Translating educational research into classroom practice:
Working together to close the gap
By

Hayley Burghart

Submitted to the graduate degree program in Educational Psychology and the Graduate Faculty of the University of Kansas in fulfillment of the requirements for the degree of Masters of Science in Education.

Chairperson: Dr. Robert Harrington

Dr. Seungyeon Lee

Dr. Felix Moos

Date Defended: 9 May 2017

The Thesis Committee for Hayley Burghart certifies that this is the approved version of the following thesis:

Translating Educational Research into Classroom Practice:
Working Together to Close the Gap

_____

Chairperson: Dr. Robert Harrington

Date Approved: 9 May 2017

Abstract

The research-to-practice gap, the disconnect between what we know about education and what we do in practice (Olswang & Prelock, 2015) or the gap between the production of new knowledge through research and its inclusion in routine practice by educators (Greenwood & Abbott, 2001) has been discussed and examined in the education field for many decades. However, this gap continues to be a challenge researchers and educators face (Kane, 2016). The current literature on the research-to-practice gap does not address the *process* by which teachers are engaging with educational research when facing challenges in the classroom. If teachers are to participate in closing the gap, we need to better understand their selection processes for various outlets of educational research.

The current study is a mixed methods survey research design examining how pre-service teachers (n = 28) select sources of information (academic and non-academic) to solve instructional and behavioral challenges they may encounter in the classroom, why they choose the sources they do, and their opinions on solutions to close the research-to-practice gap. The findings showed that pre-service teachers were more likely to use their personal relationships with colleagues as source of gathering new information because these colleagues provide practical information for challenges they face in their classrooms. Suggestions for interventions proposed by pre-service teachers and future directions are discussed.

Keywords: Research-to-practice gap, pre-service teachers, evidence-based practices, information transfer, educational resources, educational psychology

Acknowledgements

I would first like to thank my thesis advisor Dr. Robert Harrington at the University of Kansas along with my thesis committee members Dr. Seungyeon Lee and Dr. Felix Moos for their incredible flexibility and valuable insights throughout the development and completion of this thesis project. I am truly appreciative of the assistance you all have provided me in completing this project.

I would also like to thank my family for their unfailing support throughout my academic career. I am so grateful for the love and care they have provided me particularly over the past year as I completed this thesis.

Finally, I would like to express my profound gratitude to my future husband, Kendal. I certainly would not have been able to accomplish this goal if it were not for the motivation, inspiration, kind-hearted advice, patience, and love he has shown me. Thank you.

Hayley Burghart

Contents

Chapter I: Introduction

The research-to-practice gap has been the topic of various symposia and studies over many decades and has been discussed across multiple domains (e.g., school psychology, social work, speech and language pathology, as well as the education field; Cheung, Ma, Thyer & Webb, 2015; Crooke & Olswang, 2015; Davis et al., 2013; Meline & Paradiso, 2003; Riley-Tillman, Chafouleas, Eckert, & Kelleher, 2005). Efforts to close or bridge the gap, though successful in some contexts, are generally large-scale interventions that may not be practical for all educators (Booth et al., 2015; Cooper, 2007). These interventions will be discussed in the *Closing the Gap* section below, page 11. The impractical nature of interventions may be due to the lack of communication between researchers and practitioners, barriers that teachers face when it comes to accessing empirical studies, or understanding and applying new strategies in the classroom setting (Deshler, 2003; Meline & Paradiso, 2003; Vanderlinde & van Braak, 2010). Educational researchers have conducted a multitude of studies examining best practices for educators (e.g., the following authors are just a sample of those developing practices to improve student engagement: Anderman, Andrzejewski, & Allen, 2011; Bundick, Quaglia, Corso, & Haywood, 2014; Hughes, Luo, Kwok, & Loyd, 2008; Klem & Connell, 2004) and a surge in the *evidence-based practice* movement following the No Child Left Behind Act (NCLB, 2002) gave teachers a reason to become more engaged with educational research. Evidence-based practices are strategies that are tried and tested as effective strategies in certain contexts (Biesta, 2007). Whether this evidence comes from classroom implementation or experimental studies is debated among educational professionals, but most agree that evidence-based practices in education are those that show proof of improving student's academic performance (Biesta, 2007).

The research-to-practice gap has continued to be a topic of interest in today's current research and educational researchers have continued to propose ways to bridge or close this gap in hopes to improve student outcomes through the use of evidence-based practices (Kane, 2016). Just last year, in a feature of *Education Next,* Thomas Kane (2016) compares the current status of student achievement with that during the era of the Coleman Report (1966). Examining the results of the Coleman Report and recent reports from the National Assessment of Educational Progress, Kane notes that the disparities in achievement across racial and ethnic lines have changed little. Kane (2016) claims that, due to ineffective use of federal funding for programs that connect research to practice and poor collaboration between researchers and local and state policymakers, the last five decades have been a "complete failure" in regards to racial achievement gaps (p.82). Kane urges the research community to increase collaboration with local practitioners and decision makers to make bigger and more effective strides towards closing the achievement gap. The successes in educational research (i.e., the development of new pedagogical strategies) are limited in their relevance as well as their effects on student performance if teachers in the classroom do not actively engage with and utilize them. Promoting and providing adequate funding for school and research programs that support translation of educational research and collaboration between research and teaching communities are just two ways researchers have proposed to close or bridge the research-to-practice gap. By understanding the processes by which teachers seek out educational research we can develop interventions that are practical for teachers and have positive effects on student outcomes.

Why does this gap exist?

Researchers have speculated as to why this gap between research and practice exists by examining the attitudes of current educators and researchers (Chafouleas & Riley-Tillman, 2005;

Meline & Paradiso, 2003; Vanderlinde & van Braak, 2010). They have found an occasional divergence in the reasons provided by each group (i.e., researchers and classroom teachers). Researchers highlight weaknesses in the dissemination process, such as a lack of effective mechanisms that get research into the hands of teachers when they need it, and a lack of accessibility of published findings as two main reasons that educators are unable or unlikely to use research (Chafouleas & Riley-Tillman, 2005). In a summary of recent literature, Vanderlinde and van Braak (2010) report that researchers fail to draw educator's attention to their reported findings and instead move on to their next study after publication. The authors conducted a focus group study examining the attitudes of four main groups of individuals that engage with educational research: teachers, school leaders, intermediaries (described as people or organizations in charge of distributing research findings to practitioners such as in-service trainers), and researchers. Researchers discussed their dissemination processes, which mainly include relying on academic journal publications and conference presentations. However, Vanderlinde and van Braak (2010) indicated that teachers and school leaders often do not know these academic journals and are more likely to use other sources of information. These authors did not discuss in detail the specific sources that educators use, an area that the current study aims to address. Though researchers have identified the dissemination of findings as an area for needed improvement when it comes to translating educational research, it appears their efforts may need to be directed towards a more systematic change by providing access to published articles for educators and drawing attention to the various modes of access (e.g., Education Resources Information Center).

