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Research-Informed Teaching of Adults: A Worthy Alternative to Old Habits and Hearsay?

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A Worthy Alternative to Old Habits and Hearsay?

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"Knowing is not enough; we must apply.
Willing is not enough; we must do."
—Goethe

Overview

How and why teachers teach the way they do is central to understanding the impact of education on learners. While many professions have integrated research findings into their practitioners' practice, education's record is less consistent in this respect. This paper outlines the case for teachers to become research-informed in their teaching (RIT). It firstly considers what is involved in being research-informed, what types of research are most relevant, why it warrants consideration as well as issues associated with it. It then reviews RIT in the New Zealand context and particularly in relation to teaching adults. Finally, the paper looks at how an RIT approach might be implemented.

Introduction

I recently proof-read an essay that my daughter had written for her final assessment in a post-graduate nursing qualification. It consisted of writing up an in-depth case study of a long-term care patient for whom she had to write a care plan over an extended period. Nothing exceptional there, except that what interested me was the requirement to support every aspect of her plan with reference to relevant research that justified why she had decided to propose what she had chosen. It was an evidence-based professional plan throughout the document.

This experience prompted me to reflect on how well we, as teachers of adults,[1] could match such an exercise. There is little doubt that there is considerable discussion about 'research' among educators in most sectors including teachers of adults, but it is referred to in a number of different ways. Krokfors et al. (2011, p. 2) quotes Griffiths (2004) who identified four main ways that research relates to teaching:

1. *research-led*, where the curriculum content is based on the research interests of teachers
2. *research-oriented*, where the process of learning content is seen as important as the content itself and hence, an emphasis on learning inquiry skills
3. *research-based*, where the curriculum is based on inquiry-based activities rather than acquisition of content

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[1] This article is written referring predominantly to adult literacy due to the ready availability of relevant literature from this sector and also the author's interests, although it should also have broad applicability to all teachers of adults, irrespective of their context.

4. *research-informed* teaching, which consciously draws on systematic inquiry into the teaching and learning process itself.

It is the last of these four, *research-informed teaching*, using relevant research findings to shape and re-shape our own teaching, that is the focus of this article.

Like all professionals, teachers are constantly making decisions about what they do: how to recruit and retain learners, how to assess them pre-course, what teaching content will achieve the course objectives, how to group learners, what teaching methods to use, how to assess the impact of a course and a myriad of other factors that make up the complexity we know as teaching. As teachers, we make these decisions based on a range of grounds – tradition, hearsay, suggestions or advice from colleagues, observing other teachers, fads, 'common sense', myths, 'gut feeling' and probably most frequently, 'we've always done it like this'.

The first question that arises then is what do we know about how teachers teach and why they do what they do? The most obvious answer to this question is that teachers tell us what they do. "I'm a Freirean teacher who believes in being learner-driven and helping them to become active citizens in their community" or "I'm a hands-on teacher interested in passing on what it takes to be a skilled [trade]" are not uncommon statements that should give some indication of what we could expect to see going on in these teachers' classrooms. The difficulty here is that in most situations we have scant, and certainly not systematic or comprehensive, knowledge about how teachers actually teach. Teaching is a surprisingly private affair, where the main audience of learners tend to only relate what they witness anecdotally and without the benefit of appropriate analytical tools. As Guernsey and Ochshorn (2011, p. 1) observed, "often these activities take place out of sight, witnessed only by principals or directors taking stock of a teacher's skills, sometimes based on no more than a few jots about what they see from the doorway."

The best indications about what actually happens in classrooms come from a small body of teaching observation studies, which show some interesting results in relation to this topic. Firstly, these studies show that there are often discrepancies between teachers' espoused philosophies and their actual practice; for example, progressive teaching principles are (mis-) matched with traditional, teacher-dominated teaching practices. In their observation study of 20 adult literacy classrooms, Beder and Medina found that,

> Although teachers' responses in their interviews suggested they wanted to be learner-centered, our classroom observations quite clearly showed that instruction was highly teacher-directed. If teachers controlled the classroom, and they intended to be learner-centered, how could a teacher-directed system of instruction result? Our answer harks back to the concept of socialization. We concluded that teachers are so intensely socialized into a teacher-centered form of instructing that they teach in teacher-centered ways, despite intentions to be learner-centered (2001, p. 110).

These findings have also been confirmed by two other studies of adult literacy classrooms (Benseman, Lander, & Sutton, 2005; Scogins & Knell, 2001) where interactions were predominantly teacher-initiated, questions and responses were dominated by factual information (i.e. requiring low-level thinking) and teacher-initiated question and answer instructional style was the norm.

So if their teaching philosophies are not overly influential in shaping their teaching behaviour, what does shape it? Ceprano's study (1995) of 16 adult literacy teachers, concluded that by and large, the teachers in their study taught how they themselves were taught as learners, "with the assumption that what worked for them will work for anyone" (p.63). The difficulty here is that teachers have often experienced vastly different learning journeys from the learners they teach. Typically, teachers have succeeded in settings that are very teacher-centred and dominated by lecturing and 'chalk and talk' (Brown, 2004), matching Pratt's (2002) transmission teaching perspective.

