Bridging the Research-to-Practice Gap: A Review of the Literature Focusing on Inclusive Education

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Despite advances in our knowledge of evidence-based inclusive educational practice, much of this knowledge does not reach routine classroom practice. There remains a significant gap between our accumulated knowledge about what can work in classrooms and the extent to which evidence-based practice is used in sustainable ways. This inability to bridge the research-to-practice gap has an adverse effect on the progress of inclusion in schools and the ability of individual teachers to respond to the needs of all students. This review examines those factors that both enable and interfere with the successful translation of research to practice in education settings.

Keywords: research, teacher education, professional development, inclusion

Advances in research on educating students with diverse abilities have contributed to a strong knowledge base that can underpin efforts to make classrooms more inclusive (Cunningham & Cunningham, 1992; Delquadri, Greenwood, Whorton, Carta, & Hall, 1986; Department of Education, Training and Youth Affairs [DETYA], 2000; L.S. Fuchs & D. Fuchs, 1998; Gersten, Vaughn, Deshler, & Schiller, 1997; Klingner, Vaughn, Schumm, Cohen, & Forgan, 1998; Lloyd, Weintraub, & Safer, 1997; Mastropieri & Scruggs, 1998; Mathes & Fuchs, 1994; Vaughn, Klingner, & Hughes, 2000). When applied in school settings, this knowledge can make the school and classroom environments, and curriculum and materials more responsive to students' backgrounds and learning needs, potentially reducing segregation based on performance levels or perceived abilities (Cunningham & Cunningham, 1992; Mastropieri & Scruggs, 1998; Mathes & Fuchs, 1994; Vaughn, Hughes, Schumm, & Klingner, 1998; Vaughn et al., 2000).

Despite research advances there remains a significant gap between the accumulated knowledge of effective educational practices and the extent to which they are utilised (Billups, 1997; Carnine, 1997; Foegen, Espin, Allinder, & Markell, 2001; Forness, 2001; Forness, Kavale, Blum, & Lloyd, 1997). Even when instructional practices designed for heterogeneous classrooms are implemented with positive outcomes they are frequently not sustained (Klingner, Arguelles, Hughes, & Vaughn, 2001). Few studies have generated objective evidence regarding specific factors

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affecting these practices' implementation and sustainability in schools (Billups, 1997; Brouwer & Korthagen, 2005; Darling-Hammond & Baratz-Snowden, 2007; Darling-Hammond & Berry, 2006; Francis, 2002; L.S. Fuchs & D. Fuchs, 1998; Gersten, Chard, & Baker, 2000).

The inability to 'bridge the gap' between research and practice is well documented (Abbott, Walton, Tapia, & Greenwood, 1999; Carnine, 1997; DETYA, 2000; Gersten et al., 1997; Malouf & Schiller, 1995; Richardson, 1996; Stanovich & Stanovich, 1997). It has an adverse effect on the progress of inclusion in schools and the ability of individual teachers to respond to the needs of all students.

This review seeks to respond to the following research question: What factors have been identified in the literature that contribute to sustaining research-based projects that respond to diverse student needs? It examines factors that were identified in education literature that influence research to practice (RTP) and make educational settings more responsive to the needs of all students. Within this review, inclusion is described and defined as an approach focused on responding to the diversity of student needs in ways that are beneficial to students with (O'Neil, 1994; Salend & Duhaney, 1999; Smith, Polloway, Patton, & Dowdy, 1998) and without disabilities (Foreman, 2005; Sailor, 1991). As such, inclusive education represents a whole-school concern and works to align special education with general education in a manner that most effectively and efficiently imparts quality education to all students (Lipsky & Gartner, 1997).

Method

Relevant studies from 1967 to the present were located through an EBSCOhost® database search. Studies were included if they appeared in a published peer-reviewed journal and identified specific RTP, professional development (PD) or teacher education (TE) factors that could be beneficial in translating the work of researchers to address the needs of students in school settings. Descriptors were introduced in the following sequence: *research into practice* (1158 references), *inclusive education* (limited results), *education* (440 references), *research to practice* and *education* (80 results). Of the 80 articles located using the terms *research to practice* and *education*, 29 were selected for this review as they specifically discussed the use of research-based programs in primary, secondary and university settings.

A second search was conducted regarding PD, as RTP is a common focus of PD efforts although it is not treated in depth in many discussions (Ax, Ponte, & Brouwer, 2008; Klingner, Vaughn, Arguelles, Hughes, & Leftwich, 2004; Ysseldyke, 1989). The identification of relevant literature commenced with an all-field search using *research to practice*, *education* and *professional development* as descriptors. Of the 296 citations, many made only brief mention of RTP issues. An abstract search using the same descriptors identified eight articles that specifically presented detailed discussions of PD as a comprehensive or longitudinal approach to address the RTP gap in education. Articles that made reference to PD in fields other than education and did not refer to the RTP gap were not selected for this review.