When examining the opinions of teachers, researchers have found that educators are in agreement with researchers in that access to findings limits their use in the classroom but more

importantly they note that the lack of *relevance* to classroom practice is a main reason why research findings are not used in the classroom (Vanderlinde and van Braak, 2010). Again, Vanderlinde and van Braak (2010), in a focus group study assessing the attitudes of teachers, school leaders, intermediaries, and researchers, found that teachers are most confounded by the lack of applicability and ambiguity of research findings. This lack of applicability and practicality means that research articles and studies do not address specific issues in which teachers are interested. These authors found that teachers value research and findings that have direct applications to their classrooms, are orientated more towards practice, and those that can be translated easily to their classrooms. When teachers were able to access journal articles, they were often found to be about topics that were not relevant to their classroom practice, or they were too broad in nature that any interventions presented would be difficult to implement. These participants believed that an increase in research with practical applications that address issues they face in their classrooms would best facilitate the use of research findings and proposed strategies.

Everett, Luera, and Otto (2006), reiterate this point by summarizing the literature on why teachers are unlikely to use educational research. Everett et al. (2006) state: (1) the lack of relevance to classroom practice, (2) the lack of persuasiveness and broad findings of research studies, and (3) lack of accessibility to published articles are the three main reasons teachers are not likely to use academic research to inform classroom practice. The authors examined pre-service teachers' ability to link information they found in the literature to what they observed in the classroom during their student teaching experiences. By examining the final reports of an action research project from 144 groups (two to four people in each group) of pre-service elementary teachers, Everett et al. (2006) were able to determine (1) whether these students

developed the skills to locate research articles that are relevant for their teaching practices and (2) whether they are able to link their observations of teaching strategies (during their in-classroom student teaching experiences) to the research base. During this action research project, participants were to consult the current literature on a specific science topic, construct a pre-assessment instrument to administer to the class, develop two lessons based on analysis of the pre-assessment, administer a post-lesson assessment, and link their results and findings from the action research experience back to the research base.

The study showed that while pre-service teachers were successful at navigating academic resources for peer-reviewed articles to inform their practice and the development of the pre-assessment, they were unlikely to link practices used in the classroom back to the research base at the conclusion of their action research project. Only 23 of 144 groups of students (16%) reported explicit connections between what they observed in the classroom and current educational literature in their final project. These authors speculate as to why these students were unable to draw these connections and came to the conclusion that they required more guidance in achieving this final step in their action research project. With that, these researchers conducted a follow-up study where they implemented more opportunities for feedback with pre-service teachers and provided more support to these students. The follow-up study, though only conducted with 17 groups of students, showed improvements in connecting teaching experiences to the research base. In fact, 94% of these groups were able to draw connections from their teaching practice to the research base in the final project paper. These findings suggests that pre-service teachers require more training and support in connecting their teaching practice to the research base, or using educational research to inform their practice.

The current study expands upon Everett and colleagues (2006) by examining the various sources of information pre-service teachers use when developing their teaching practices and why they select the sources they do, in hopes to propose practical interventions that will improve the use of educational research in classroom practice.

Pre-service teachers comprise a population that has been relatively unheard from in the literature on the research-to-practice gap. These pre-service teachers hold a significant position in both the research and teaching communities as they have experience critically examining and reading educational studies and they have in-classroom experience with teachers and students. Their voice is important and provides a perspective that is missing in the literature. Though Everett and colleagues (2006) examined how pre-service teachers connect teaching strategies to the research base, they did not consider how or whether these students would use various sources of information (including non-academic sources) to draw these connections or to inform their practice. This information will allow researchers to invest more time in interventions that will effectively get research into the hands of teachers, through avenues that they are most likely to use. Little is known about the extent to which pre-service teachers determine the specific sources they are likely to use, whether they are academic or non-academic sources.

Meline and Paradiso (2003) examined how the research-to-practice gap influences the use of evidence-based practices by speech and language pathologists (SLPs) that work in schools and other settings. To examine the barriers these participants face in using practices, 27 SLPs completed a 10-item survey with statements addressing their (1) ability to understand research articles, (2) opportunities to engage with research, and (3) attitudes on implementing practices. The authors found that these practitioners were predominantly interested in *seeking* relevant research and found value in keeping up with current findings. However, at the same time, few

(7% of participants) reported being satisfied with the time available to keep up with current literature. This finding introduces another barrier to using research to inform classroom practice: lack of time. Practitioners also reported being confident in their understanding of research articles (96% of participants), with only one in four participants stating they are displeased when statistics are present in research articles. However, only 42% stated that is easy to implement strategies found in research articles in everyday practice. Meline and Paradiso (2003) also reported that 92% of practitioners believe that all published research findings are reliable. These last findings seem a bit contradictory, possibly indicating the inadequate training of SPLs in evaluating the validity and reliability of research studies. On one hand they are confident in their analysis of journal articles but on the other hand, they are also likely to believe the findings presented in published articles as reliable. Assuming the reliability of a published journal article may not be enough as some findings are not applicable to the setting in which educators are working. Readers must also be critical and consider the context in which they would apply interventions and whether or not those match with the context of the given research study; if the settings are not similar, the findings may not be consistent and therefore unreliable. However, it is also possible that the research articles these practitioners are reading are not practical and lack examples of implementation.

Though this study was conducted with speech and language pathologists who work in schools, findings may be similar for classroom teachers; barriers introduced by Vanderlinde and van Braak (2010) such as lack of time and the applicability of findings are consistent with the barriers these SLPs expressed. Speech and language pathologists are also likely to face similar barriers to accessing research articles as these journals conform to the same restrictions as educational research journals, such as limited free access to articles for non-university students.

The current study expands upon Meline and Paradiso (2003) by surveying pre-service educators' opinions on educational research: what sources they use to seek information, why they choose the sources they do (e.g., is it because the source provides statistical evidence?), and how they think the research-to-practice gap can be bridged. Similarly, we are interested in the opinions of practitioners and their use of educational research. However, we introduce specific sources of information and motives for resource selection processes in which pre-service teachers engage.