A second finding in these studies is that these teaching techniques did not relate very well with current research findings. Brown (2004, p. 1) suggests that teachers' reliance on what they have experienced rather than research findings is due "in large part because many have had little education about and understanding of adult learning principles." For example, an Australian study of 252 adult literacy managers and teachers (McGuirk, 2001) found that few of those surveyed had any familiarity with major thinkers, writers or researchers in the field – "The results are somewhat disturbing as they reveal that many supposedly well-known authors and researchers are unknown or have had little impact on many respondents. Many respondents ticked *Not known* to the entire list" (p. 59). Along similar lines, a US study of 208 adult literacy teachers also found low levels of knowledge of research about the teaching of reading based on the *Knowledge of Teaching Adult Reading Skills* test.

Another source of information about how teachers of adults go about their work with learners comes from the UK Inspectorate, Ofsted, which covers all educational sectors. In their annual reports, Ofsted provides an insightful summary of what its inspectors have seen in the classrooms they cover, especially in relation to successful outcomes for learners (Ofsted, 2011). These reports not only detail what teachers do in their classrooms, but also how successful their teaching methods match assessed learner impacts. These reports detail highly variable practices, often inconsistent with adult teaching principles[2] or relevant research findings.

The other important finding from the observation studies of teachers (Beder, 2001; Beder & Medina, 2001; Benseman, Lander, et al., 2005; Scogins & Knell, 2001) is that while there are specialist aspects of their teaching, a large proportion of teaching time is generic and therefore reasonably common to all teaching contexts. For example, while adult literacy teachers employ specific techniques to teach literacy, numeracy and language skills, observational data show that much of their teaching behaviour can be found in any educational setting – asking questions and responding to them, managing relationships with learners, explaining learning tasks and so forth. This is not to say that these tasks are identical in all teaching contexts or with all groups of learners, as individual circumstances, cultures and individuals do differ considerably,[3] but there is still considerable commonality across contexts also. The importance of this finding lies in the applicability of much teaching research about these 'core' teaching activities across educational sectors, even with the recognition of some differences in specific contexts and particular groups of learners.

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[2] The degree to which 'adult teaching principles' match research findings is a study in its own right and outside the scope of this paper. Similarly, the congruence between various adult education theorists such as Freire and Knowles and research also warrants consideration.
[3] There is considerable literature about what constitutes effective teaching for different cultural groups for example (May, 2009; Pratt, Kelly, & Wong, 1999) although most of it is based on learner preferences rather than learner outcomes.

If we are aiming to improve the quality of teaching and accept that current practice is probably based on questionable or unknown bases, a clear alternative solution lies in the direction of becoming research-informed. Here, however, there are still a number of possible options and related issues to resolve. The key initial question to be addressed with RIT is: which research is to be used in informing and shaping teachers practices in the classroom?

One possibility is to identify 'effective teachers' and study their teaching for indications of what effective teaching involves (see for example, Benseman, 2001; Looney, 2008; Medwell, Wray, Poulson, & Fox, 1999). The challenges of this approach lie in the question of who identifies the effective teachers and the criteria for their selection. Usually the researcher relies on local education officials or other key informants to make the choice; they may be given broad parameters to inform their choices, but nonetheless they may decide on varying criteria. In an OECD study of formative assessment (Looney, 2008) for example, the teachers studied were chosen by local education bureaucrats and prominent education scholars whose choices relied on a combination of professional reputation and learner outcomes. The difficulty in these studies is to achieve consistent and accurate choices of subjects for the research and therefore ultimately has issues around the validity of their findings.

A second approach is to draw on learners' perspectives on what they see as effective teaching/teachers. These studies survey large samples of learners about what they believe helps them learn most effectively. They can identify particular characteristics (such as the ethnicity or gender of the teacher), their teaching behaviours (such as specific teaching methods) or their learning environment (such as various aspects of logistics in educational settings) that learners identify as helping them learn. They can also focus on general groups of learners or specific sub-groups, such as the unemployed (Benseman, 2001), literacy learners (Ward, 2003), refugees (Benseman, 2012a) or different cultural groups (Pratt et al., 1999), which gives these studies a specialist slant to their findings. This approach is also commonly employed in national and institutional 'best teacher' awards.

Learner-driven studies are particularly useful for showing us what learners value and are therefore probably useful for telling us what factors are likely to increase their participation rates and retention for example, but they also have their limitations. The difficulty with this approach is that learner ratings (typified in smiley-face type evaluation sheets) do not necessarily indicate learner impact in its entirety as measured in other outcome indicators (Scriven, 1994). Adults asked to reflect on significant learning in their lives often point to periods, events, teaching methods or teachers that were extremely challenging or even painful (Brookfield, 2000; S. Merriam, 2007; S. Merriam, Mott, & Lee, 1996). Teaching that challenges learners may well make them uncomfortable, even troubled or not even become evident until some period of time has passed. Learners asked to indicate their ratings of challenging teaching may not always be prepared, or able, to recognise these less appealing aspects of what teachers do. The effectiveness of teachers requires much more analysis than surface, Disneyland happiness indicators.

