

An Exploration of the Utility of a Knowledge Utilization Framework to Study the Gap Between Reading Disabilities Research and Practice

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This pre-pilot study explored the usefulness of a knowledge utilization framework comprised of Knott and Wildavsky's (1980) seven stages of knowledge use and Stone's (2002) three routes to knowledge use to investigate the gap between reading disabilities research and teachers' self-reported use of that research. Semi-structured interviews of ten elementary school teachers were undertaken. A qualitative analysis of the interview data indicated that the framework was effective for categorizing and interpreting the interview responses. Findings indicated that a divide between research and reported practice potentially begins with an inadequate reception of research, and that a divide is exacerbated by limited reading and implementation of research knowledge by teachers. The knowledge utilization framework also assisted in identifying obstacles to teachers' reported use of research. These obstacles were successfully categorized according to the variables of supply, demand, and context. The combined framework of knowledge utilization has potential for studying the use of research by teachers.

Cette étude pré-pilote a exploré l'utilité d'un cadre de l'emploi des connaissances - comprenant les sept étapes de l'emploi des connaissances de Knott et Wildavsky (1980) et les trois routes de l'emploi des connaissances de Stone (2002) – dans l'étude de l'écart entre la recherche portant sur les déficiences en lecture d'une part, et l'emploi que les enseignants affirmaient faire de cette recherche d'autre part. Nous avons effectué des interviews semi-structurées auprès de dix enseignants de l'élémentaire. Une analyse qualitative des données d'entrevue a indiqué que le cadre était efficace dans la catégorisation et l'interprétation des réponses découlant des interviews. Les résultats indiquent qu'un fossé peut commencer à se creuser entre la recherche et l'application qu'on dit en faire quand la recherche n'est pas suffisamment accueillie, et que ce fossé s'élargit si la mise en œuvre que font les enseignants de la recherche et des connaissances qui en découlent est limitée. Le cadre de l'emploi des connaissances a également été utile dans l'identification des obstacles à l'utilisation que les enseignants déclaraient faire de la recherche. On a réussi à classer ces obstacles en fonction de trois variables : l'offre, la demande et le contexte. Le cadre combiné de l'emploi des connaissances pourrait servir dans l'étude de l'utilisation que font les enseignants de la recherche.

Interest in the use of education research is longstanding, dating back to 1867 (Coulson, 1983) and continuing internationally today (Levin, 2004). In fact, “observations of the gap between research and practice in education have become a mainstay of contemporary literature”

(Gersten, Chard, & Baker, 2000, p. 453). The underutilization of special education research raises particular consternation (Carnine, 1997; Fuchs & Fuchs, 2001; Greenwood & Abbott, 2001), as does the use of research by teachers in reading instruction where evidence-based teaching is considered to be most effective (McCardle & Chhabra, 2004). However, few studies of the use of education research focus on reading disabilities. A minority of studies include teachers' views and no studies can be found that apply the theoretical framework that was explored in this pre-pilot study. It is proposed here that a theoretical framework that potentially helps explain the extent of research underutilization, deficits in how research is used, and barriers to research use would significantly aid an investigation of a gap between existing research and teacher practice. Prior to a large scale study founded on a relatively novel underlying framework, a pre-pilot study with open-ended questions is recommended (Cohen, Manion, & Morrison, 2005). This pre-pilot study was conducted to investigate the utility of a knowledge utilization framework that combined Knott and Wildavsky's (1980) and Stone's (2002) theories of knowledge use for exploring the gap between reading disabilities research and teachers' practices.

Background

Decades of reading research have culminated in some consensus of how to prevent or remediate reading disabilities (National Reading Panel, 2000; Shaywitz, 2005; Snow, Burns, & Griffin, 1998). With early identification and appropriate instruction, 70% (Barnes, 2007) to 95% (Greenwood & Abbott, 2001) of potential reading disabilities can be prevented or alleviated. When, for example, 43.1% of exceptional students in Ontario schools in 2003-2004 showed evidence of learning disabilities (Ontario Ministry of Education, 2005), and when 80% of these disabilities included reading difficulties (Snow, Burns, & Griffin, 1998), the need for effective, evidence-based interventions is highlighted.

Unfortunately, studies to date have suggested that such evidence-based pedagogical knowledge is lacking in education and teaching generally, and in special education specifically (Boardman, Arguelle, Vaughn, & Klingner, 2005; Burns & Ysseldyke, 2009; Costa, Marques, & Kempa, 2000; Wilson, Gutkin, Hagen, & Oats, 1998). With respect to reading research, Bos, Mather, Dickson, Podhajski, and Chard (2001) found that pre-service and practising educators lacked knowledge for effective reading instruction, and that teachers felt only somewhat prepared to teach struggling readers. Cunningham, Perry, Stanovich and Stanovich (2004), Moats and Foorman (2003), and Spear-Swerling and Brucker (2005) additionally reported that teachers were deficient in their understanding of early literacy skills that are important for teaching students with reading difficulties.

Several explanations for a 'research-to-practice' gap in education have been suggested. For example, it has been proposed that the quality of education research may be deficient (Carnine, 1997); researchers poorly disseminate and inadequately support teachers' use of research (Gersten, Vaughn, Deshler, & Schiller, 1997); and school environments preclude research implementation (Kennedy, 1997). Teachers may also be culpable in research underutilization by resisting or misusing innovations. Any or all of these variables may affect the use of education research.