In regards to consuming educational research, Vanderlinde and van Braak (2010) indicate that school leaders found the technical language often used in educational studies to be a barrier for understanding findings, stating researchers use a language that is "unintelligible" to them (p. 306). It is unclear whether Vanderlinde and van Braak (2010) asked participants about the use of statistics like the question posed by Meline and Paradiso (2003). Vanderlinde and van Braak (2010) used focus groups to gather information from teachers, school leaders, intermediaries, and researchers. We can synthesize the findings of Meline and Paradiso (2003) and Vanderlinde and van Braak (2010) to conclude that though some practitioners may not be deterred by statistics, school leaders are deterred by complex language suggesting that these educators are not critical consumers of research. These practitioners and school leaders may possess limited skills in analysis of research finding them complex and assuming their reliability. These findings also suggest that researchers may need to examine the way in which they present and disseminate information, as time for educators is limited and implementation can be difficult just from reading an article.

Educators' inadequate time to access, read, and comprehend a research article *that is relevant to the educators problem*, along with the complex and technical language used in research articles are just a few supplementary explanations for the educational research-to-

practice gap (Meline & Paradiso, 2003; Vanderlinde & van Braak, 2010). Knowing the main barriers teachers face with accessing and utilizing research in the classroom we can better develop interventions with practical applications. Gathering information from the perspective of pre-service teachers who engage with educational research in their coursework will provide valuable insights into future directions considering these barriers. It is important to propose interventions based on the perspectives of pre-service teachers in light of barriers presented in the literature to ensure that interventions will work.

How do educators seek new information?

By examining the means through which educators gain new information, Neal, Neal, Kornbluh, Mills, and Lawlor (2015) found that teachers usually gain information through secondary sources and casual conversations with colleagues as opposed to reading empirical studies themselves. Neal et al. (2015) used semi-structured interviews with 19 school administrators to examine how these participants gain information for school-based programs. The authors explored pre-existing modes of information transfer in relation to Gould and Fernandez' (1989) brokerage typology. This brokerage typology is a classification of "brokers" or individuals and organizations involved in the translation of new information connecting subgroups of individuals that are normally disconnected [i.e., similar to Vanderlinde and van Braak's (2010) intermediaries]. These disconnected subgroups include researchers and practitioners. Gould and Fernandez (1989) identified five different types of brokers, through theoretical examination of forms of mediation observed in social structures, which translate information in different ways providing connections between subgroups that usually do not engage with each other. Neal and colleagues (2015) examined each of these types of brokers in their study.

Neal and colleagues (2015) found that, for school administrators, the most common form of access to educational research and new information was through brokers called "gatekeepers". The term "gatekeeper" refers to a particular type of broker that seeks out information and passes it along to others (Gould & Fernandez, 1989). These brokers step out of their community seeking information from a disconnected subgroup, gather the information, and return to their community with this new information. For example, information is most often translated, as Neal and colleagues (2015) found, through individuals like superintendents who seek relationships with researchers to gather information to pass along to teachers. Neal and colleagues provide the following example of a gatekeeper in education: "A district superintendent recruits a local researcher with expertise in bully interventions to provide professional development to district staff and teachers. The superintendent brokers information between the researcher and school staff." (2015, p.425). Though the example here shows the superintendent as the gatekeeper, other individuals can take on this function as well such as teachers and other school leaders.

This form of information transfer is the one most commonly used by school leaders though they also recognized other modes of connecting these two communities. Neal et al. (2015) placed responsibility on both researchers and practitioners to actively close the research-to-practice gap by recognizing these effective modes of communication and utilizing these avenues in ways that support the translation of reliable and valid research. Neal and colleagues (2015) propose identifying appropriate gatekeepers within school districts and fostering relationships between these gatekeepers and researchers to aid in the transmission of educational research to classroom practice.

The current study follows the work of Neal and colleagues (2015) by exploring current forms of information transmission, specifically how pre-service teachers seek out new

information when facing challenges in the classroom. We introduce personal relationships between "brokers" in our sources of information (e.g., correspondence with a school psychologists and other colleagues) but we also include non-academic sources of information (e.g., generic search engines and news organizations). This expands upon Neal and colleagues (2015) by introducing more specific educational resources beyond those introduced in the brokerage typology. The current study also gathers information from pre-service teachers on their suggestions for closing the research-to-practice gap. This information provides insight into more practical intervention efforts, what types of support pre-service teachers foresee needing in the translation of educational research, and possibly resources in which to invest to improve the use of research-based practices in the classroom.

Closing the educational research-to-practice gap

Though the reasons for not using academic research vary depending on whom you ask, the solutions often look similar: action research for teachers, supporting communication and collaboration between educators and researchers, and giving teachers more opportunities to engage with research through professional development and other technologies (e.g., Information Communication Technology, discussed below on page 12). One example of collaboration between researchers and teachers put into place is the National Association for the Education of Young Children (NAEYC) Center for Applied Research. This center was launched in 2010 to provide better forms of communication between teachers and researchers. Two main goals of the NAEYC Center for Applied Research are to inform researchers of the needs of educators through direct lines of communication and advising educators on ways to apply academic research by providing them with professional development trainings, books on early childhood education, and resources for translating research into practice (Snow, 2011).

Providing other forms of interventions, Deshler (2003), focusing on research in special education specifically, emphasizes some improvements that can be made within the structure of educational research agencies. Better allocation of financial resources that promote collaborations between researchers, policymakers, and teachers are suggested by Deshler (2003), which is in line with the recommendations of Kane (2016) discussed previously. Deshler (2003) recommends several other avenues to minimize the gap between research and practice including: establishing educational standards by which researchers must demonstrate that their work is effective considering the contextual difficulties of the population being served (i.e., the settings in which students with disabilities live and are served); creating mechanisms through which research agencies, practitioners, and researchers can communicate and work towards the common goal of producing and utilizing knowledge; developing strategies for broad dissemination and integration of practices; and structuring research agencies so that they employ more researchers, reduce budget limitations, and improve and perhaps narrow the areas of interest to ensure more resources for high priority populations.

Weston and Bain (2015) introduce Information and Communication Technology (ICT) as a tool that mediates the relationship between classroom instruction quality and evidence-based practice (e.g., knowledge obtained through educational research) and a mechanism that can be used to bridge the research-to-practice gap. Weston and Bain (2015) are interested in increasing the use of educational practices that have been linked to improved quality of education in the classroom by using Information and Communication Technology. ICT is a program that teachers utilize when planning their lessons that puts emphasis on evidence-based practices and provides direct feedback to teachers. Using ICT would provide more direct engagement with educational research for teachers, without them having to seek it out on their own. Comparing the use of

research-based practices of a control group that created lesson plans without the use of ICT and a treatment group that did use ICT, Weston and Bain (2015) found that teachers that effectively used ICT in their lesson planning provided (1) expected outcomes for students, (2) the intent of each lesson, (3) time for students to practice examples independently, (4) models of skills and (5) scaffolding for students learning new skills. Each of these teaching practices are supported through the use of ICT and all are research-based practices found to improve student performance.