A third alternative is to refer to 'practitioner wisdom' of teachers who are perceived to be effective by their peers. These accounts are often insightful and useful (see for example, Nugent, 2011), but may or may not match the relevant research. These writers often draw

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[4] The terms *research-based practice (RBP)* and *evidence-based practice (EBP)* are also commonly used, but often cover broader areas than teaching; RIT is used here to refer only to teaching practices.

on educational philosophies or other 'wise practitioners', but include few references to specific research studies or even relevant literature reviews.

Research-informed teaching

Another alternative to those discussed above is that of *research-informed teaching* (RIT) or its near-cousins, *research-informed practice* and *research-based practice*. The latter originated in health, where it is now considered the norm throughout the health professions. Research-based practice in medicine has been defined as a decision-making process informed by three distinct sources of influence: the best available research evidence, clinical expertise and client values (Spencer, Detrich, & Slocum, 2012, p. 128) and is applied to all elements of practice in the broadest sense, including all decision-making.

RBP in medicine is substantiated by the clear and consistent research evidence that have shown major improvements in health mortality and morbidity. These improvements have resulted not only from ever-increasingly sophisticated medical procedures, but also from more straightforward changes such as surgeons scrubbing up and public health advances to prevent the spread of major diseases (Bonita, Beaglehole, & Kjellström, 2006).

Classic health research evidence is based on the random assignment of interventions to treatment groups and control groups who are either given placebos or no intervention. Differences between the outcomes for the two groups are calculated and causality of the changes is deduced as a result. While this model is seen as scientifically rigorous, outright conclusions claiming causality are still rarely made, given the difficulty of providing absolute causation evidence. Even links that are now widely accepted such as smoking and cancer are still based on strong, cumulative correlational evidence (Bonita et al., 2006). Issues such as multiple causation and difficulties studying conditions outside laboratories constantly challenge the 'purity' of these studies.

Even within the apparent clinical, 'laboratory-driven' environment of medicine, there have been considerable challenges about sampling issues, control of results by drug company sponsors and the exclusion of non-conforming results (Goldacre, 2012). Research-based practice may have originated in medicine, but it has long since spread to many other professions such as architecture, social work and health-related educational sectors such as special education, as well as the schooling sectors.

Research types and evidence weightings

Whatever its professional context, there is a consistent hierarchy of research types when considering the evidence to inform decision-making and professional practices. The strength or weight of the evidence is rated according to the likelihood that the measured outcomes are caused, or at least heavily influenced by the selected intervention. Judging the strength of research evidence is invariably weighted towards quantitative research over qualitative and then within quantitative, there is a further hierarchy. All things being equal (such as the rigour of the research, sample sizes), the higher the method is on the hierarchy, the greater the strength of the evidence for consideration. Multiple studies are stronger than single studies. Comings (2003, p. 5) lists the methods (including quantitative and qualitative) hierarchy as:

- Experimental, employing two identical groups of participants that are randomly assigned to treatment and control groups.
- Quasi-experimental, employing treatment and comparison groups that are not randomly assigned but appear identical, though they may have unseen differences.

Statistical controls allow researchers to compensate for the differences between the treatment and comparison groups.

- Correlational with statistical controls employs treatment and comparison groups that are not identical, but researchers use statistical controls to compensate for differences that may be important.
- Correlational without statistical controls employs treatment and comparison groups that are different, but researchers assume that the differences may not be important, since the sample is usually large.
- Case study may employ only a treatment group and assumes that differences among participants are not important or are obvious, since the sample is usually small.

The key principles underpinning the hierarchy are the generalisability (hence the high rating of quantitative methods) and quality of the research. Can the research results be generalised to broader populations than the original study subjects (hence randomly chosen, large-scale studies are more valid than small case studies) and do the studies meet quality standards for research methodology that are appropriate to the methods employed?

Generalisability depends not only on sample sizes, but also the number of studies available to draw on. Stanovich and Stanovich (2003, p. 18) report a statement from a task force of the American Psychological Association that investigators (of RBP) should not "interpret a single study's results as having importance independent of the effects reported elsewhere in the relevant literature" and they go on to conclude (p.19) "Science progresses by convergence upon conclusions. The outcomes of one study can only be interpreted in the context of the present state of the convergence on the particular issue in question."

In areas like the teaching of adults however, the database of original research studies is very limited in comparison with health or even the schooling sector which can access large numbers of studies with significant sample sizes. In these areas, the large databases also enable meta-analyses that draw on large research pools. The paucity of research in other sectors inevitably means that inclusion criteria for RIT need to be relaxed somewhat to ensure reasonable numbers of studies. In the absence of research volume, or even with questionable quality research, it is argued that that even "imperfect evidence, used wisely, is better than no evidence at all" (Spencer et al., 2012, p. 136).

The role of qualitative research in RIT

This article is not the place to argue in detail about the value or otherwise of different research paradigms, but it is important nonetheless to recognise the broad nature of these paradigms and their various off-shoots, their strengths and weaknesses and most importantly, what they can contribute to the argument for developing an evidence-based approach to teaching adults.