In addition, approaches to studying the extent of research use have varied. For example, Pressley and El-Dinary (1997) observed the fidelity of educators to the implementation of newly introduced research-based comprehension strategies. Baker and Smith (2001) explored factors

that facilitated the use of research-based reading programs; while Calfee, Miller, Norman, Wilson, and Trainer (2006) reported on the conditions that facilitated and obstructed the translation of literacy research to practice. Broekcamp and van Hout-Wolters (2007), Dagenais, Janosz, Abrami, Bernard, and Lysenko (2008), and Williams and Coles (2007) were among the researchers who enlisted teachers' reports on their uses of education research. Overall, findings suggested that education research is underutilized by teachers.

However, studies to date present with various shortcomings. One weakness is that the meaning of 'use' is rarely defined. Secondly, only a few studies have addressed reading disabilities research. Additionally, the approaches to studying teachers' use of research have varied considerably, and they have not employed specific theoretical frameworks. Therefore, an investigation of teachers' use of reading disabilities research with a guiding knowledge utilization framework is justified. Before embarking on a large scale study of reading disabilities research use, this pre-pilot study sought to determine the usefulness of a specific knowledge utilization framework that offered meanings for 'use' and addressed degrees of knowledge use as well as obstacles to such use.

Theoretical Framework

Knott and Wildavsky (1980) proposed that knowledge utilization does not imply an "immediate and direct impact" (p. 542). Their model of seven stages of use was developed to understand policy-makers' application of information. The seven stages are:

1. Reception: relevant information is received.
2. Cognition: information is read, digested, and understood.
3. Reference: information changes the views, preferences, or understanding of the magnitude or probabilities of the impact.
4. Effort: information influences actions; effort is made to adopt a study's recommendations.
5. Adoption: information is put into policy and it influences policy outcomes.
6. Implementation: information is implemented.
7. Impact: policy is implemented with desired effects.

Knott and Wildavsky (1980) also suggested barriers to knowledge use; however, for this pre-pilot study, Stone's (2002) three routes to knowledge use, which could also be barriers, were adopted as valuable components of the knowledge utilization model. Stone posited that knowledge is used through the following routes: the supply side, the demand side, and the policy currents or the context side. The twelve variables within these routes/barriers are:

- a) Supply side: (1) there is insufficient relevant research; (2) there is a lack of or inequitable access to research; (3) research is flawed because of researchers' poor understanding of what is relevant; and (4) researchers ineffectively communicate their research.
- b) Demand side: (1) users are unaware of the research; (2) users have limited time and resources; (3) users have a tendency for anti-intellectualism (negative bias against use of research); (4) users are unable to interpret and use research; and (5) users politicize

research by modifying it or implement research selectively to reinforce existing beliefs and practices.

- c) Context side: (1) a societal disconnection of researchers and users from each other leads to users relying on internal sources of information; (2) research relevance in specific domains limits its use; and (3) there might be a “contested validity of knowledges” or “ideology” between the world of researchers and that of the users (Stone, p. 291), limiting institutional arrangements and the nature of the regime of power or the culture of public debate (or research interest) or lack of it impact research use.

For this study, research or knowledge denote findings produced by way of multiple studies and methods of means to effectively identify and instruct students who are at risk for reading disabilities. A demographic component was added to the theoretical framework; demographic variables such as teaching roles, years of experience, education, age, or gender may impact research use from the demand perspective. A representation of the model is in Appendix A. A similar model was successfully implemented by Shultz (2007) in his study of research use by university administrators.

Research Questions

The following questions guided this pre-pilot study:

1. Can teachers’ reported uses of reading disabilities research be categorized using Knott and Wildavsky’s seven stages of knowledge utilization?
2. Might using such categorization reveal evidence of research underutilization, the degree of any such underutilization, and which stage of research use is problematic?
3. Do teachers identify obstacles to research use that can be classified according to Stone’s (2002) three categories and twelve factors?
4. Do additional themes regarding research use and routes to use arise from teachers’ responses?

Method

Sample

Ten elementary school teachers who were known to the researcher composed a sample of convenience. The researcher attempted purposely to achieve representation from a variety of teaching positions, and in so doing strengthen the generalizability of this pre-pilot study. The participants included one principal, one vice-principal (VP)/learning support teacher (LST) (special education), two full-time learning support teachers, one literacy teacher, two kindergarten teachers (one in English and one in French immersion), one Grade 1 French immersion teacher, one Grade 2 teacher, and one Grade 4 teacher. One teacher was a male and nine were females. All were qualified teachers; five had bachelor’s degrees and five had master’s degrees. The ages of five teachers were in the 50 to 60 year range; two teachers were between 40 and 49 years of age; and three were between 30 and 39 years of age. With respect to years of

teaching experience, one teacher had taught for seven years; one between 10 and 14 years; four between 15 to 19 years; and four for 20 to 25 years.

Instrument

Open-ended interview questions that were based on the pre-pilot study's research questions were designed to elicit participants' views on teachers' knowledge and uses of research on reading disabilities and the obstacles to their uses of such research. The respondents had the liberty to express their views on teachers' uses of research in general or on their own experiences. The questions are listed in Appendix B.