Weston and Bain (2015) suggest conducting subsequent studies on the use of Information and Communication Technology as a way to bridge the gap between researchers and practitioners. Studying not only the means by which educators seek access to educational research but the tools that can improve the use of research-based practices (e.g., modeling and scaffolding) will advance our understanding of the research-to-practice gap and inform efforts to repair the disconnect. ICT appears to be a promising avenue to close the research-to-practice gap but in the short-term is not particularly accessible or practical for all teachers. As previously mentioned, time to read research and learn implementation strategies are barriers teachers face to using educational research in the classroom (Vanderlinde & van Braak, 2010). ICT puts the burden of closing the gap on the educators themselves, as they are the ones that need to take the time to use ICT when lesson planning, an event that often occurs for teachers during their "home" time, not necessarily during "work hours".

The current study focuses more on how pre-service educators will seek out educational research when they are facing a challenge in the classroom as opposed to linking educational research directly to an instructional lesson. If a teacher is facing a new challenge, such as a disruptive student in the classroom, ICT may not be as useful as it is better used to incorporate

research-based practices in everyday lessons. The current study explores how, when faced with challenges, pre-service teachers will seek out possible solutions and where they will go to find relevant information.

Many interventions and efforts to minimize the gap have relied on school administrators to improve professional development opportunities (Riley-Tillman et al., 2005; Rust, 2009; Spencer & Logan, 2003) and the teachers themselves to make changes or take on roles as action researchers (Cheung et al., 2015; Rust, 2009; Spencer & Logan, 2003). Some researchers bring light to issues with dissemination of research findings as discussed previously (Deshler, 2003; Meline & Paradiso, 2003; Neal, et al., 2015; Vanderlinde & van Braak, 2010) and bring the role of closing the gap to the researchers instead of the practitioners. One common theme among those examining the research-to-practice gap is that educators and researchers fail to communicate in effective and meaningful ways; from the top-down process of designing research projects without collaboration with educators to the inaccessibility of published educational findings and complex technical language used, teachers are left behind in the venture of educational research.

Some fruitful efforts to provide better collaboration between researchers and practitioners with the goal of improving student outcomes are presented by Cooper (2007) and Booth and colleagues (2015). These authors both discuss the success of the Minority Student Achievement Network (MSAN). Superintendents of 15 school districts with the goal to close racial achievement gaps formed this network in 1999 (Cooper, 2007). Cooper (2007) describes how this network quickly established a second goal to improve relationships with researchers as a means to disseminate information more efficiently and connect to a research base that informs practice. The MSAN has taken a strong stand to not only consult research when working to close

achievement gaps but to conduct research in their own districts to meet their goals by building partnerships with research agencies [e.g., they partnered with the Strategic Education Research Partnership (SERP) in 2006]. This network is founded on recognition that educational research is important and connecting with researchers is essential to making practical change (Cooper, 2007).

Booth and colleagues (2015) examined the effectiveness of MSAN (now comprised of 29 contributing school districts) initiatives addressing the lack of progress minority students were making in Algebra 1. The MSAN collaborated with the SERP to describe the problem they were facing, challenges they anticipated in finding a solution, expectations for intervention outcomes (e.g., it has to be practical for teachers), and to ultimately develop an intervention that was both practical in implementation and provided research-based strategies. The end product of this collaboration was a set of 42 Algebra 1 assignments called "AlgebraByExample" that addressed issues practitioners discussed, such as common student misconceptions, and was based on evidence-based practices that support student comprehension, such as self-explanation problems (Booth et al., 2015). Using multilevel modeling to compare a control and a treatment group (i.e., treatment group used the developed AlgebraByExample assignments) on pre- and post-test performance, Booth et al. (2015), reported that overall the treatment group scored 5 percentage points higher on a conceptual post-test than the control group. Interestingly, the poorest initial performers did 10 percentage points better than control group students on the conceptual post-test. This shows that collaborations between practitioners and researchers can produce favorable interventions that improve outcomes for all students, especially those most in need.

The collaboration achieved by the MSAN working with researchers and agencies is proof that teachers and school leaders are willing to work closely with researchers to improve student

performance. One major limitation that accompanies this particular collaboration is that it took approximately seven years to create the AlgebraByExample intervention and another year to test its effects on student performance in Algebra 1. The current study attempts to identify solutions that are less time consuming and more realistic for teachers in their everyday classrooms. Though creating these connections between researchers and educators has positive effects on student performance, it can be assumed that there are other opportunities for improvement that focus on the everyday challenges teachers face as opposed to the larger picture concerns such as racial achievement gaps.

Researchers and practitioners alike would benefit from an exploration of educator's attitudes towards using research to inform practice. The current study examines the attitudes of pre-service educators, or students preparing to enter the field of education. These students are a unique group that sits on the border between the researcher and the practitioner. Many engage with journal articles through course requirements and also participate in classroom teaching through in-field experiences. Gathering information from this group of individuals provides insight into possible barriers educators face to engaging with research (above and beyond those discussed previously), as well as what teachers are looking for when they search for information to solve problems in the classroom.

By gathering suggestions from pre-service educators on solutions to close the research-to-practice gap we can see more practical pathways for solutions allowing researchers to communicate their findings in ways that will promote translation. In their own words, the pre-service teachers were able to describe the means through which they believe closing the gap is possible. This study aims to use these suggestions to inform interventions that could aid in closing the research-to-practice gap, ensuring that (1) researchers are providing findings in ways

that are meaningful and helpful to teachers by eliminating some of the barriers they face and (2) teachers are engaging with empirical findings and applying evidence-based practices in the classroom that are appropriate for their setting by using reliable sources to gather information.

The current study

The purpose of this study is to explore the attitudes of pre-service educators on translating educational research into classroom practice. This is a mixed methods survey research design. We look specifically at (1) educational resources that participants find most relevant to implementing strategies in the classroom, (2) specific reasons for which they use or do not use a particular source, and (3) future directions for closing the research-to-practice gap. By understanding where teachers are going to seek new strategies and their motives for selecting these resources, researchers can develop interventions that will get more practical and evidence-based practices into the hands of teachers.

Research questions and hypotheses

This study examines the following research questions:

1. What are the most common sources that pre-service teachers are likely to use when seeking solutions to challenges they face in the classroom?
2. What are the main reasons for which pre-service teachers select sources of information?
3. What are the main reasons for which pre-service teachers are unlikely to use sources of information?
4. In what ways do pre-service teachers think we can close the research-to-practice gap?
5. Do pre-service teachers differ on the reasons they provide for using and not using sources of information based on the grades they have experience teaching (e.g., high school, middle school, elementary school)?