While few would dispute the value of large-scale quality quantitative studies for deriving points of good practice (except when there is an over-reliance on these studies), the role of qualitative research is more contentious in this debate. Historically rated by many quantitative researchers as inferior and therefore discounted in the 'paradigm wars' of the 1980s, a number of arguments can be made for the inclusion of qualitative research in any body of evidence about effective teaching.

Firstly, qualitative research often plays an important role in opening up our understanding of educational behaviour and issues that are then picked up as the basis for important large-

scale quantitative studies. Piaget's work on human development for example was first explored with his own children and later informed multiple, large-scale studies.

Secondly, qualitative research has an important role in complementing quantitative studies to 'fill in the gaps' and explain issues in greater depth. As Maxwell (2012, pp. 658-659) says,

> The idea that randomized experiments or structural equation methods can provide valid general conclusions about the effect of an intervention, in the absence of any understanding of the actual processes that were operating, the specific contexts in which these processes were situated, or the meaning that the intervention and contexts had for participants is an illusion. We need qualitative methods and approaches in order to understand 'what works' and why.

He goes on to maintain that a 'realist', 'generative', 'process' approach in qualitative research using *thick descriptions*[5] of subjects to explain the complexity of life can provide causal explanations as "fundamentally a matter of identifying the actual processes that resulted in a specific outcome in a particular context" (Maxwell, 2012, p. 656). Fundamentally, he and other qualitative researchers (Donmoyer, 2012a, 2012b; Erickson, 2012) argue that causes of change can also be identified outside quantitative measurement and they therefore have a distinctive contribution to make and "are good at it."

Rather than argue for the superiority of one paradigm over the other, these researchers posit the value of drawing on both traditions and therefore "respect the value of both approaches and support by a dialog between the two" (Maxwell, 2012, p. 658). The importance here is recognising the distinctiveness and nature of the contribution that each paradigm offers. Even many stalwarts of scientific empirical studies accept the value of both approaches, "the domain of science includes both some quantitative and qualitative methodologies" and therefore "the key is to use each where it is most effective" (Stanovich & Stanovich, 2003, p. 25 quoting Mayer (2000)).

Defining RIT

If quantitative and qualitative research are both seen as having distinctive, but valid and valuable contributions to understanding educational phenomena and behaviours, then it becomes reasonably straightforward to define what is meant by RIT. Spencer, Detrich and Slocum (2012, p. 134) argue that RIT should be based on the *best available evidence*, "irrespective of its paradigm and chosen according to what is (a) most relevant to the decision and (b) has the highest degree of certainty."

In some instances, the best available evidence will mean randomised clinical trials, as well as quasi-experimental designs with very high methodological quality and large sample sizes. At other times, such evidence will not be available and alternative types of research will be referenced, or even a combination of quantitative and qualitative studies. In all cases, the relevance to the review topic and degree of match with the educational context (e.g. ages of learners, cultural factors, organisational setting) will also be factors in deciding on inclusion.

In sum, the quality of RIT evidence is ensured by accessing peer-reviewed literature (irrespective of its ontology), duplication and consensus of results (the degree to which there is agreement in the research about the findings) and "ultimately a preponderance of quality evidence gathered in rigorous research studies" (Stanovich & Stanovich, 2003, p. 6).

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[5] Reporting data in sufficient detail that enables conclusions about the transferability of the findings to other times, settings, situations, and people.

Before considering RIT specifically in relation to teaching adults, it is worth noting its specific value for a sector or profession. While it is reasonably self-evident that being research-informed warrants greater attention than justifications based on hearsay, tradition, reputation, the latest fad, intuition or 'anything goes', there are strong arguments to justify RIT.

Firstly, a consumer protection argument. "A gap between research and practice means that consumers are not receiving services that are based on the best research evidence that exists and therefore may suffer from poorer outcomes and unnecessary costs associated with ineffective treatments"[6] (Spencer et al., 2012, p. 128). In other words, promoting research-informed practice has greater potential to improve learner outcomes and thereby provide optimum services for learners who make considerable financial investments in their education.

Secondly, RIT always has the potential for challenging and exploding long-held beliefs about what constitutes effective practice. While we may now laugh at traditional 'medical remedies' such as applying butter to burns (as was common in my childhood), there are comparable examples in our contemporary educational world. RIT can certainly play an important part in challenging not only traditional orthodoxies, but also the various educational panaceas that arise periodically, promising to solve hard-core educational issues in one fell swoop.

One example of a current educational panacea in widespread usage is that of learning styles. It is not uncommon to hear learning styles as the great solution for increasing learning across the board, but particularly in relation to social groups who are marginalised in traditional education and have high failure rates when they do become involved. Learning style advocates argue that understanding these learners' innate', natural' ways of learning is the key to ensure that they engage successfully once the teacher matches their teaching styles to their learners' learning styles. Typically, it is argued that traditional teaching is dominated by cerebral, abstract, overly-analytical models that characteristically rely on teacher-talk and learners writing. In contrast, those who fail in this regime tend to be kinaesthetic, common-sense learners who prefer (and are innately suited) to experience educational input via senses such as touch, with lots of hands-on problem-solving and manipulation of concrete material in order to learn successfully. The proposed solution for these advocates is to provide educational experiences that reflect the learners' learning styles that are assessed by test such as the *Kolb Learning Style Inventory* or the *Myers-Briggs Type Indicator*.