Procedure

Ethics approval was granted by the Faculty of Education at Western University and by the participating Ontario school board. Each interviewee received a letter of information and each signed an informed consent form prior to the interviews. Individual, semi-structured interviews lasting 45 to 90 minutes were conducted at locations that were convenient for the teachers. Seven interviews occurred in schools, two in homes, and one by email. All but the email interview were audio-taped and transcribed. Demographic data such as previously reported were also recorded.

Data analysis

The interview responses were thematically coded by the researcher according to the aforementioned seven stages of research use as well as the twelve variables which composed Stone's (2002) three categories of routes/obstacles to research use. Additional coding was conducted to identify teachers' sources of research knowledge. These sources of research were coded as (a) academic journals, (b) university contact/courses, (c) professional development (via school board, ministry of education, teachers' federation, professional meetings, conferences), (d) Internet, (e) professional journals, ministry documents, books, (f) within school (e.g., specialized teachers, other teachers, staff meetings, administration), (g) other disciplines or consultants (e.g., speech and language pathologist, psychologist, school board consultants), (h) other schools or school boards, and (i) media (e.g., television). One third of the comments from each category of responses was extracted and coded by a second coder. Inter-rater reliability in coding initially ranged from 62.5% agreement on the knowledge use comments, 77% on the obstacles, to 80% agreement on the sources of research. Discrepancies in coding were resolved through discussion between the coders and, on a second attempt, agreement on a sample of responses coded as knowledge use rose to above 80%. Observations were additionally made regarding the relationship between demographic features and the responses.

Findings

Results of the thematic coding of the interviews are reported here. The teachers' opinions and direct comments regarding their own and other teachers' uses of research on reading disabilities are presented below as they reflect Knott and Wildavsky's (1980) seven stages of knowledge utilization and the twelve variables which compose Stone's (2002) three routes/barriers to

knowledge use. In order to protect the identity of the respondents and confidentiality of their comments, the principal and VP/LST have been identified as administrators; the LSTs and literacy teacher are referred to as specialized teachers, and the kindergarten, Grades 1,2, and 4 teachers are the classroom teachers.

Knowledge Utilization

Teachers' views on whether and how research on reading disabilities is used were elicited by questions one, three, and five in Appendix B. The findings are first discussed below according to the seven stages of knowledge use.

Reception. Obtaining research on reading disabilities appeared to be the most problematic stage of knowledge use. For example, a specialized teacher relayed, "I can't say that that [reading disabilities] has been an area [of professional development]. With all the professional development, there has not been a general in-servicing for learning disabilities at all. I would say that has not been touched on." A classroom teacher replied, "I would say that they [teachers] don't receive a lot of it; I would say we receive a little, and it [reading disabilities] is not focused on as much as it should be by any means unless the kids are on IEPs (Individual Education Plans)." Another classroom teacher stated, "I don't recall anything specifically on like learning disability in terms of reading." An administrator also stated, "As far as disabilities, um, I'm not sure we [teachers, administrators, or school board] do a great job of addressing reading disabilities."

The teachers reported receiving some information about teaching reading, but most stated that research on identifying and instructing students who are at risk for reading disabilities was not provided to them. However, in addition to a passive reception of research, teachers may also actively seek it. Reception of this nature reportedly occurs sometimes and mostly on a 'need to know basis' as the following comments by a specialized teacher and a classroom teacher respectively illustrate: "When they have a child in the class that's struggling, that's when they seek out the information," and, "It's in response to specific needs that they have." Conversely, it was opined by a specialized teacher and an administrator that teachers might not routinely look for research on reading disabilities as their statements reflect: "I don't think they actively find it," and, "I think they would like to go looking for it, but they don't." One administrator added, "I think they rely on the LST to provide programming, so the programming is the result of research."

The administrators and specialized teachers viewed their reception of research most positively. For example, one specialized teacher replied, "In my role, I see that a lot, and that's information about reading disabilities ... I'm always reading, I'm always checking online for new research into reading." A second specialized teacher commented, "We [teachers] generally get the research, whether it comes from our principal, or whether it comes from meetings ... I get it from LST meetings." This teacher also stated, "If I'm interested in a particular aspect of something, I will go out and seek out what I can find." One administrator additionally reported benefitting from conferences as sources of new knowledge and serving as the source of articles on innovations for teachers.

If reception of information is considered to be a stage of research use, these comments reveal that research on reading disabilities is underutilized, and that this stage of knowledge use is problematic.

Cognition. With respect to this second stage of utilization, which is reading with understanding, interviewees largely responded that research on reading disabilities, if received, is read sometimes, and it is read by some teachers but not by others. A specialized teacher commented, “I see some teachers who really get it and read the information and use it, and I see others who don’t ... I would hope that they do professional reading on their own, but I have my doubts.” An administrator shared:

Any time I have presented an article to staff, it’s like anything else, some of them jump right on it and say, “this is what I need,” and some put it away and find it a little later, and so on and so on, and some just say, “oh, I haven’t got time for that.”

On the other hand, one specialized teacher asserted that teachers do read research that is given to them. In general, teachers supported the proposition that the cognition stage is conceivably another area of concern with respect to the use of reading disabilities research.