The following hypotheses are created based on the given research questions:

1. Following research by Chafouleas & Riley-Tillman (2005), Meline & Paradiso (2003), Vanderlinde & van Braak (2010), and Neal and colleagues (2015), teachers are more likely to use non-academic sources of information due to the lack of access to journal articles and other academic sources. Some examples of sources, provided in the questionnaire, of non-academic sources include: Generic search engines (e.g., Google, Yahoo, Bing, etc.) and local and national news organizations (e.g., NPR, CNN, etc.).
2. Pre-service educators are most likely to use resources because they provide practical information and clear examples of how to implement solutions in the classroom.
3. The main reasons teachers will *not* use certain sources include lack of access to the source, complex technical language, and impractical information for problems encountered in the classroom (Meline & Paradiso, 2003; Vanderlinde & van Braak, 2010).
4. When asked about suggestions to close the research-to-practice gap, pre-service teachers will include improving access to empirical studies for teachers and providing more practical examples of the implementation of strategies.
5. It is my understanding that no studies compare the reasons elementary school, middle school, and high school teachers provide for using sources of information. Based on the barriers expressed by teachers in Meline and Paradiso (2003), such as time constraints and lack of access, there will be no differences between teachers for their reasons for engaging with sources of information. Though teachers may face different barriers in their day-to-day processes, in regards to accessing and putting educational research to use

they will hold the same main motivations for using some sources and not using other sources.

Chapter II: Method

Participants

Pre-service teachers were recruited from two sections of the Classroom Assessment undergraduate education course at a large Midwestern university (N = 103). This course is for pre-service educators in their final year of their undergraduate career. It covers concepts in formal and informal classroom assessment. All students in these classes were asked to participate in an online questionnaire either through direct email from the researcher or through contact by their professor. It was explained to all students that participation is completely voluntary and that they will not receive any extra credit for participating in the study.

Attempts were also made to collect data from various courses in the School of Education. The researcher contacted professors who teacher undergraduate pre-service teachers to request access to their students. Efforts were also made to send the recruitment email to the undergraduate School of Education listserv to obtain a larger sample size. These efforts to distribute the questionnaire to more students proved unfruitful as only one professor responded to the researcher's request. However, no responses were obtained from pre-service teachers through this contact.

Pre-service teachers comprise a unique group of pre-service educators who (1) engage with educational research in their coursework and (2) have experience with current teachers and students in the classroom setting through student teaching opportunities. The participants were informed that all responses and participation in the study would be anonymous; no identifying information was gathered from the participants. On the first page of the questionnaire (see appendix), a consent form was presented following Institutional Review Board (IRB) regulations. If the participant decided that they did not want to participate in the study, the

questionnaire ended and no data was be collected. If the participant confirmed to participate, then the questionnaire followed. One week following the initial recruitment email, all participants received a follow-up reminder. In this correspondence, the researcher (1) thanked those who had already taken the questionnaire and (2) requested again that those who had not taken the questionnaire do so if interested. This was the last time the researcher contacted the sample of participants. All recruitment documents including both emails to sample participants have been approved by the IRB. Questionnaire responses were collected for a total of 14 days.

A total of 29 responses were recorded from the recruited sample of 103 pre-service teachers. One participant answered the first few questions then ended the questionnaire before completing the remaining sections; this case was removed from data analysis. Of the 28 participants who completed the full questionnaire, most identified themselves as female (85.7%), White (96.4%), and seniors in their undergraduate program (96.4%). These participants ranged in age from 21 to 38 years ($M = 23.07$, $SD = 3.39$). In regards to these participant's experiences in the classroom, most had some experience observing or student teaching in elementary school classrooms (60.7%), while the other participants had experience in middle school (7.1%), high school (14.3%), or a combination of middle school and high school classrooms (17.9%). These participants ranged in months of experience in the classroom from 7 to 48 months ($M = 12.93$, $SD = 9.24$).

Measures and Procedures

After IRB approval, the pre-service teachers were contacted to participate in the study by completing an online questionnaire. Those who confirmed on the consent form and volunteered to participate in the study received the questionnaire with three sections. The first section of the designed questionnaire covers the sources that participants use when facing challenges in the

classroom, the second section covers the specific reasons participants use or do not use specific sources of information, and the final section covers demographic information and the participants' experience working in the classroom. Questions on the survey take various forms, some are close-ended with options provided for the student to select, some have a 4-point Likert scale response format, and others are semi-open ended questions where "Other" is an option allowing the participant to fill in the appropriate response. The item addressing student's opinions on future directions to close the research-to-practice gap is open-ended. The semi-open ended format in particular is beneficial for participants who do not find the answer options appropriate; they are able to provide their own response. For example, one question presents a list of academic and non-academic sources from which the participant selects the sources they use when facing challenges in the classroom. If a participant does not like any of the sources provided, they are able to input another source that they use and continue with the questionnaire considering this new source of information. The survey also gathered information on the reasons why these pre-service teachers do not like the sources provided.

A pilot study of the instrument was conducted prior to data collection during the spring 2017 semester to gather feedback on the mechanics, language, and content used in the questionnaire. Feedback from three current educators (high school, middle school, and elementary school) was collected and considered in the final revisions of the questionnaire. This feedback helped the researchers comprise the final list of resources participants select from as well as the reasons for using and not using sources presented to the participants in the second section of the questionnaire. The questionnaire was used to collect data during the spring 2017 school semester.

To examine the ways in which researchers and teachers can work together to close the

research-to-practice gap (research question four), participants were first provided with a small statement describing the research-to-practice gap and were then asked to provide their suggestion as to how this gap can be closed. Participants provided their own response for this item, some were lengthy and some were fairly short. However, one participant expressed that they were not interested in closing the gap. All responses were examined by the researcher to determine whether there were common themes that developed.

Statistical Analyses

Descriptive statistics were used to address the first three research questions examining the sources of information that are most commonly used by participants and the reasons for which these sources are or are not selected for use. A chi-square test for independence was used to address the fifth research question, comparing groups of participants. We examined whether the type of school in which a participant had experience teaching was significantly related to how these participants selected sources of information as well as the reasons they provided for selecting resources. The researcher determined the categorical variables along which to compare the mutually exclusive groups of pre-service teachers and identified the chi-square test as the most appropriate statistic to examine the relationships between classroom experience and sources used and motives for selecting sources. The chi-square test for independence is used to compare groups along a categorical variable. The nature of the current data used is categorical for both sources selected (either *yes* you selected a source or *no* you did not) and reasons provided for selection (provides practical information, provides examples, I have access, etc.).