A third search was conducted in the area of teacher education (TE). TE represented an avenue that links the efforts of researchers and educators who work in inclusive education environments to enhance RTP endeavours (Everington & Hamill, 1996; Golder, Norwich, & Bayliss, 2005; Villa, Thousand, & Chapple, 1996). Like PD, TE was expected to have a RTP agenda; however, the TE literature indicated that while RTP

remains a concern, it was often discussed in depth (Carnine, 1997; Darling-Hammond, 2006a; D. Fuchs & L.S. Fuchs, 1998; Gravani, 2008).

An all-field search using *research into practice* and *teacher education* as descriptors located 440 references. A review of the abstracts identified that many references made only limited mention of RTP issues. Subsequently, this search was refined through an abstract search using the same descriptors, locating 90 references. These articles were scrutinised based on the criteria that they must have made reference to TE and identified RTP factors. Table 1 presents an overview of the research included for review.

Each of the studies was read and categorised according to the project details, participants and the RTP factor identified. Commentary claims identified through this investigation are evident within the narrative and consistencies in RTP assertions are presented in Table 1.

Results

The literature search identified 22 studies that identified RTP factors. Of these studies 13 were conducted in the United States (US), seven in Australia and one in both Greece and the United Kingdom. The Australian DETYA (2000) research evaluation program accounted for five studies, which are presented in Table 1. Half of the studies reviewed were undertaken in schools, with the results described and presented in three sections: (1) RTP factors and themes identified through research-to-practice commentary claims and related research into practice examples, (2) RTP factors and themes identified through the PD literature and (3) RTP factors and themes identified through the TE literature.

Research into Practice

Commentary claims or position papers featured predominantly in the RTP search. Of the 29 RTP references, 19 represented commentary claims or position papers while 10 presented RTP intervention research. Claims about RTP were generally based on indirect evidence. The primary focus of the intervention research was in the area of reading. There were no empirical research examples with a longitudinal, intervention-oriented focus on research to practice.

Research-to-Practice Commentary Claims and Assertions

Carnine (1997) claimed the 'research-to-practice' gap exists because research has not been designed to make a practical difference. He identified three factors or characteristics that influence RTP efforts. These were usability, accessibility and trustworthiness of research. Usability was described as the practicality of use. Accessibility referred to the extent to which programs were available to those who want to use them. Trustworthiness reflected the confidence and belief practitioners had in research findings. Carnine's themes of usability and accessibility built on early claims made by Guba (1967), Eash (1968) and Coleman (1979) who identified concerns related to transferring research to practice. Concerns that influenced the aforementioned factors included: inadequate links between universities and schools, inadequate training, and lack of use by practitioners. Toch (1982) concluded that the failure of researchers and educators to cooperate contributed to their lack of communication, which impacted negatively on the research in schools. This lack of cooperation and communication was later presented as essential to the notion of trustworthiness by Carnine (1997).

TABLE 1

RTP Literature Included in This Review

Study	Category	Participants	Focus area	Major conclusions/RTP factor
Foegen, Espin, Allinder, & Markell (2001)	RTP	45 preservice teachers	Preservice teachers' beliefs about CBM	Researchers disseminate their findings effectively and practitioners review research
Foorman & Moats (2004)	RTP	1400 (K–4) Students from 17 low-performing schools in Houston and Columbia	Early reading instruction and RTP	Trustworthiness and speed of TE and PD were obstacles to RTP
D. Fuchs & L. Fuchs (1998)	RTP	7 teachers from Nashville schools	Maths Peer Assisted Learning Strategies (PALS)	Partnership survival requires continuous work
Fuchs & Fuchs (2001)	RTP	Researchers and educators working with 25 students	Maths Peer Assisted Learning Strategies (PALS)	Inadequate teacher demand for research
Vaughn, Klingner, & Bryant (2001)	RTP	Summary of Collaborative Strategic Reading (CSR) studies	Describes four CSR strategies and the role of peer-mediated instruction	Supportive partnerships promote trust in research
DETYA (2000)	RTP		Comprises the following five studies:	
Research and its Impact on Australian Schools	RTP	Postgraduate students, practitioners, principals, professional associations, policymakers	Mapped Australian educational research using Australian Education Index (AEI)	TE requires engagement of researchers and educators
Backtracking Practices and Policies to Research	RTP	Researchers and educators	Appraised the influence of research on educators	Marketing research knowledge
Teacher Knowledge in Action	RTP	Teachers	Analysed teachers' explanations of the decisions they made during a videoed lesson	Shift in what is valued in university work
Education Research in Australia	RTP	Institute of Scientific Information (ISI) database	Assesses the international visibility of Australian educational research	Good attitudes and exposure to practical research
The Selby Smith report (1999)	RTP	Review of literature and multiple data sources	Adds the policy formulation perspective in relation to vocational education and training.	Modest influence of research on policymakers