The justification for this strategy is usually expressed as 'common-sense' or a vague "research tells us that people learn in different ways and they prefer different learning styles" (Apps, 1991, p. 40). However when learning styles research is examined more closely, a quite different picture emerges. In a schooling context, the New Zealand *Best Evidence Synthesis* (BES) programme has reviewed a range of studies showing that utilising a learning styles approach actually has negative effects (Alton-Lee, 2003), especially for Maori and Pasifika learners – the very groups it is claimed, who will benefit most from adopting a learning styles approach. Alton-Lee dismisses such claims as 'snake-oil' solutions, where "well-intentioned, caring and experienced teachers can unknowingly teach in ways that have impacts counter to their own goals" (Alton-Lee, 2007, p. 72).

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[6] Or educational interventions.

Specifically in relation to teaching adults, Coffield et al. (2004) spent 16 months reviewing the plethora of literature on learning styles in relation to adults. They concluded (p. 53) that "research into learning styles can, in the main, be characterised as small-scale, non-cumulative, uncritical and inward-looking" despite its popularity across many disciplines outside education. The authors detail the difficulties of an idea where there is a "proliferation of concepts, instruments and pedagogical strategies, together with a bedlam of contradictory claims" (p. 54). They see little in common between the different models advocated by their authors (and commercial interests that market the related tools). They also challenge its value (even with its more coherent and valid models) against other educational strategies such as metacognition and formative assessment that have been clearly shown to have much higher impact on learner outcomes (see also, Hattie, 2009).

One of the key dangers Coffield et al. see with learning styles is that learners begin to label themselves. They recount (p. 55) a student presenting at a conference: "I learned that I was a low auditory, kinaesthetic learner. So there's no point in me [sic] reading a book or listening to anyone for anyone for more than a few minutes." They argue that this learning analysis had become a prescriptive strait-jacket for this learner's future educational undertakings. Finally, the authors argue that there is little agreement among its advocates about what practitioners should actually do in their teaching in relation to learning styles: should they only teach to learners' preferred learning styles or should they increase their repertoire of styles for example?

A similar situation can also be found in relation to dyslexia, where a concept has been interpreted in multiple ways, often with little in common, without much original research informing it and a comforting label for many learners without offering them any strategies of value based on rigorous research (see for example, Rice & Brooks, 2004).

Critique of RIT

RIT is not without its critics. These criticisms usually centre on RIT being overly dominated by what is seen as excessive positivism, where the only acceptable evidence comes from large-scale experimental studies rather than the more moderate stance discussed earlier of accepting studies from both research traditions.

> In the [RIT] conceptual landscape we find such concepts as relevance, effectiveness, technicality, rationality, instrumentality, causality, randomized controlled trials, and positivism. Against this cluster of concepts, critics pit another cluster of concepts consisting of practical judgment, professional experience, situatedness, appropriateness, ethical considerations, phronesis, and democracy — not infrequently with the tacit assumption that the two clusters are incompatible and that the latter is in danger of being completely replaced by the former (Kvernbekk, 2011, p. 516)

This dominance of quantitative evidence was particularly associated with successive Republican administrations in the US that saw liberal education under fire because its defenders were not able to point to 'gold standard' (i.e. randomised, large-scale quantitative) research to prove its value. Maxwell (2012, p. 667) reports that this obsessive emphasis on quantification "has now largely disappeared since the Clinton administration, although there is still a strong preference for quantitative evidence across the political spectrum in government as well as philanthropic foundations."

A second argument against RIT is based on the assertion that teaching is as much an art as it is a science. As an art, these critics argue that teaching is a creative exercise open to an infinite number of possibilities and cannot be dissected and analysed like other enterprises or objects. Teaching's effectiveness therefore relies on a certain 'je ne sais quoi' or X Factor that no research is eve likely to isolate, let along quantify (Crosby & Benseman, 2003). Teaching is seen as a multi-dimensional, complex activity where isolating specific components paints a simplistic, uni-dimensional picture of how teachers work. In response, RIT advocates argue that teaching may well incorporate artistic elements, but this does not preclude scientific considerations as well, just as medicine acknowledges these dimensions in its practices. Stanovich and Stanovich (2003, p. 3) argue that positing teaching as an art/science dichotomy is misleading and that it is more useful to see teaching as a craft, "as it is compatible with scientific knowledge and can be more easily integrated with it."

A third criticism is concerned with the issues of what constitutes 'research-informed', who decides what the evidence is and the complexity of research findings and dealing with inherent contradictions in findings (Davies, 2003; Kvernbekk, 2011). As Kvernbekk points out (2011, p. 515), the aura of scientific support can be misleading or unfounded because

> … in educational research, conclusions tend to be contradicted in other studies; that is, in a good many cases there is both positive and negative evidence. The weighing of evidence is itself a complex process and decision-makers (and others) may be very selective in their appeal to evidence in order to support or justify their views — proponents of different sides in virtually any debate can thus claim that the 'evidence' supports their view. Negative evidence runs the risk of simply being ignored.