Reference. Three participants alluded to activities which reflect this stage of knowledge use. The teachers expressed appreciation of regular collegial time to discuss new information and strategies that they have tried. Two referenced participation in professional learning communities and they suggested that research on reading disabilities might be distributed and deliberated during division meetings. After such meetings, some teachers explored new ideas and reported to the group. These actions could influence teachers’ frames of reference. However, a specialized teacher reported:

I wouldn’t say that ... it’s [reading disabilities] not a big concern to talk about; they talk about the overwhelming needs in the classroom ... they talk about that, but not necessarily that learning disabilities, and um, with reading disabilities, how can I help that child?

These comments indicated that an exploration of Knott and Wildavsky’s (1980) third stage of knowledge utilization may also reveal the extent to which and how research on reading disabilities is employed by teachers.

Effort. When research on reading disabilities is available, respondents concurred that some teachers would and others would not try to employ it depending on certain conditions. Classroom teachers proposed, “Teachers will try strategies found in research if it applies and/or works for specific students in their current classroom,” and, “Some people, they just don’t feel comfortable doing it, where other teachers would just move in and go, “Well, ok, I’ll give this a try.” Another classroom teacher recalled:

When we get together and we have our discussions about articles and different things that we’ve brought up the previous meeting, you have some people that didn’t do a thing ... then you have other people that had always looked at the stuff and tried it out.

Specialized teachers agreed, saying, “I guess sometimes, I would have to say sometimes [teachers use research]” and “I think teachers here get it, they do the reading, and then maybe implement some of the research,” and “I would hope so [teachers use research] ... that’s why they would seek it; they are looking for a change, they are looking for help.” Administrators appeared to be less positive about the extent of teachers’ efforts to use research, stating, “I don’t think that the majority of teachers ... are going to be as comfortable with that [use of research];

It needs to be much more practical,” and “I think my honest answer would be not at all.”

Therefore, the fifth stage of knowledge utilization, effort to try new ideas, emerged from the teachers’ comments and an underutilization of research was implied.

Adoption. The adoption of research on reading disabilities into school policy or programming was not specifically mentioned. However, one administrator referred to facilitating conditions:

It’s about alignment ... somebody had been to a workshop and knew that this was a really good piece of work (Six Traits of Writing). That person had the initiative at the school level; the professional learning community was already in place. They gather together and then it’s go, go, go. So it’s taking the time and it’s fostering that—getting all systems aligned.

This same administrator referred to research-based programming which LSTs provide for students. It appears, therefore, that adoption may be another stage of research use by educators to be explored in future studies.

Implementation. This stage of knowledge utilization appeared to be synonymous with ‘use.’ The participants referred to the use of research on reading disabilities with the implication that research did or did not inform teachers’ practices. As previously mentioned, one administrator stated the teachers do not use reading disabilities research at all, and a classroom teacher contended that even if research is available, teachers simply cannot employ it in the classroom because of a lack of time, their class make-up, and curricular demands. Most believed that research is implemented by some teachers and sometimes, given certain conditions as with the effort stage. For example, one specialized teacher stated, “Even with students which you have identified learning disabilities ... you write up your IEPs, you get everything. Then, ‘is it being practiced?’ is my big concern. Quite often it is not.” Yet a classroom teacher commented, “I think teachers will change their practices if it benefits their students. They will also keep strategies in mind, and when it’s the right time, and the right students, they will then implement those new practices.” The teachers’ responses clearly referred to implementation as a stage of knowledge use and one that is potentially problematic.

Impact. Three participants commented on the positive benefits of research-informed practices. For example, one administrator stated:

... the programming is a result of the research. The one thing that I think has made a huge difference is assistive technology, and you know, the Co-writer and the Write Aloud, all of those, and they have made an amazing difference for most children with reading disabilities ... they become independent and can use it themselves—a big plus. Then I would say that is one aspect of modern research that teachers use.

A classroom teacher also reported, “Kids definitely, I think, have a lot more solid language base than they did because we have been trained in terms of what specifically we’re supposed to teach them now.”

Apparently, when the educators applied research, desirable outcomes resulted. Therefore, Knott and Wildavsky’s (1980) seventh stage of knowledge use may be helpful for analyzing the extent and type of research use by teachers.

Obstacles to Knowledge Use

The fourth interview question, “What helps or hinders teachers’ uses of research on reading disabilities?” was asked to assess whether Stone’s (2002) three routes/barriers to knowledge use, including the twelve variables as previously discussed and illustrated in Appendix A, could be employed to categorize teachers’ responses regarding obstacles to their use of research on reading disabilities. The findings are summarized below.

Supply side. This category of routes or obstacles to knowledge utilization includes four variables. The first variable concerns the supply of knowledge as a possible obstacle, and the findings indicated that an inadequate supply of research on reading disabilities was perceived to be an obstacle to its use. However, the absence of research was mainly attributed to poor access, variable two, and to inadequate dissemination of research, which is the fourth variable on the supply side. Both poor access and dissemination overlap with Knott and Wildavsky’s (1980) stage of reception which was demonstrated to be problematic. Teachers are reportedly not receiving research on reading disabilities, either actively or passively. In addition to previously reported comments, a classroom teacher further supported this finding in stating, “When teachers are in teacher’s college, they are required to read and respond to many different journals related to students and learning, etc. That’s the only time I can remember getting research info.” Another classroom teacher also confirmed that access was difficult: “Getting it, yeah, it’s connecting with the right information I think.” Several concurred that they received minimal research information about reading disabilities. In addition, one specialized teacher speculated that despite of plentiful professional development, “a lot of stuff was, [what] we touched on, was not on learning disabilities, and I don’t know if they save up for the LST and they want to keep it a secret for them.” The implication was that research on reading disabilities is not easy to access and that it is possibly selectively disseminated to teachers. Therefore, teachers may perceive that there is an inadequate supply of research on reading disabilities because they are not receiving it, an issue which relates to the variables of access and dissemination or communication by researchers.