TABLE 1 (CONTINUED)
RTP Literature Included in This Review

Study	Category	Participants	Focus area	Major conclusions/RTP factor
Gersten, Morvant, & Brengelman (1995)	PD	12 classroom teachers from a large inner-city elementary school	Coaching in reading for students with learning disabilities	Collaborative processes and decision-making are essential
Little & Houston (2003)	PD	Conceptual PD framework by Florida's DET and the University of Central Florida	4-step model promoting scientifically based practices	Relevance to classrooms, support, collaboration of researchers and educators
Gravani (2008)	PD	22 teachers and 12 tutors	Case study of experiences of a university led in-service training course	Importance of joint partnerships between universities and schools
Vaughn, Hughes, Schumm, & Klingner (1998)	PD	7 general education and 5 special education teachers	A PD reading program to enhance the usability of research	Collaboration and balance between responsibilities between researchers and teachers
Klingner, Vaughn, Hughes, & Arguelles (1999)	PD	Follow-up study involving 7 teachers	Examined teachers' implementation, modification and sustainment of reading practices	Responding to classroom contexts and organisational demands
Klingner, Ahwee, Pilonieta, & Menendez (2003)	PD	29 teachers from 6 elementary schools	Investigated reading practices among teachers	Challenges of scaling of research-based practices identified
Gunstone & Northfield (1993)	PD	21 high school science teachers from 4 schools	Examining the intertwining between research and practice	Ongoing PD and its need to be viewed as credible
Sparks & Richardson (1997)	PD	Analysis of 11 national reports and resolutions	Examines effective staff development and student learning	PD is complex and dependent of clear plans and common goals
Darling-Hammond (2000)	TE	Surveys, case study and the National Assessment of Educational Progress	Examined data to determine ways TE and other school factors related to student achievement	Increased teacher's abilities and interests in research increases student achievement
Miller, George, & Fogt (2005)	TE	Case study of Centennial School	Rigorous onsite TE program using a teaming approach	Well-articulated rationale, leadership, staff commitment and resources
Winn & Zundans (2004)	TE	40 preservice teachers and 20 primary students	Literacy development program for children at risk	Collaboration between the schools and universities
Golder, Norwich, & Bayliss (2005)	TE	223 postgraduate students and 296 tutors	An initiative to enhance differentiating instruction	Web-based resources supported teaching partnerships

TABLE 1 (CONTINUED)

RTP Literature Included in This Review

Study	Category	Participants	Focus area	Major conclusions/RTP factor
Carnine (1997)	RTP		Collaboration	Usability, trustworthiness, accessibility of research
Louis & Jones (2001)	RTP		Collaboration	Shared responsibility
Hall (1982)	RTP		Collaboration	Shared understanding and responsibility
Sydoriak & Fields (1997)	RTP		Collaboration	Feedback is essential
Kratochwill & Shernoff (2003)	RTP		Collaboration	Shared contribution and ownership
Toch (1982)	RTP		Collaboration	Cooperation
Lloyd, Weintraub, & Safer (1997)	RTP		Research	Practical and responsive to student needs
Slavin (2004)	RTP		Research	Evidence-based
Guba (1967)	RTP		Research	Educational change
Eash (1968)	RTP		Research	Many concerns exist
Coleman (1979)	RTP		Research	Field-based training
Schneider & McDonald (2006)	RTP/PD		Resource support	Long-term with adequate materials
Ysseldyke (1989)	RTP/PD		Collaboration	Joint partnerships between researchers and practitioners
Billups (1997)	PD		Support	Consistent
McLeskey & Billingsley (2008)	PD		Support	Comprehensive and sustained
Malouf & Schiller (1995)	TE		Collaboration	Active stakeholder involvement
Grimes & Tilly (1996)	TE		Collaboration	Practitioner involvement required in research
Goodlad (1993)	TE		Collaboration	Mutually aligned norms, expectations and roles
El-Dinary, Pressley, Coy-Ogan, & Schuder (1994)	TE		Support	Support of personnel qualities and attributes

Ways to enhance consistency and support for teachers in their efforts to translate research to practice were identified by Gunstone and Northfield (1986). Suggestions included ensuring the grounding of research questions in practice with a focus on efficient and manageable interventions, collaborating with practitioners to establish feasibility, broadening the context for successful research-based demonstrations and promoting school-based research (Carnine, 1997). These solutions were supported by Lloyd et al. (1997), who emphasised research should be responsive to practicing professionals' needs in order to effectively address the diverse needs of their students.

In order to address the usability, accessibility and trustworthiness of research, Mitchell (1997) proposed that information regarding the research base should be included in school programs. It was suggested that this information should include who did the study, how it was conducted, in what setting, length of time and evidence of its track record. Carnine (1997), Lloyd et al. (1997) and Mitchell (1997) proposed that relevant information should be disseminated in a user-friendly format so teachers can fully understand the implications and the extent of usefulness. Further, Sydoriak and Fields (1997) advocated for joint involvement and ownership between researchers and practitioners to increase the likelihood of research reaching classrooms in ways that are more reflective of 'real world' conditions.