Fourthly, some qualitative researchers are sceptical about the universality of RIT findings because "local circumstances differ – we don't teach people in general, we teach specific people in particular circumstances. Thus, educational practices that are situationally appropriated need to be built locally, chosen and tried out in phonetically informed local social action" (Erickson, 2012, p. 688).

Finally, it should be pointed out that using a research-informed approach for teaching or broader aspects of educational practice is somewhat different to using it in matters of policy (OECD, 2007) and warrant separate consideration. Zepke (2008) for example has written from a 'sceptical perspective' challenging the validity of research as the prime basis for developing policy.[7] He does not deny the centrality of research evidence in this process, but questions the politics behind such an approach and the degree to which government agencies adhere to their claim to be "informed, and respond to information about what works" (Ministry of Education Statement of Intent quoted, p. 26).

While these criticisms need to be heeded and considered when developing RIT, they also need to be weighed against the status quo of alternatives: "whim, prejudice or embedded custom" (Kvernbekk, 2011, p. 529), teacher opinions, or even the better alternatives of learner-informed studies and practitioner wisdom studies. Secondly, many of the criticisms come out of concerns about an RIT approach that uses a narrow selection of 'pure' quantitative research that skews the evidence base and ignores the alternative insights that other forms of research can offer. The simple solution here is therefore to broaden the range of research types, while still respecting their various strengths and weaknesses and

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[7] Zepke himself has written several RIT literature reviews on aspects of tertiary teaching (Zepke & Leach, 2010; Zepke et al., 2005).

still maintaining appropriate standards of quality in the selection process. As Kvernbekk (2011, p. 516) says, "there is nothing inherently positivist in the words [RIT]."

Criteria for inclusion in RIT reviews

In many contexts, the consensus that appears to have arisen therefore from these debates is that RIT should be based on a 'preponderance of the best available' evidence (Donmoyer, 2012b, p. 670). For example, The *No Child Left Behind (NCLB) Act* of 2001 in the US encourages and, in some cases requires, the use of instruction based on scientific research that meets these criteria:

- employ systematic, empirical methods that draw on observation or experiment
- involve rigorous data analyses that are adequate to test the stated hypotheses and justify the general conclusions
- rely on measurements or observational methods that provide valid data across evaluators and observers, and across multiple measurements and observations
- be accepted by a peer-reviewed journal or approved by a panel of independent experts through a comparatively rigorous, objective, and scientific review. (National Institute for Literacy, 2010).

So here the emphasis is certainly on the quality (and extent) of the research rather than its ontological origins, although the third criterion suggests a preference for quantitative studies.

Some interpretations of RIT in education have also gone beyond these criteria to include 'practitioner wisdom' studies to allow for the identification and incorporation of local circumstances into consideration. In the US, Smith, Harris and Reder (2005) report that the U.S. Department of Education's Institute of Education Sciences defines evidence-based education as "the integration of professional wisdom with the best available empirical evidence in making decisions about how to deliver instruction" where professional wisdom is defined as:

- the judgment that individuals acquire through experience
- consensus views of effective strategies and techniques to use in instruction.

Practitioner wisdom also comes into greater consideration in sectors where there is a paucity of strong research studies - "When evidence is incomplete and less than definitive, the educator must exercise greater professional judgment in selecting treatments.[8] Recognizing the uncertainties involved in these decisions, evidence-based educators place greater reliance on progress monitoring to evaluate the effectiveness of their decisions" (Spencer et al., 2012, p. 136).

National RIT literature reviews

An RIT approach can be undertaken at a number of levels, across whole education systems through to individual teachers. For example, the *Best Evidence Synthesis* (BES) operates nationally to influence the New Zealand schooling system. BES is seen internationally as the most comprehensive approach to research evidence because of its "willingness to consider all forms of research evidence regardless of methodological paradigms and ideological rectitude, and its concern in finding contextually effective, appropriate and locally powerful

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[8] i.e. educational interventions.

examples of what works" (Luke & Hogan, 2006, p. 170). BES reviews to date include for example Māori educational leadership and learning, Māori-medium education, evidence-based strategies for secondary mathematics teaching, student-centred leadership, realising the potential of professional learning and collaborative inquiry for improving teaching and learning.

The BES project leader explains that they use the metaphor of a jigsaw puzzle, assembling pieces of research evidence from across a range of studies and using effect sizes where possible to assess the relative magnitude of different approaches (Alton-Lee, 2004). Zepke takes this statement to mean that priority is given to quantitative studies in weighing the research evidence (Zepke, 2008, p. 35)

RIT and teaching adults

Even in a small country like New Zealand, the BES is able to draw on a reasonable body of research to carry out these reviews, let alone the substantial number of studies available internationally and in large-scale meta-analyses (Hattie, 2009) that can include enormous numbers of subjects.