Access to research, variable two on the supply side was additionally addressed by the second interview question that explored the routes by which teachers access reading disabilities research. A wide range of sources for information on reading disabilities was reported, although reliance on the school board for professional development and consultation dominated. In-school dissemination of information on reading disabilities also figured prominently and it was largely credited to the principal, the LST, and the literacy teacher. However, much of the information that is shared within schools reportedly stems from school board training, thereby bolstering the school board’s role as a major source. The Internet and published works were suggested as potential sources. However, respondents were wary of the degree to which they are in fact used. The apparent dependence on one or two sources of information further suggests a problem with research accessibility. While the language and statistics used in research reports may also make research inaccessible to some, this issue was not forwarded.

Regarding variable three on the supply side, the quality of research, teachers stressed that research must meet teachers’ needs and make a difference with students to be convincing. Teachers must experience that, “it’s a valid strategy and it has to be a connection right away [about] which teachers say, “I can use that and I can make it work,” an administrator advised. One classroom teacher also speculated that research is frequently not applicable because, “most of the research is based on American, Australian, etc. schools. The clientele could be different.

The States have different standards/expectations etc. that differ from Ontario.”

Fourth on the supply side of variables, and referring again to the dissemination of information, is researchers’ ineffective communication of their work. This variable was further verified as a potential block to teachers’ implementation of research as revealed by a specialized teacher:

... some research is maybe not as—maybe [not] as user friendly or as clear, or as useable in a classroom as others, um, I refer to it as ‘airy fairy,’ that’s my comment, my word for it. It sounds good on paper, but it’s not classroom friendly, it’s not useable information that can be taken from a piece of paper and used in a classroom without a lot of clarification maybe.

This teacher added that if research requires clarification and intensive study to understand it, and then re-designing of an existing program in order to implement it, it will probably not be used or not used completely. Several respondents added that functional research information is ideally ready to use and accompanied by the necessary materials.

The communication of the research also refers to the manner in which research is ‘sold’ to potential users. Researchers might assume this role; however, others such as consultants or specialized teachers may also serve as links to research. However, if individuals from outside the teachers’ schools attempt to transmit new concepts, a specialized teacher warned that the following might occur:

... it’s tricky because they have got these people who have knowledge, but there’s no relationship, there is no connection, and so these strangers are going to the schools, they have so much knowledge to share and all this stuff, there’s that ego personality barrier.

In other words, teachers might resist the knowledge presented to them by outsiders, with the consequence that the knowledge is underused. Stone’s (2002) fourth variable on the supply side was therefore also confirmed as an obstacle to research use by teachers.

Demand side. This category of routes or barriers to knowledge use is comprised of five variables which implicate the intended users of research as obstacles to utilization. For example, a specialized teacher commented on educators’ uses of research by qualifying, “That is so individual; it depends on the teacher.”

More specifically, the first variable on the demand side suggests that users’ lack of knowledge about research is an obstruction to research use. Most of the teachers affirmed that they received minimal information about reading disabilities; they were consequently unaware of the available research. The pre-service education of teachers was partially blamed for this problem. Most agreed, however, that teachers prefer to be informed; but, the greatest obstacle to seeking and using research was a shortage of time. All of the respondents concurred that teachers are over-stretched, which is the second variable on the demand side, or that many teachers are even over-whelmed. Several strains on teachers’ time were identified: ministry and board demands, curriculum expectations, class compositions, lack of help, years of teaching experience, and family obligations. The near exasperation with the demands on teachers was expressed by a specialized teacher as follows:

I think teachers would like to know more but I think they are so overwhelmed that it’s just one more thing. But, oh gosh, like they almost get to the point where they shut down when they go to PD sessions. They are so overwhelmed, oh my God, what are they going to make us do now? What’s the

new thing? I think individual teachers wish they knew more, but it's um, they are just doing the best they can.

This teacher added:

It is just the overall time demands of the teachers; [that] there's just so much coming down from the top, and there's a lot of pressure, and they're really dealing um, you know, they are just trying to survive and keep their heads above the water.

Another specialized teacher explained the impact of increased curriculum demands on teachers' time: "They just don't have the time to really sit down and plan a lesson and plan for differentiated instruction." The curriculum was of particular concern for one classroom teacher who argued that the heavy demands of subjects other than reading in the junior grades preclude teachers from investigating and trying new ideas to help struggling students. Overloaded classes beyond the primary grades, split grades, and the integration of students on individual education plans additionally burden junior and intermediate grade teachers. Another classroom teacher highlighted the challenges of keeping pace with the curriculum when one's grade allocations differ every year, or if one is the sole teacher of a particular grade in a school.

Regardless of grade level, students' needs demand much of teachers' time as this specialized teacher's statements revealed: "The job is getting harder and harder and the kids are getting more and more challenging, and [they] are getting less and less support," adding, "I jokingly say that we have one room school houses, we just happen to have eight of them, but we have them in any given room in this building."