Ysseldyke (1989) suggested that researcher training needs to be improved for the translation of RTP to occur. Gersten, Vaughn, Deshler and Schiller (1997) expanded on this suggestion by proposing that alternative researcher roles — including collaborators, facilitators and coaches — may reduce the gap between special education research and classroom practice, thus making classrooms more inclusive. Such an approach to enhancing collaborative links between researchers and practitioners may contribute to enhancing Carnine's (1997) notion of usability, as research is promoted as proactive rather than reactive (Ysseldyke, 1989).

Slavin (2004) proposed that educational reform needs a well-designed comprehensive approach to schoolwide practice that is based on the best research available. As such, attending to details such as professional development, evaluation and comprehensive design are important. The integration of instruction, assessment and classroom management into a schoolwide reform plan to meet the diverse needs of students is needed to ensure accessibility.

Consistencies in suggestions on ways to make research useable, accessible and trustworthy are highlighted in Table 1. Carnine (1997) and Sydoriak and Fields (1997) summarised these factors in their six principles: (1) importance of practicality, concreteness and specificity of research-based practices; (2) scope and magnitude of intended change should not be too broad or too vague; (3) linking research ideas to classroom situations with opportunities to experiment with feedback; (4) collaboration and joint problem-solving between researchers and practitioners, ensuring links to real-life situations; (5) frequent and substantive interaction to give teachers the opportunity to discuss new practices and (6) relating research applications to improvements in learning for all students. Collectively, these principles propose the promotion of sustained use of research, summarising concerns presented over the last four decades. Further, Sydoriak and Fields (1997) advocated for joint involvement and ownership between researchers and practitioners to increase the likelihood of research reaching classrooms in ways that are more reflective of 'real-world' conditions.

Research-to-Practice Intervention Research

This section builds on commentary claims and presents the small number of related research examples that identify factors that claim to reduce the RTP gap by striving to make research useable, accessible and trustworthy. The work by L.S. Fuchs & D. Fuchs (1998, 2001), Vaughn, Klingner and Bryant (2001), Foegen et al. (2001) and Foorman and Moats (2004) expanded on the importance of the trustworthiness of research by promoting supportive partnerships and environments.

Foorman and Moats (2004) presented a PD approach that emerged out of their research in Houston and Washington, DC. This study was conducted in Houston and involved 1,400 children from 17 high-poverty, low-performing schools in Houston and Columbia. Conditions under which these children from Kinder to Grade 4 learn to read were examined. The data collection procedures were the same in both cities and involved frequent visits to the classrooms by observers, professional development staff, assessment personal and project faculty. All teachers used a comprehensive reading program with implementation supported by the publisher's consultants. By the end of the 4-year project, students in both cities were solidly at national averages in their reading scores. Although the achievement results were positive, contextual variables differed in locations. The extent of PD differed. In Columbia PD was multidimensional, while due to limited funds Houston's PD consisted of four days across the school year. On analysis of this reading intervention study, Foorman and Moats (2004) concluded that an obstacle to moving sustainable research practices to scale include the slowness of teacher education and PD efforts. Positive factors include the sound research-based practices available and an awareness of the need for increased knowledge of how to bring research to scale. Other critical elements identified as contributors to sustaining and scaling research-based practices through this investigation include mutual respect, pride in academic achievement and collegiality in interactions.

Fuchs and Fuchs (2001) described how researchers and educators can work together more productively to produce methods that schools can continue to employ once the researchers' work is complete. This follows L.S.Fuchs & D. Fuchs's (1998) description of efforts linking researchers and educators in Metro Nashville PHASES Public Schools. The Nashville study sought to identify principles for sustaining research-based practices through a schoolwide study utilising Math Peer Assisted Learning Strategies (PALS). This study involved seven teachers across different schools. The authors claim that this model differs from traditional research due to the level of teacher involvement.

The model relies on ongoing collaboration between university researchers and school building level educators and has three phases. The first phase involves implementing a pilot process where teachers reflect on their concerns and work with researchers to implement an innovation. Formal testing of the innovation occurs during the second phase, with schools, districts and state departments providing support to scale up the innovation in the third and final phase. This research example united educators and researchers as partners in planning, implementing, providing feedback and problem-solving. They found that these partnerships only survived when both sides worked continuously to preserve them. It should be noted that during this research many challenges arose, such as the state adopting high-stakes achievement tests, which increased anxiety levels and made partnerships more susceptible to mistrust.

Fuchs and Fuchs's (2001) discussion made reference to this PALS investigation and indicated that inadequate demand for validated practices represented a major reason for their lack of use. The use of only one research-based intervention may be viewed as a limitation, yet this investigation reinforced the importance of shared responsibility.

Foegen et al.'s (2001) study, which examined preservice teacher beliefs on curriculum-based measurement utility and validity, added to the shared responsibility factor. They presented the need for researchers to better disseminate their research and for practitioners to more actively review the research. Researchers alone are said to be incapable of bridging the research-to-practice gap. In sum, these studies have indicated that commitment and collaboration between researchers and educators at planning, implementation and sustainment phases of research-based interventions are beneficial in promoting RTP efforts. Collectively, they have suggested that to increase the demand for research, researchers must work with educators to produce innovations that are validated and PD efforts need to ensure meaningful dissemination of research findings.