For those involved in the teaching of adults (let alone within its various sub-specialties) however there is nowhere the same level of research riches to draw on. The sector internationally has access to a relatively small number of studies carried out within the sector along with significant shortcomings in the research quality. Within New Zealand, the situation is even more limited. Fortunately, while the situation historically had been little better in the adult literacy sector (Beder, 1999; Benseman, 2003; Comings, 2003; Comings & Soricone, 2007), there have been significant developments over the past decade that have produced some notable achievements in relation to RIT. Following the release of multiple national incidence studies through the OECD (OECD, 1995, 1997, 2000), there has been not only a flurry of policy activity in this sector, but also in research related to the sector in most Western countries (Benseman, 2008; Comings & Soricone, 2007; Hamilton & Hillier, 2006). In particular, the development of the *National Research and Development Centre (NRDC)* in the UK and the *National Centre for the Study of Adult Literacy and Learning (NCSALL)* in the US meant the initiation of multiple, high-quality research programmes in these countries, much of which has clear relevance to other contexts. In the subsequent cold winds of economic and political change, the NRDC has since been reduced in scale and NCSALL has closed its doors, although their research is still readily available.

Along with these centres' research work around specific topics, there have been several large-scale research reviews of core literacy teaching issues in the US (Kruidenier, 2002) and the UK (Brooks et al., 2001) that have drawn on both adult-specific studies (a small number of experimental as well as non-experimental) and smaller numbers of relevant child studies. Despite their comprehensive coverage, the US review was still only able to find 100 studies that matched the National Reading Panel's criteria, with 40 strong (two experimental studies) findings and 20 with weaker findings; the UK one was somewhat broader in its scope, but also found scant pickings. A similar review in New Zealand focused on teaching and learning, although it also included overseas studies (Benseman, Sutton, & Lander, 2005).

Another type of publication also emerged out of this era. These publications endeavoured to translate relevant findings from these studies into practitioner-friendly guidelines (McShane, 2005). Of particular note are the short practitioner guidelines published by the NRDC and NIACE (Appleby, 2008; Appleby & Barton, 2008; Baynham et al., 2007; Burton, 2007; Burton, Davey, Lewis, Ritchie, & Brooks, 2008; Casey, Derrick, Duncan, & Mallows, 2007; Coben et

al., 2007; Grief, 2007; Grief, Meyer, & Burgess, 2007; McNeill, 2008; Mellar et al., 2007; Nance, Kambouri, & Mellar, 2007).[9] Along with these publications, the NRDC and NCSALL also had considerable professional development projects to inform and support practitioners interested in improving their teaching based on these findings (Garner, Bingman, Comings, Rowe, & Smith, 2001; Morton, McGuire, & Baynham, 2006).

In terms of research-informed guidelines for more generic adult teaching, there has also been a steadily increasing number of publications about practice implications for teachers of adults in the more formal parts of post-school provision (see for example, Ambrose, Bridges, di Pietro, Lovett, & Norman, 2010) as well as the schooling sector (Hattie, 2012; Petty, 2009). While these resources are not always focused on adult teaching per se, they still warrant consideration for teachers of adults in any sector interested in RIT for adults.

Implementing RIT

Having accepted the value of RIT and the criteria for selecting the evidence base for its content, there is still the challenge of implementing an RIT system, whether it is at the national system or at individual teacher level. Are teachers prepared to change how they teach if they are shown credible, substantiated alternatives? How can teachers realistically become research-informed practitioners? How can they be supported towards achieving this goal?

A central concern to address here is the long-standing gap between practitioners and researchers - "Education has long struggled with the gap between the methods that are best supported by systematic research and those that are most widely used" (Spencer, Detrich, & Slocum, 2012, p. 127). Researchers argue that practitioners aren't aware of research findings or don't understand them, while practitioners retort that researchers don't understand their everyday realities or that their findings are not readily available and when they are, are cloaked in mystique and obtuseness.

Furthermore, many teachers readily admit they don't know much about research literature, let alone its implications for practice (Bell, Ziegler, & McCallum, 2004; McGuirk, 2001). They report being overwhelmed by the immensity of grappling with research and find it difficult to make a start on this journey, even if they want to. In a study of teachers' perspectives about research, Zeuli (1991) found that they generally have one of three different perspectives:

1. Research is not useful. Researchers don't understand my teaching context, and the only way to improve my teaching is through my own experience with students.
2. Research can be useful, if it is presented in the form of specific and practical strategies, techniques, and approaches I can readily use in the classroom.
3. Research is useful, but I don't need it to give me practical strategies. I want it to challenge my assumptions and help me build my theories about teaching.

Zeuli found that the level of formal education that the teacher had completed was not related to the teacher's having a particular perspective, but those who had participated in some type of research themselves were more likely to view research as useful (Smith, Harris, & Reder, 2005, pp. 2). At a national level, legislation can also influence teachers' uptake of research. In the US,

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[9] See http://www.nrdc.org.uk/content.asp?CategoryID=502

The passage of *No Child Left Behind* (2001) was a true watershed for efforts to increase the role of research evidence in education. For the first time, the use of scientific research for making educational decisions was prominently featured in national education legislation… The research-to-practice gap was transformed from a concern of a relatively small group of educational researchers and reformers to a national policy issue resulting in greater political and social traction than ever before (Spencer et al., 2012, p. 128).