The amount of time that teachers have for exploring innovations may also depend on where they are in their careers. Some respondents intimated that experienced teachers are more likely to investigate new ideas. For example a specialized teacher postulated:

I think it depends a lot on where that teacher is in their development. Like if you are a first year teacher, you are so overwhelmed with all the other stuff that you are not going to have enough time to research one specific thing. Whereas I think it would be the more experienced teachers that are still searching for those questions.

In addition, family obligations may compete for newer teachers' time as this classroom teacher proposed: "A lot of them have young families too, you know, so they've got to put on another hat when they walk out that door." Stone's (2002) theory that being over-stretched obstructs research use by targeted users was supported by the teachers.

Stone's (2002) third variable which obstructs research use on the demand side is a tendency for anti-intellectualism or a resistance to new ideas. No indications were given that educators oppress researchers or withhold their needs from the researchers as Stone proposed. However, the interview results did support the suggestion that some teachers are simply not interested in or motivated to find new ideas. Regarding interest in seeking new knowledge for example, one specialized teacher offered: "I know myself, I am [interested], and I know a few others who are. So, I would say it is probably 50:50." However, an administrator suggested that while teachers may be open to new research and to trying new ideas, "What gets monitored, gets done." The need for teachers to be accountable for implementing ideas was voiced by a few participants, and this implied that intrinsic motivation to learn about research is possibly a problem.

Respondents from all teaching roles attributed a recent decline in teachers' attitudes toward new knowledge and lessened dedication to continued learning to the current generation of teachers and to the effects of collective agreements. A tendency for anti-intellectualism by teachers was also expressed in this administrator's explanation for the underutilization of educational research:

I would say comfort level and a comfort level that comes from confidence with almost what they see as academia. That if, um, it becomes too much of a mental exercise, or too much academic reading, then I don't think that the majority of teachers, [and] I'm looking at across the system, are going to be as comfortable with that. It needs to be much more practical.

This respondent implied that teachers reject the academic writing of research reports that may require more effort to comprehend than practical, professional materials.

Respondents also mentioned that change takes a long time, and resistance to change might be due to a comfort with established practices as stated by an administrator: "They get set in their ways. ... they do the same thing they have done because they have always done it." For example, administrators, specialized teachers, and classroom teachers decried the inclination of many teachers to reject differentiated instruction which current research promotes. With respect to differentiated instruction, an administrator complained, "I think we still are at the point where we present a concept to the middle, to the class majority, and then we step back a little bit and try and pick up some of the pieces." A classroom teacher reported that instead of differentiating instruction, some teachers feel, "if you just got that one or two kids out of my room, everything would be fine." Teachers may also be opposed to new ideas because of how the ideas are presented. If transmitters of knowledge come from outside the school, teachers might not be receptive as noted previously. Therefore, one can safely surmise that an anti-research attitude or resistance to change, the third variable on the demand side of barriers to research use, was reflected in the teachers' comments.

The fourth variable on the demand side of obstacles refers to the inability of intended users of research to comprehend and use new knowledge. Participants also volunteered responses which supported this variable. Some speculated that teachers receive inadequate training in how or where to search for needed information, and that they lack confidence in reading research or in exploring new practices. One administrator commented, "I think ... they don't just feel very comfortable doing [that – putting research into practice]," and a classroom teacher suggested that teachers lack confidence in using research, adding: "I think teachers get very comfortable doing what they know has worked, maybe in the past." A specialized teacher hypothesized that, "maybe [teachers are] unsure of what the research actually means, or what it implies, or how they can implement it in their particular classrooms." As Stone (2002) suggested, the intended users, teachers in this case, are possibly lacking the training to be "intelligent consumers" (p.290).

The fifth variable on the demand side referred to the politicization or misuse of research. This barrier was partially alluded to in the interviews. A preference of classroom teachers to have students with special needs pulled from the class in order to receive their individualized programming could be considered a misuse of knowledge because teachers appear cognizant of alternative strategies to teach some students, but they prefer to delegate the teaching to someone else. An administrator also reported that innovations will be used if teachers think, "I can use that" or, "I can make that work," and if they do not need to alter their programs

substantially. A specialized teacher stated explicitly that, “if it takes a matter of completely redesigning a program in order to use that piece of research, it probably would not be used or may not be used as completely as someone would think.” These statements imply that only ideas that are compatible with a program or that legitimize existing practices will be attempted, not necessarily because they are evidence-based. Variable five labels this as selective use which could result in misuse or underuse of knowledge.

Obstacles to research use on Stone’s (2002) demand side adequately grouped the interview responses that made reference to the teachers’ responsibility for research underutilization. A difference emerged with respect to the issue of time as an obstacle; teachers being over-stretched appeared to be more of a barrier than Stone had possibly anticipated for policy-makers, and several causes for a shortage of time dominated the demand side of the obstacles. No additional factors related to the demand side of obstacles were elicited.

Context side. Stone (2002) posited that the worlds of the researchers and of the intended users of the research, as well as the relationship between these two contexts also determine the extent of research use. In the present study, this category of routes/barriers to knowledge use is comprised mainly of three variables. The first variable concerning the intended users’ context refers to a disconnection between researchers and users. One respondent, an administrator, explicitly confirmed this problem: “I think it’s that link between research at a university or college level and the school board. So, there is a huge gap there; there is a huge emptiness where there need to be more links and more connections.” In addition, this participant emphasized the lack of an association with teachers:

I don’t think it’s a real understanding of the channels that it [research] needs to go through, that your classroom teacher is your better link between the child and the information, the research. And, um, I think it’s valuing that pathway.