Collegiality, mutual respect, time, resources, comprehensiveness, emergent feedback, implementation integrity, long-term support, pride in achievement, communication, shared responsibility and positive student and peer responses were factors identified to enhance supportive environments to promote the usability, accessibility and trustworthiness of research (Bain, 2007; Fuchs & Fuchs, 2001; Klingner, Ahwee, Pilonieta, & Menendez, 2003; Schneider & McDonald, 2006; Vaughn, Klingner, & Hughes, 2000). Further, better dissemination of research and practitioner review was suggested by Foegen et al. (2001) in their study with preservice teachers. Fuchs and Fuchs (2001) similarly found that partnerships only survived when both sides worked continuously to preserve them.

Examples of PD built on themes of accessibility, trustworthiness and usability (Foorman & Moats, 2004). Obstacles to moving sustainable research practices to scale include the slowness of TE and PD efforts. Other factors identified as contributors to sustaining and scaling research-based practices included the availability of sound research-based practices and an awareness of the need for increased knowledge of how to bring research to scale (usability). Mutual respect between professional development staff and teachers, student and teacher pride in academic achievement, and collegiality in interactions among stakeholders were identified as features that can enhance trustworthiness and narrow the RTP gap through addressing diverse student needs.

In 1998 the Department of Education, Training and Youth Affairs (DETYA) conducted a study with the Australian Research Council (ARC) that provided additional support for the many factors identified through RTP commentary claims. The study sought to explore the impact of Australian educational research, with particular respect to schools. The Research Evaluation Programme, managed by the DETYA, identified five studies that presented different perspectives on the impact of educational research in Australia and offered a broad insight into the influence of Australian educational research. The first study *Mapping Educational Research and its Impact on Australian Schools* is a comprehensive charting of Australian educational research and identifies the published Australian educational research undertaken during 1992–1997. *Backtracking Practices and Policies to Research* appraised the influence of research on educators and *Teacher Knowledge in Action* analysed teachers' explanations of their decisions during a videoed lesson. Both groups mapped backwards from the practitioner through the network of influences to identify the impact of research on practice. *Education Research in Australia: A Bibliometric Analysis* assessed the international visibility of Australian educational research through lists of citations and inclusions in journals found in the Institute of Scientific Information (ISI) database. The Selby Smith report (1999), *The Relationships Between Research and Decision-Making in Education: An Empirical Investigation*, (as cited in DETYA, 2000) adds the policy formulation perspective in relation to vocational education and training (VET). Collectively, this research confirms

that quality teacher education needs to develop good attitudes to research, along with exposing educators to research-based knowledge that will assist them in catering for the needs of individual students. For research to be applied in an education context, researchers have to market their knowledge so that it is accessible and motivating. This requires a shift in what is valued in the work of universities (DETYA, 2000).

Results of these studies supported the need for the engagement between researcher and educator in the creation of 'new knowledge' and 'new solutions', adding that this interactive process must be multilayered (Carnine, 1997; DETYA, 2000; Sydoriak & Fields, 1997). DETYA (2000) refers to the inadequacies of conceived linear relationship between educational research and practice, and suggest a multilayered process of engagement between researcher and educator that is responsive and effective at all levels. Multilayering identified that educators' problems need to be addressed in context, with the acknowledgment of individual attitudes, beliefs and organisational structures that provide opportunities for feedback and communication with realistic expectations. The studies also expanded upon the understanding of the accessibility of research, suggesting the need for clear, unambiguous language that is meaningful to educators. The importance of teacher education was emphasised and the need for developing educators who value and use research to support change (Ax et al., 2008; Gravani, 2008; McLeskey & Billingsley, 2008).

In summary, research that has attempted to identify the success or concerns of educational interventions has provided examples of ways in which researchers and practitioners can work toward making research usable, accessible and trustworthy. Through analysing the intervention research it became apparent that while immediate application appears to be a high priority for practitioners, shared theoretical understandings are essential for educators and researchers to be able to work together (DETYA, 2000). The following section builds on this RTP knowledge and describes the role of professional development as a factor that can assist educators in creating successful educational experiences for all students (Foorman & Moats, 2004; Gunstone & Northfield, 1986; Klingner et al., 2003; Little & Houston, 2003; Mitchell, 1997).

Professional Development and Research to Practice

Eight publications were identified that specifically presented a detailed discussion of PD as a comprehensive or longitudinal approach to address the RTP gap in education. An article on coaching located in the TE search is also presented in this section as it pertained to a PD intervention. Articles that made reference to PD in fields other than education and did not refer to the RTP gap were not selected for this review.

Fullan (2000) described PD as a continuous process, supported through mentoring, coaching and feedback to address the perceived needs of the students within individual classrooms and schools. It may be further defined as a complex and comprehensive process of change dependent on clearly articulated plans to address common goals (Fullan, 1993; Hargreaves & Fullan, 1992; Sparks & Richardson, 1997).