What needs to happen?

Helping teachers of adults become research-informed is unlikely to happen overnight given their current starting points and the level of other demands made on them administratively and professionally. So how could RIT be achieved within these constraints?

Realistically, few but a zealous minority will ever endeavour to base all their teaching on research findings. The solution here is for teachers to focus selectively on some key aspects of their teaching (e.g. teaching writing skills, developing speaking in English) and core teaching skills that can have a significant impact on their learners. A good example of the latter is formative assessment. There is strong body of research evidence (Derrick & Ecclestone, 2008; Hattie, 2009; Wiliam, 2011) from all education sectors that improving teachers' formative assessment skills is one of the most effective strategies to increase impact on learners. More recently, there have been specific studies in adult literacy (Looney, 2008) and there is extensive research and professional development literature from Black and Wiliam at the Institute of Education on how to change teachers' use of this form of assessment in different subject areas.[10] If teachers are able to focus on several key aspects of their teaching, they are more likely to gradually implement new strategies on a realistic basis and eventually increase their repertoire of RIT in the medium term.

A further way to keep RBT developments at a realistic level is to incorporate literature reviews into planning procedures for new developments. For example, if a teacher or department is planning to move their teaching into a more Web-based environment, a standard part of the planning process could include someone undertaking a research review of related literature to inform these developments. In this way, RIT becomes integral to the planning of new directions. These reviews can also draw on some of the literature-based publications increasingly available (see for example, Buskist & Groccia, 2011; Ross-Gordon, 2002).

Secondly, busy teachers are unlikely to know the literature in sufficient depth, be confident in critically reviewing studies or have the time to undertake literature searches themselves. The solution here lies in accessing the excellent research-based literature referred to earlier in this article, encouraging researchers to work more closely with practitioners to identify implications for practice and for clearinghouses to sponsor and promote research-informed material (Benseman, 2012b). In New Zealand, Ako Aotearoa actively plays this role.

Thirdly, the challenge of helping teachers embed RIT into their daily work warrants further attention. Knowing how to ensure this transfer of learning requires some knowledge of how this process occurs. In a review of the literature on how teachers use research, Garner, Bingman, Comings, Rowe & Smith (2001) found that teachers do not approach research in a linear way; rather, they "scan the environment" (p. 8) for new ideas from the research and

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[10] See also, http://assessment.tki.org.nz/Assessment-in-the-classroom for New Zealand resources.

are more apt to apply its findings when they have a chance to discuss those findings and their implications with colleagues. Teachers also are more likely to use research to guide their instruction when they have opportunities for "sustained interactivity" with researchers – i.e., when they work closely with researchers and are treated as partners in, and not as 'targets' of research (p. 8). Finally, teachers seek truth and utility in the research -- "research findings that fit with their experience and, better still, are vouched for by trusted colleagues" and "can help them improve their current practice" (p. 9). Other research from NCSALL confirms the importance of using study circles and practitioner research training as part of professional development to help teachers "access, understand, judge, and use research" (Smith et al., 2005, p. 3).

There is also a substantial body of writing for example about introducing formative assessment strategies to teachers as part of professional development and maintaining its development through professional communities of practice (Absolum, 2006; Black, Harrison, Lee, Marshall, & Wiliam, 2003; Wiliam, 2011; Wiliam & Thompson, 2007). As members of a peer group, teachers selectively and incrementally introduce appropriate formative assessment techniques, mutually reviewing their implementation and building up common repertoires of successful strategies.

Conclusion

> Early in the 17th century, two astronomers competed to describe the nature of our solar system. Galileo built a telescope and found new planets and moons. Francesco Sizi ridiculed Galileo's findings. There must be only seven planets, Sizi said. After all, there are seven windows in the head—two nostrils, two ears, two eyes, and a mouth. There are seven known metals. There are seven days in a week, and they are already named after the seven known planets. If we increase the number of planets, he said, the whole system falls apart. Finally, Sizi claimed, these so-called satellites being discovered by Galileo were invisible to the eye. He concluded they must have no influence on the Earth and, therefore, do not exist (National Institute for Literacy, 2010, p. 2).

It is easy to ridicule Sizi's position with the benefit of hindsight, but this account is useful in reminding us that what is self-evident today is tomorrow's fallacy or tale of ridicule. Notwithstanding major paradigm shifts, research-informed practices have a far greater chance of standing the test of time and leading to improvements in outcomes and ultimately better professional performances.

Teaching is a complex activity, involving the interplay of multiple factors in multifarious contexts. It is also involves creativity and even a certain amount of X factor that can never be quite isolated or nailed down to an analytical floor. But it also involves multiple components about which we have an increasing body of good quality research. Although the research evidence is rarely clear-cut or irrefutable, it does provide a sturdier platform to base our teaching than the alternatives of old habits and hearsay. The challenges lie in assembling the 'preponderance of research evidence' to inform teaching practices, to present it in forms that practitioners can understand and utilise and then to develop strategies that help teachers integrate it into their daily work with learners. Rising to these challenges is neither straightforward nor easy, but achieving it will almost certainly provide more satisfying professional performance for teachers as well as better outcomes for learners.

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