gray 1998) as they unpack experiences during group sessions in class, in the playground and at home.

This article has identified that EBP occurs when practitioners make ethical judgements about what evidence is and how relevant an EB approach or intervention is to a given situation within a set context to bring about improvements and benefits that are in the best interests of the students (Christiansen and Lou 2001; Digennaro Reed & Reed, 2009; Mitchell, 2008; Mitchell, 2010). Practitioners also need to be aware of the three corner-stones of culturally-responsive EBP, specifically the concepts of tika (research and literature that is culturally grounded), aroha (respectful consultation and relationships with student and family), and pono (practitioner knowledge and expertise that is ethical) to ensure that EBP is applied effectively and responsively for diverse populations (Bourke et al., 2005; Macfarlane, 2010). RTLB practice requires regular formulation of questions or hypotheses around issues and the principle focus of EBP then provides the system through which to critically analyse evidence for interventions, and to evaluate outcomes of interventions for the purpose of future planning and professional reflection.

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## AUTHOR PROFILE

### Celeste Littek



**Celeste Littek** has a diverse and extensive background in the area of autism, grounded in both personal experience and professional practice. Her teaching experience has included teaching in early childhood, primary, early intervention, special schools, and currently as an RTLB in Ahuriri, Hawke's Bay. She also worked for 10 years as a consultant on ASD developing and delivering training programmes such as TIPS for Autism; a 3 day RTLB intensive training course; EarlyBird;  SPELL; HELP; and other programmes  for professionals and parents while on contract to Autism NZ, the MOH and the MOE. Her research focus over the past fifteen years has been social inclusion of students who have ASD, and involved numerous action research studies, a four-paper Masters thesis, and research mentoring. Celeste's interest in autism over much of her life has led her into exploring the best ways of helping students who have ASD to be included in their local schools and communities. Celeste has learned that we need to create villages to successfully raise and include children who have ASD and that the more we learn about ASD the more we learn about typical relationships.

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