The importance of PD in relation to RTP efforts and special education was described by McLeskey and Billingsley (2008). Support for concerns of accessibility, usability, trustworthiness of research and the possible reasons for and solutions to the RTP gap were stated. They proposed that the two most influential RTP gap factors are teacher preparation and the nature of research conducted. McLeskey and Billingsley (2008) discussed the need for comprehensive, coordinated and sustained efforts in the area of teacher education to reduce the RTP gap.

A reconceptualised PD model involving a four-step process to promote quality and the use of scientifically based instructional practices was described by Little and Houston (2003). The occurrence of educational learning or change was identified as occurring when critical factors, including relevance to classroom needs, dependence on required support, collaboration of researchers and multiple educators within schools that can provide expert content knowledge, are met. This work increased awareness of factors that can reduce the RTP gap.

Gersten, Morvant and Brengelman (1995) conducted an intensive coaching process to support general education teachers' adoption of research-based practices selected to improve reading performance of low-achieving students. Key issues included the anxieties inherent to, and the variations in concerns and priorities of, general and special educators. As such, general and special educators' varied perceptions emerged as a key issue in ways to bring research-based teaching into general education classrooms to cater for the needs of students with and without disabilities. Collaboration, including the use of collaborative decision-making teams across the school and the adoption of collaborative meeting process in all committees and groups, may rectify this issue.

Joint partnerships with mutual boundaries between universities and schools are deemed important (Gravani, 2008). The academic–teacher relationship was described as one of the most important areas upon which future professional learning should be based. Gravani (2008) added that the cultural clash between researchers and teachers can be addressed through mutually identifying boundaries, structures and purpose.

Seven general education teachers and five special education teachers (secondary participants) undertook a year-long intensive PD reading program (Vaughn et al., 1998). The intervention promoted PD as a way of enhancing accessibility and usability of research by engaging teachers in pursuit of genuine questions. It identified that RTP efforts can be enhanced by establishing a collaborative link between researchers and teachers to build trustworthiness and balance their differing agendas, roles and responsibilities. A follow-up investigation (Klingner, Vaughn, Hughes, & Arguelles, 1999) examined the extent to which seven of these teachers continued to use instructional practices they had originally learned. Six of the seven had continued to use one or more of the practices. A year later, Klingner et al. (2001) investigated the extent to which these practices had spread among teachers who were not part of the original PD. Findings indicated that for programs designed to meet the needs of a range of students, teachers were more likely to maintain a practice if peers perceive the practice is valuable and a support network is in place that allows for discussion around implementation issues.

Klingner et al. (2003) extended PD research efforts implementing four reading research-based practices with 29 teachers from six elementary schools. The most frequently cited barriers included a lack of sufficient instructional time, too many competing demands on time and a lack of materials. Off-task students, interruptions, insufficient administrative support and classroom management challenges also made scaling efforts difficult. Factors that assisted the implementation included students enjoying the strategies, students performing well during implementation, administrative support, teachers feeling sufficiently prepared, materials being provided and ongoing support from the research team.

A key factor derived from Klingner et al. (2003) is that for research-based practices to be sustained and scaled in general education classrooms that include children with special needs, there must be 'buy in' from stakeholders at multiple levels and teachers must take ownership of the practices. The need for collaboration between researchers and teachers continued to be emphasised, with a greater awareness of the considerable

time required to balance the many roles and responsibilities essential to achieving the delicate balance between practice and research.

These assertions echoed and expanded upon those identified in the RTP literature and suggested a need to limit competing demands in PD planning. If PD is to be effective, the demands placed on teachers must be manageable and realistic. Support in creating this manageable balance of multiple agendas is necessary for consistent PD efforts to address the needs of staff in their ability to cater for the needs of students with a diverse range of abilities. These PD factors are consistent with previous RTP assertions and build on the knowledge required by researchers and practitioners on ways to reduce the RTP gap. Factors within the identified PD themes are specifically identified in Table 1.

The following section expands upon those factors identified in the PD literature and describes teacher education as a way to influence research-to-practice efforts (Everington & Hamill, 1996; Golder, Norwich, & Bayliss, 2005; Villa et al., 1996). Research examples that confirm and expand upon RTP and PD assertions are presented.

Teacher Education and Research to Practice

Teacher education (TE) in an inclusive education context is identified in both research and position papers as a key strategy in bridging the RTP gap, furthering the capacity to collaboratively link university and school efforts (Capizzi & Fuchs, 2005; Darling-Hammond & Baratz-Snowden, 2007; D. Fuchs & L.S. Fuchs, 1998; Golder et al., 2005; Gravani, 2008; Korthagen, 2004; Winn & Zundans, 2004). TE can assist reduction of the RTP gap as it represents an avenue linking the efforts of researchers and educators who work in inclusive environments to enhance RTP endeavours (Everington & Hamill, 1996; Golder, Norwich, & Bayliss, 2005; Villa et al., 1996). Like PD, TE would be expected to have an RTP agenda. However, the TE literature indicated that while RTP remains a concern, it is not treated in depth in many discussions (Carnine, 1997; Darling-Hammond, 2006a; D. Fuchs & L.S. Fuchs, 1998; Gravani, 2008). This section built on factors identified in PD research and identified issues that link TE and RTP assertions. Of the 12 TE research-based references located, only four offered a specific focus on TE as a way to address the RTP gap.