Chapter III: Results

By examining the opinions of future teachers on translating research into practice, the specific sources they use to gather information, and criteria they use to select sources we can develop a solution to bridge the research-to-practice gap that is practical and realistic for teachers. This will ultimately allow teachers to spend less time navigating articles or untrustworthy sources for the information they need and spend more time applying appropriate evidence-based practices in the classroom.

Research questions one through three

To examine the first research question addressed in this study, we used descriptive statistics to find the most commonly used sources of information pre-service teachers report. We found that the three sources of information that participants are most likely to use are Colleagues or other teachers (100%), Generic search engines (e.g., Google, Yahoo, Bing, etc.) (92.9%), and School Psychologist or other school professional (92.8%). Not only were colleagues indicated as the most commonly used source of information when seeking solutions to challenges faced in the classroom, but all participants indicated that they were *very likely* to use this source. No other source throughout the questionnaire received 100% agreement among respondents. This may indicate that advice or suggestions received from colleagues are seen as valuable information when working to change instructional practices.

The two sources of information the participants reported the least likelihood of using are What Works Clearinghouse (21.5%) and Textbooks or other print resources (53.6%). However, textbooks are still reportedly used by more than half of the participants. See Table 1 for the percent of participants who responded with *Somewhat likely to use this source* or *Very likely to use this source*.

Table 1
Percent of Participants Who are Likely to Use Source

Source of information	Percent *Somewhat likely to use this source*	Percent *Very likely to use this source*	Total percent likely to use source
Generic search engines (e.g., Google, Yahoo, Bing, etc.)	28.6	64.3	92.9
Google Scholar	57.1	14.3	71.4
TED talks	60.7	21.4	82.1
Youtube or other video resources (excluding TED talks)	50.0	28.6	78.6
News organizations online or in print	42.9	14.3	57.2
Edutopia	46.4	14.3	60.7
What Works Clearinghouse	17.9	3.6	21.5
Academic journal articles	42.9	14.3	57.2
Professional workshops	32.1	50.0	82.1
Colleagues or other teachers	0	100	100
School Psychologist or other school professionals	35.7	57.1	92.8
Textbooks or other print resources	35.7	17.9	53.6

Based on the literature and the barriers that educators face when accessing educational research, it was hypothesized that pre-service teachers would indicate sources of information that are non-academic, for example, generic search engines and local or national news outlets. This hypothesis is partially supported by the findings as generic search engines (e.g., Google, Yahoo, Bing, etc.) is one of the top sources of information indicated by participants. However, participants also gather new information by conversing with colleagues and school professionals. This finding is more in line with Neal and colleague's (2015) study that examined the brokerage typology and current modes of information transfer used by school administrators. We have found that personal relationships between colleagues in the school are a meaningful way through which pre-service teachers gain access to information they can use in their classrooms, which is similar to Neal et al.'s study (2015).

Next we examined the reasons for which these sources of information are selected to answer research question two. By using descriptive statistics, we found that the two most frequently reported reasons for which participants are likely to use a source of information were "It provides practical information for the problems I encounter in the classroom" (29.7%) and "I have access to the source" (17.2%). Synthesizing this information with the most commonly selected sources of information we can see that participants are more likely to use colleagues, generic search engines, and their school psychologist above other sources because they provide practical information that can be applied in their classroom.

However, these two main reasons were also provided to describe why participants are likely to use other types of information. The *practical information* motive for using sources of information was also the main reason indicated for selecting TED talks, Youtube videos, Edutopia, What Works Clearinghouse, and Professional workshops. What is also interesting about these results is that no participant selected the reason "It does not provide statistical evidence" as a main motive for selecting any of the resources provided in the questionnaire. This may suggest that participants are not interested in avoiding statistical evidence or they are not deterred by the presence of statistical analyses in resources, which is consistent with the same finding by Meline and Paradiso (2003). For a glimpse at the main reasons participants are likely to use each source of information provided in the questionnaire, see Table 2.

Table 2
Main Reason Participants Selected Source

Source	Reason likely to use	Frequency	Percent
Generic search engines (e.g., Google, Yahoo, Bing, etc.)	It provides practical information for the problems I encounter in the classroom AND The information I need is readily available and easy to find	8 (each response)	30.8
Google Scholar	I find this source to be trustworthy	6	30.0
TED talks	It provides practical information for the	6	26.1

	problems I encounter in the classroom		
Youtube or other video resources (excluding TED talks)	It provides practical information for the problems I encounter in the classroom	9	40.9
News organizations online or in print	I have access to the source	7	43.8
Edutopia	It provides practical information for the problems I encounter in the classroom	5	29.4
What Works Clearinghouse	It provides practical information for the problems I encounter in the classroom	4	66.7
Academic journal articles	It provides statistical evidence	6	37.5
Professional workshops	It provides practical information for the problems I encounter in the classroom	8	34.8
Colleagues or other teachers	It provides practical information for the problems I encounter in the classroom	13	46.4
School Psychologist or other school professionals	It provides practical information for the problems I encounter in the classroom AND It provides clear examples of how to implement the solution(s) in the classroom	7 (each response)	26.9
Textbooks or other print resources	I have access to the source AND I find this source to be trustworthy	4 (each response)	26.7

Examining the frequencies in which these reasons occur provides us with detailed information as well. We can see how these reasons compare with each other across all sources of information. Not only is it beneficial to see that the *practical information* motive was the main reason for 8 of the 12 sources of information, but it is also helpful to see that the second most common reason, the *access* motive was selected as the main reason 41 times across all sources of information. Looking at the data in this manner allows us to understand more accurately how these reasons stack up against each other when it comes to the various sources of information educators seek out. For the frequencies for which each reason was provided across all sources of information, see Table 3.

Table 3
Frequencies of Reasons Likely to Use Source Across all Sources

Reason likely to use	Frequency	Percent
It provides practical information for the problems I encounter in the classroom	71	29.7
The language used in this source (or advice given) is easy to understand	12	5.0
It provides statistical evidence	15	6.3
I have access to the source	41	17.2
It provides clear examples of how to implement the solution(s) in the classroom	36	15.1
I find this source to be trustworthy	39	16.3
It does not provide statistical evidence	0	0
The information I need is readily available and easy to find	20	8.4
Other	5	2.1

These findings partially support our hypothesis for research question two, *pre-service educators are most likely to use resources because they provide practical information and clear examples of how to implement solutions in the classroom*. We found that the main reason participants select a source is because it provides practical information for the problems they encounter in the classroom. Not only was this the most common motive for selecting a source across all resources provided in the questionnaire, but it is also the main reason provided for the top three sources of information: colleagues, generic search engines, and school psychologists.