Overall, the teachers were positive and respectful of external research; however, they partially confirmed that the relationship between researchers and teachers is deficient.

Stone’s (2002) second variable on the context side of obstacles to knowledge use identified the relevance of the domains of research to contexts of the users as a potential problem. For example, is education research relevant to schools? This variable might overlap with the issue of the usefulness and meaningfulness of research which was previously discussed in reference to the quality of research in the supply side of routes/barriers. However, while the participants often declared that research should address teachers’ and students’ needs, the participants did not criticize research content to any great extent. Mainly an administrator referred to the need for research and context compatibility: “It has to fit the group of people you have, and it has to fit the direction you are going.” Research that is irrelevant to the teachers’ contexts would probably be rejected.

The interview comments were also analyzed with respect to the third variable on the context side, the social and political conditions within schools that might impact the uptake of new knowledge. Of the context features, this variable garnered the most attention. Aspects of institutional arrangements, the culture of public debate, and the nature of the regime of power within schools or school boards were implicated as variables that influence research use by teachers. For example, educational institutions might lack the money and resources to support the use of innovations as relayed by a classroom teacher: “Many parents who have children with reading disabilities do not know how to help them. Of course, they can ask their child’s teacher,

and the teacher can give them many strategies, but then the parents and the teachers don't have the resources to give them." Teachers also expressed that resistance or delays on the part of the school board to test students in the early primary grades limit their efforts to implement new and appropriate strategies. Case in point is the finding that early identification and instruction of students at risk for reading disabilities is necessary to alleviate the incidence of reading disabilities. However, school boards wait until students are in Grade 3 before they are tested and identified with reading disabilities. Respondents consider that such a school board policy precludes their uses of research-based early interventions.

The culture or attitude within a school or board to learn about new practices was also mentioned as an important factor. For example, a specialized teacher proposed: "I think the teachers should be really encouraged to do professional reading. ... Or, if you get the chance to go to conferences. You don't very often get the chance to go to conferences." This teacher also reported difficulty within the school: "I have had amazing results with the kids that I've used it (technology) with that have learning disabilities, but I still have resentment from other staff members for me using the lab space with these kids ... that has to be acknowledged." An administrator also suggested the following: "As far as getting people excited about the research, that starts with conversations, that starts with giving them the time to do that." The teachers applauded the availability of informed literacy or learning support teachers and collegial time to share new ideas, of mentoring practices, of more professional development, and of self-directed professional development in order to foster a culture of learning. One specialized teacher also referred to the leadership as a determinant of teachers' use of research in this statement: "It's, I think, that's [seeking information] going to depend on which school they are at and who their principal is, how supportive they are." The school environment and the school administration undeniably were considered to be influential in teachers' implementation of research.

Another aspect of the third variable on the context side, ways of knowing which influence institutional practices, was not referred to as an obstacle to knowledge use by the teachers. Epistemological beliefs such as what knowledge is and what the sources of knowledge are did not appear to concern the participants. Could this reflect a failure of teacher education programs to foster critical thinking with respect to research beyond the utilitarian aspects of findings in education research? However, although it was not an issue raised in this pre-pilot study, ways of knowing may still be worth considering in a larger scale study with a greater range of respondents. No additional categories of contextual features were mentioned as obstacles.

Discussion

The open-ended interview questions elicited responses which were successfully classified according to Knott and Wildavsky's (1980) seven stages of knowledge utilization. The information gained from these classifications suggested an underutilization of research on reading disabilities, and that the first stage, reception of research on reading disabilities, was probably a key reason for the reported underutilization. The teachers reported that they received very little if any information about reading disabilities, and that some teachers tended to search for information on reading disabilities sometimes and on an 'as needed' basis. If and when research on reading disabilities was obtained, some teachers read it, discussed it, tried it, implemented it, and actually achieved desirable impact on student learning. The adoption of research into policy was not explicitly mentioned; direct questions about this stage may be necessary in future studies. In addition, the findings revealed that demographic variables may

influence responses. For example, administrators and specialized teachers were more positive regarding the availability and particularly their own reception of research on reading disabilities than classroom teachers were. On the other hand, classroom and specialized teachers were slightly more optimistic about some research being used sometimes by teachers than administrators were. Also, although the participants' ages and years of experience were known only by the researcher, the fact that administrators and specialized teachers tended to be older and have more years of experience than most of the classroom teachers indicated that age and work experience may influence responses. Therefore, the inclusion of demographic variables in the knowledge utilization framework was supported. Additionally, discrepancies in coding by the two raters resulted from difficulty in discriminating 'use' from 'try', which demonstrated that a more explicit meaning of 'use' needs to be given when studying this issue.