The need for university and school educators to engage collaboratively in research in an effort to improve practice was promoted (Darling-Hammond, 1994). Collaboration referred to researchers working with practitioners to address their questions and needs. According to Gravani (2008), Darling-Hammond (1994), and Winn and Zundans (2004), involving teachers in the research process encouraged deeper comprehension and ownership of research efforts.

Darling-Hammond (2000) used an extensive dataset to examine ways in which teacher education and other school factors related to student achievement. Results suggested policies regarding teacher education, licensing, hiring and professional development may influence RTP through the capacities teachers bring to their work. It promoted a view that by increasing teacher's abilities and interests in using research-based projects in classrooms, increased student achievement may result. This work gives indirect support to the importance of TE in addressing RTP as teacher preparation has been shown to differentially affect teacher capacity and ultimately student achievement.

The impact of modifications to a school's organisational structure using a teaming approach was raised by Miller, George and Fogt (2005). Elements including a well-articulated rationale for change, the quality of leadership, commitment from staff, sufficient resources and the responsiveness of organisational features were cultivated through the change process. These elements were promoted as critical to enhancing the effectiveness

of teacher-training efforts. They were also identified in the work of Fuchs and Fuchs (2001) as strong features in ways to support the use of research in schools. Further, Miller et al. (2005) advocated attention be given to other variables, including collaborative teacher education, to ensure the research approach selected is a good *contextual fit*. Interventions should be unobtrusive, making them more acceptable to both teachers and students, and be consistent with their values and beliefs.

The TE literature collectively supported the need for RTP factors, including sufficient time and the role of support and feedback in the use of research-based practices through efforts to strengthen teacher education programs (Barnes, 1999; Fuchs & Fuchs, 2001; Gersten et al., 2007; Griffin & Warden, 2006; Hipp, Huffman, Pankake, & Olivier, 2008; Korthagen, 2004; Shallcross, Loubser, Le Roux, O'Donoghue, & Lupele, 2006; Titone, 2005; Volonino & Zigmond, 2007; Winn & Zundans, 2004). Through this TE research, the provision of peer and administrative support with feedback on multiple levels was presented as advantageous for educators to bridge the gap between research and practice (Carnine, 1997; Gersten et al., 1997; Gersten, Vaughn, Jenkins, & Downing, 1997; Lloyd et al., 1997; Sydoriak & Fields, 1997; Zahorik, 1984).

Teacher educators share a responsibility for providing educators with a lens through which to view every learner as valued and essential. One way to value every learner is by employing the best researched practices when working with them. Similarly, encouraging TE programs to work collaboratively with educators to address identified needs may promote new knowledge and enhance the success of individual learners (Klingner, Vaughn, Arguelles, Hughes, & Leftwich, 2004; Klingner et al., 1999; Vaughn et al., 1998). A joint approach is said to provide coherent, collaborative, research-based and relevant opportunities for practitioners to develop skills that are supportive and foster achievement for all learners (Casale-Giannola, 2005; Darling-Hammond & Baratz-Snowden, 2007; Darling-Hammond & Berry, 2006; Golder et al., 2005).

The difficulty in maintaining a collaborative link between university and school partnerships was raised (Sirotnik as cited in Goodlad, 1993, p. 31). Concerns include differing norms, roles and expectations of researchers and practitioners. Sirotnik referred to this situation as a 'cultural clash' between universities and schools. TE programs bear heightened responsibility in addressing the longstanding concern that evidence-based knowledge is not being used to its full potential in school settings (Devine & King, 2006; Golder et al., 2005; Schmidt, Rozendal, & Greenman, 2002; Volonino & Zigmond, 2007). Positive partnerships between schools and universities have been identified. Winn and Zundans (2004) presented a project designed to enhance literacy development of primary aged children considered to be at risk in regards to their literacy and numeracy development. A key feature identified was the need for collaboration between the schools and the university to develop explicit links between the theory and practice so that educators comprehended the theoretical logic behind practical decisions. However, the considerable time required to implement and monitor collaborative research-based intervention efforts was identified as an obstacle in this RTP reading intervention (Winn & Zundans, 2004).

An initiative designed to enhance the knowledge, skills and attitudes of trainee teachers and to equip them in differentiating their teaching was reported (Golder et al., 2005). Evaluation reports indicated individualised teaching partnerships involving a systematic strategy supported by web-based resources were promising. The need to continue to develop practical ways of enhancing initial teacher education in relation to special educational needs and inclusion was promoted.

The examination of the TE literature identified consistencies with the RTP and PD literature. It built on the initial themes of accessibility, trustworthiness and usability of research, describing their importance from a teacher educator rather than a practitioner perspective. This perspective identified additional factors including teacher enthusiasm and fatigue. Universities were presented as a vital link in creating practical pathways between research and practice by collaboratively preparing teachers to cater for diverse student needs.