The second most common reason for selecting a source of information, "I have access to the source", is also consistent with findings in the literature though it was not hypothesized here. Chafouleas and Riley-Tillman, 2005; Vanderlinde and van Braak, 2010; and Everett, Luera, and Otto, 2006 found that the lack of access to educational research is a barrier educators face when using research-based practices in the classroom. These authors also highlight the relevance of educational research and the practicality of interventions as challenges teachers encounter. These two main reasons for selecting sources of information, found in the current study, reflect these

challenges; educators are interested in finding and using sources that provide practical and relevant information to which they easily have access.

To answer the third research question, for which reasons are pre-service teachers unlikely to use sources of information, we used descriptive statistics. The current study found that the two main reasons for which participants are unlikely to use a source are "I do not know this source" (33.7%) and "It does not provide practical information for the problems I encounter in the classroom" (20.4%). Considering this and the two sources of information that were least likely to be used, What Works Clearinghouse (WWC) and textbooks, we can see that participants do not know WWC and textbooks do not provide them with the practical information they are seeking.

This finding is consistent with our previous finding discussing the reasons one is *likely* to select a source (because it *does* provide practical information) as well as the current literature on the topic. Again, access to educational resources is a barrier that educators face (Chafouleas & Riley-Tillman, 2005; Everett, Luera, & Otto, 2006; Vanderlinde and van Braak, 2010). One can draw a simple connection between access to a source and knowledge of the existence of a source. If a teacher is unaware that resources like the WWC exist, then whether or not they have access to them is irrelevant (educators do, in fact, have free access to this source through the internet). For a breakdown of the main reasons provided for not using each source, see Table 4. For the frequencies in which the reasons were selected across all sources of information, see Table 5.

Table 4
Main Reason Participants are Unlikely to Use Source

Source	Reason unlikely to use	Frequency	Percent
Generic search engines (e.g., Google, Yahoo, Bing, etc.)	I do not find this source to be trustworthy AND I do not know this source	1 (each response)	50.0
Google Scholar	It does not provide practical information for the problems I encounter in the classroom	3	37.5

TED talks	It does not provide practical information for the problems I encounter in the classroom The language used in this source (or advice given) is too complex and unclear It provides statistical evidence that can be difficult to understand It does not provide clear examples of how to implement the solution(s) in the classroom AND Other: These talks are often long and it would be difficult to implement a 45 minute video into a lecture	1 (each response)	20.0
Youtube or other video resources (excluding TED talks)	I do not find this source to be trustworthy	2	33.3
News organizations online or in print	It does not provide practical information for the problems I encounter in the classroom	7	58.3
Edutopia	I do not know this source	8	72.7
What Works Clearinghouse	I do not know this source	21	95.5
Academic journal articles	It provides statistical evidence that can be difficult to understand	4	33.3
Professional workshops	I do not have access to the source	2	40.0
Colleagues or other teachers	N/A	0	0
School Psychologist or other school professionals	It does not provide practical information for the problems I encounter in the classroom AND I do not know this source	1 (each response)	50.0
Textbooks or other print resources	It does not provide practical information for the problems I encounter in the classroom	6	46.2

Table 5

Frequencies of Reasons Unlikely to Use Source Across all Sources

Reason unlikely to use	Frequency	Percent
It does not provide practical information for the	20	20.4

problems I encounter in the classroom		
The language used in this source (or advice given) is too complex and unclear	9	9.2
It provides statistical evidence that can be difficult to understand	8	8.2
I do not have access to the source	5	5.1
It does not provide clear examples of how to implement the solution(s) in the classroom	11	11.2
I do not find this source to be trustworthy	4	4.1
It does not provide statistical evidence; I would prefer sources with statistical evidence	2	2.0
I do not know this source	33	33.7
Other	6	6.1

Suggestions for closing the research-to-practice gap

To answer research question four, *In what ways do pre-service teachers think we can close the research-to-practice gap?* we examined open-ended responses from participants. There were a wide variety of suggestions that participants provided and one participant stated that they were not interested in closing the research-to-practice gap. This individual appeared to have strong opinions about researchers in general and this opinion remains relevant. If these future educators do not find value in educational research to improve the quality of instruction for students, then getting evidence-based practices into the classrooms is going to be quite a challenge.

Four themes that developed when examining the responses of participants in their suggestions for closing the research-to-practice gap are: *Collaboration* between teachers and researchers in regards to designing and conducting research studies, Open lines of *communication* between teaching and research communities as well as within the teaching community, *Teacher preparation*, and *Manuscript* improvements. Table 6 provides an example of a suggestion that falls within these three categories provided by participants. The first two themes dominate the suggestions made by participants while teacher preparation and manuscript

improvements are mentioned less often but still provide useful insights from these pre-service teachers.

Table 6
Examples of Pre-service Teacher Suggestions for Closing the Research-to-practice Gap

Theme	Participant suggestion
Collaboration	Having teachers keep daily observation logs or journals, as well as being observed by researchers.
Communication (teacher to researcher)	Welcome researchers into the classroom, interview teachers and colleagues to discuss effectiveness, overall open communication
Communication (teacher to teacher)	There could be on-line discussion boards and forums within every school to share new information from educational researchers and asking for teacher input on findings and allowing for peer review and mentoring.
Teacher preparation	Student teachers should not experience teaching the last two semesters of school. Instead, programs should require for student teachers to begin the practice within the first year of schooling.
Manuscript improvements	Instead of providing 50 page research articles, provide a two page bulleted list with pictures.

This first and main theme of collaboration is also reflected in the goals of organizations like the NAEYC Center for Applied Research. This organization works not only to aid teachers in their use of educational research but also to inform researchers about the needs of teachers. This direct collaboration between teachers and researchers in the development of new studies would ensure that teacher's concerns are addressed and the resulting intervention would be applicable to their setting. The Minority Student Achievement Network and their collaboration with the Strategic Education Research Partnership in the development of the AlgebraByExample lessons, discussed previously, is a prime example that these forms of collaboration can be successful at improving student achievement.

It is also important to note that these pre-service teachers indicate an interest in actively being a part of educational research. They provide suggestions that mirror action research, using teachers to collect data on student performance and changes in learning. Previous research has

suggested interventions that engage teachers in the process of conducting research but researchers should *also* include them in the design and development of research studies. These participants highlight the importance of collaboration as well as building connections between teaching and research communities.

The second theme of communication extends not only to efforts to improve the sharing of information between educators and researchers but also within the schools themselves. Some participants proposed allowing more time and opportunities for teachers to interact with each other to discuss what is going on in their classrooms. This type of a school-based intervention would open lines of communication and information transfer that Neal and colleagues (2015) discuss in their study. In relation to our previous findings it also appears to be a beneficial avenue for intervention as we found that pre-service teachers are most likely to seek out information from their colleagues and school professionals when facing challenges. Researchers can also invest in working with these individuals in the schools to facilitate the use of educational research.