With respect to the reported obstacles to research use by teachers, Stone's (2002) categories of supply side, demand side, and context side variables were successfully applied to group and label the responses to the interview questions. The variables are helpful descriptors of the obstacles to teachers' uses of research on reading disabilities. For example, with respect to the supply of research, the teachers were not dissatisfied with the amount of reading disabilities research; poor accessibility and dissemination were considered to be problematic. The desire for useful research that could be easily understood and implemented in classrooms was also expressed. The additional inquiry regarding sources of information illuminated the extent of and reason for teachers' difficulties accessing research. The teachers reported relying largely on within-school or school board sources to provide information. With respect to the user side of obstacles, responses indicated that educators may be resistant and unable to use research and that they might alter research findings to meet their needs or beliefs; however, being over-stretched was the most prevalent variable. Numerous factors that place a strain on teachers' time were proposed. This finding suggested that a questionnaire for teachers in the future should address these many factors directly versus time alone. Within the category of the context side barriers to knowledge use, problems with a divide between researchers and educational facilities and the relevance of research were alluded to. In addition, Stone (2002) theorized that a divide between researchers and intended users of the research leads to users relying on local sources of information. In this study, the teachers' previously noted dependence on in-school sources further supports the finding that a disconnect between researchers and schools may be an obstacle to educational research use. Institutional features such as leadership, funding, supplies, and policy were the main concerns with respect to context features that may obstruct research use. Although ways of knowing was not mentioned as an obstacle, it may need to be asked about explicitly in a future study. Demographic features of the respondents did not appear to influence the responses regarding obstacles to research use; only access to research appeared to be less of an issue for administrators and specialized teachers as was discussed in the findings related to the reception of knowledge. In coding the obstacles, statements should be carefully extracted from the context and the coding should be practised by the raters to ensure reliability.

Conclusions

Admittedly, self-reports may be flawed and the sample in this study was limited. Therefore, the findings concerning reading disabilities research use are only suggestive at this juncture. However, this pre-pilot study was conducted to determine the utility of Knott and Wildavsky's (1980) and Stone's (2002) theories to study teachers' perspectives on the research to practice

gap in the identification and instruction of students who are at risk for reading disabilities in preparation for a larger research project. The findings suggest that the teachers' responses to the open-ended questions on uses of reading disabilities research can be successfully categorized according to Knott and Wildavsky's seven stages of knowledge utilization: reception, cognition, reference, effort, adoption, implementation, and impact. Teachers' sources of research additionally reflect an aspect of research use. Hence, Knott and Wildavsky's model of knowledge utilization stages has potential for identifying the extent of how much reading disabilities research is used and at which stage use is blocked. Findings suggest that clear meanings for 'try' and 'use' need to be established and that explicit questioning about each stage would be useful for developing a survey questionnaire.

The teachers also identified obstacles to research use that could be classified according to Stone's (2002) three categories of supply, demand, and context. Within these groupings, several of Stone's variables were also confirmed, but to differing degrees from the policy makers for whom Stone developed her model. These findings suggest that Stone's variables are useful in classifying obstacles to teachers' uses of reading disabilities research, and they along with specific educational context features, such as demands on time, should be considered in a questionnaire for teachers.

The demographic component in the model may also be beneficial for exploring user characteristics that influence knowledge use and reported obstacles. Additional themes regarding research use and barriers to use did not arise from teachers' responses. The findings from this pre-pilot study were subsequently applied in constructing a survey questionnaire for teachers regarding their uses of research on the identification and instruction of students who are at risk for reading disabilities. This study additionally contributes a theoretical framework which may be used to investigate knowledge use across the curriculum and other disciplines.

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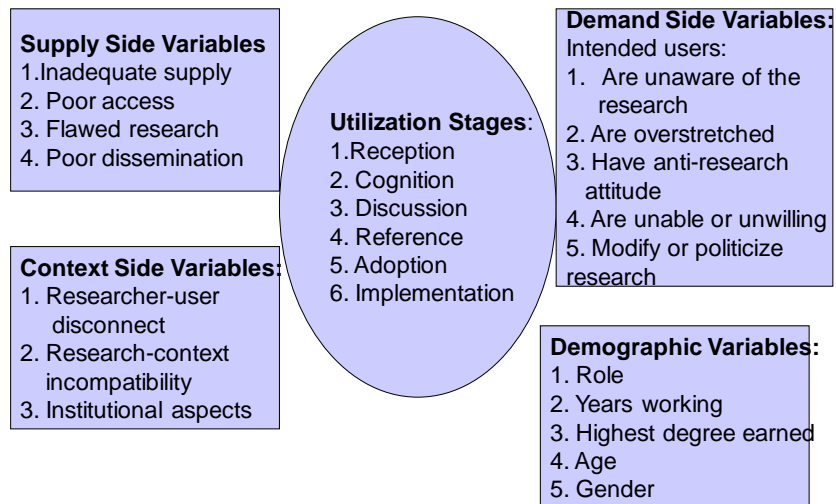
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Appendix A

Representation of the Theoretical Framework

Knowledge Utilization Framework:

Knott & Wildavsky (1980); Stone (2002)



Appendix B

Interview Questions on Teachers' Uses of Research

1. In your opinion, how do teachers use research about reading disabilities? (e.g., Do they receive it to read or use? Do they try it? Do they change their practices?)
2. From where do teachers obtain research information?
3. To what extent do teachers use research? (e.g., all the time, sometimes, not at all?)
4. What helps or hinders teachers' use of research?
5. Is there anything you would like to add regarding teachers' use of research on reading disabilities?

Some elaboration of answers might be requested such as: Can you tell me more? Can you tell me what you do?