Discussion

While the discussion of RTP was extensive, there were few empirical studies specifically focused on the translation of RTP in inclusive education settings. This review integrated, in a narrative approach, the larger commentary and opinion literature with a small number of related research studies. It went further and investigated PD and TE literature that informed RTP efforts. Major themes presented as ways to assist researchers and practitioners in reducing the RTP gap are presented in Table 1. These include the responsiveness of research, collaboration and support. This table presents the consistencies and expansion of asserted RTP factors from three bodies of literature across these identified themes. Overall, the research articles support the major themes identified in opinion papers and reflective essays. The initial RTP comments by Carnine (1997) and others including the importance of teacher contribution, trustworthiness, usability, accessibility of educational research and the need for consistent research findings are supported and expanded upon in later literature-based searches (Billups, 1997; Breslin & Buchanan, 2008; Capizzi & Fuchs, 2005; Carnine, 1997; De Landsheere, Masoner, Masoner, Dickson, & Kida, 1981; Foegen et al., 2001; D. Fuchs & L.S. Fuchs, 1998; Hall, 1978; Hall & Pratt, 1984; Hord, 1981; Horsley & Loucks-Horsley, 1998; Kornblet, 1997; Lloyd et al., 1997; Malone, 1984; Malouf & Schiller, 1995; Miller et al., 2005; Miretzky, 2007; Pratt, Thurber, Hall, & Hord, 1982; Rutherford, 1986; Sydoriak & Fields, 1997). Other intervention research raised an awareness of the need to be responsive to organisational demands, the need to display tolerance for initial implementation difficulties and the importance of recognising accomplishments and encouraging feedback on multiple levels (Hargreaves, 2007; Hasbrouck, Woldbeck, Ihnot, & Parker, 1999; Miller et al., 2005).

Researchers have sought to establish long-term collaborative partnerships with schools as a way to facilitate change and enhance sustainability (Abbott et al., 1999; El-Dinary, Pressley, Coy-Ogan, & Schuder, 1994; Klingner et al., 1998; Schumm & Vaughn, 1995). Such partnerships have promoted deeper involvement from teachers and included some form of ongoing support from the project implementation team after the initial instruction in research-based practices had taken place.

The TE literature indicates that additional attention should be paid to organisational issues so that research-based practices can be sustained over time (Miller et al., 2005). The need to incorporate empirically derived educational practices into the instructional repertoire of educators has also been presented as a way to reduce the RTP gap (Foegen et al., 2001). As a result, teacher knowledge and context are important to conceptualising the relationship between research and practice making classrooms more responsive to all students (Malouf & Schiller, 1995).

Reducing the RTP gap is said to be possible when educators are informed and actively involved in the process (Grimes & Tilly, 1996). Although significant challenges do exist, the RTP literature highlights that well-designed teacher education programs,

which are collaborative, coherent, responsive to stakeholder needs, and provide support and feedback can positively support research efforts in practical applications (Darling-Hammond, 2006b; Francis, 2002; Gunstone & Northfield, 1993). These assertions reflect a need for additional investigation through collaborative university and school partnerships to reduce the research-to-practice gap (Korthagen, 2004). Darling-Hammond (2005) suggested that teacher effectiveness is strongly linked to the preparation teachers receive. Therefore, if schools and universities are collaboratively involved in examining factors that contribute to the research-to-practice gap, identified barriers may be overcome (Grimes & Tilly, 1996; Miller et al., 2005). This work coincides with an increasing recognition of the capacity of teacher education as a locus for addressing the research-to-practice gap. It calls for additional investigation utilising specific RTP cases that share a common teacher education experience and address the diversity of student needs (Blanton, Griffin, Winn, & Pugach, 1997; Darling-Hammond, 2005; Gravani, 2008; Winn & Zundans, 2004).

Conclusion

Collectively, researchers have described models used to involve practitioners in the development, implementation and maintenance of empirically validated interventions (Abbott et al., 1999; El-Dinary, Pressley, Coy-Ogan, & Schuder, 1994; Vaughn et al., 1998; Vaughn et al., 2000). Others have compared variations in the intensity of professional development programs and described models used to deliver research-based education to teachers (Darling-Hammond, 2005; Schumm & Vaughn, 1995). Those researchers have focused their efforts on working more collaboratively with practising teachers to improve the trustworthiness, accessibility, usability, attractiveness and responsiveness of research.

This review yielded a cross-section of relevant guiding information on ways to bridge the RTP gap. These areas of review fell broadly from theory-to-practice assertions that claim to impact upon the transition of research to practice. The initial investigation included RTP literature, which then led to an examination of PD and TE literature. As a result, the RTP factors identified three key RTP themes: responsiveness of research, collaboration and support. The review provided an integrative account of those factors that can promote RTP efforts which can assist in making our classrooms more inclusive. These factors can be addressed more deeply through the implementation of much-needed intervention research focused on translating research into practice in applied settings.

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