The final two minor themes that appeared in the responses from participants are teacher preparation and manuscript improvements. Though the suggestions to improve manuscripts are reflective of barriers teachers face (e.g., lack of applicability, limited time to read findings, etc.), the improvements in teacher preparation suggested in this item are ones not found in the current literature. By examining the opinions of pre-service teachers, a voice relatively unheard from, we have identified new means of intervention. These pre-service teachers indicate two distinct facilitators of mending the gap. One participant suggested starting student teaching earlier in their teacher training claiming more time in the classroom during their undergraduate coursework would give them more experience and prepare them better for meeting classroom

expectations for using research-based practices. Another participant suggested having guest speakers present new findings and different perspectives to pre-service teachers during their training. This would allow pre-service teachers to engage with researchers in education, stay up-to-date on current educational issues, and foster a sense of value in research.

These proposed solutions to close the research-to-practice gap offer various means through which we can build better connections between educators and researchers. The hypothesis was not supported for this research question. We hypothesized that pre-service teachers would include suggestions that address the accessibility of findings as well as increasing the number of examples of strategy implementation provided in educational research. Though one participant mentioned improving the dissemination of educational research, it was not a main theme of the overall findings. These participants also did not propose solutions revolving around the lack of accessibility of research articles as hypothesized and indicated by previous research. Pre-service teachers, instead, have provided new perspectives and means for developing successful interventions; these should be considered in future educational research development.

Comparing groups of pre-service teachers

The final set of analyses addresses the fifth research question: *Do pre-service teachers differ on the reasons they provide for using and not using sources of information based on the grades they have experience teaching (e.g., high school, middle school, elementary school)?* To examine the question, the data was split by type of school in which the participant has experience teaching or observing. As most participants had some experience teaching elementary school aged students, this was indicated as one significant group to consider. The second group, to which elementary teachers were compared, comprises those that have experience teaching middle school, high school, and a combination of these classrooms. There were also three

participants that indicated experience in all three areas (elementary school, middle school, and high school); these participants were included in the comparison group. By splitting the data into two relevant groups of participants we can see whether these groups differ in the sources they were likely to use and the reasons they provided for selecting a source of information. Gathering this information may give insight into whether or not these pre-service teachers encounter similar barriers to accessing and using educational research or whether these participants hold the same motives for selecting sources of information.

A chi-square test for independence was used to gather this information. A chi-square test for independence is a non-parametric test used to determine whether there is a significant association between two groups along another categorical variable (Gravetter & Forzano, 2012). Independent sample t-tests were not used to compare these groups of pre-service teachers because the variable along which we are comparing the groups is not continuous. Independent sample t-tests are used to compare the means of two groups along a continuous variable and interpreting this type of information would be inappropriate. With the categorical nature of the sources of information selected and reasons for and against selection, a chi-squared test for independence is more appropriate. We examined how these groups (experience teaching elementary school and comparison group comprised of those with experience teaching middle school, high school, and a combination of classrooms) compare to each other across (1) sources of information they were most likely to use, (2) reasons for selecting sources, and (3) reasons for which they are unlikely to select a source. The statistically significant findings (.05 significance level) are presented in Table 7 and Table 8 for sources of information selected and reasons for which sources were unlikely to be selected respectively.

Table 7
Sources of Information for Which Groups are Significantly Different

Source	X^2	Cramer's V (effect size)
TED talks	6.09	.466 (moderate effect)

Table 8
Reasons Against Selecting Source for Which Groups are Significantly Different

Source	X^2	Cramer's V (effect size)
Textbooks or other print resources	13.00	1.00 (strong effect)

When examining whether pre-service teachers who have experience in elementary schools respond to items in a significantly differently manner than other pre-service teachers, we found that these groups differ in their selection of TED talks X^2 (1, 28) = 6.09, $p < .05$, V = .466. We can further examine the frequency for which participants were likely to use TED talks as a source of information to find that all participants in the comparison group (n = 14) reported they were likely to use TED talks as a source of information. As for elementary school educators, (n = 14), five participants reported they were unlikely to use TED talks as a source of information. Though there is a statistically significant difference in how these groups responded to this item, we can see that the effect is small to moderate as evidenced by a Cramer's V of .466.

We also found that there were no statistically significant differences between the groups in how they report the reasons for which they select particular sources of information. This may be because pre-service teachers value sources based on their practicality and access above other characteristics regardless of their classroom experience. However, when examining reasons against selecting a particular source of information, we found that these groups provide a complete divergence of reasons for not using the source Textbooks or other print resources, X^2 (6, 13) = 13.00, $p < .05$, V = 1.00. This strong effect size indicates that there are no overlapping responses between groups of participants, precisely what we find when inspecting the reasons provided by participants (see Table 9).

Table 9
Frequency of Reasons for Unlikelihood of Using Textbooks and Other Print Resources

Reason unlikely to use Textbooks	Frequency: Elementary School teachers	Frequency: Comparison group teachers
It does not provide practical information for the problems I encounter in the classroom	0	6
The language used in this source (or advice given) is too complex and unclear	1	0
It provides statistical evidence that can be difficult to understand	1	0
I do not have access to the source	0	1
It does not provide clear examples of how to implement the solution(s) in the classroom	2	0
It does not provide statistical evidence; I would prefer sources with statistical evidence	1	0
Other	0	1

Overall our hypothesis for research question five was supported by our findings. It was hypothesized that pre-service teachers, regardless of classroom experience, will indicate similar barriers to using educational research in their classroom practices as evidenced by their motives for selecting sources of information. In general, we did not find statistically significant differences in the sources of information participants selected and the reasons provided for and against the utilization of each source of information. The study contributes to current literature by comparing these groups of future educators in this manner. Based on previous findings and those discussed in this study, one may conclude that educators from elementary schools, middle schools, and high schools face similar challenges to accessing and utilizing educational research to inform their practices.

The two significant findings from the chi-squared test for independence indicate some differences between the comparison groups in relation to two particular sources: TED talks and

Textbooks. Middle school and high school educators were more likely to indicate TED talks as a source of information whereas only about one-third of the elementary school educators were likely to select TED talks as a source of information they use when facing challenges in the classroom. This may be because TED talks provide content that is more appropriate and applicable to middle and high school teachers. Finally, these middle and high school educators were also less likely to use textbooks and other print resources because they do not provide practical information, whereas the elementary school educators did not select textbooks for a wider variety of reasons (e.g., they do not provide examples, the language is complex, it provides statistical evidence, and in contrast it does not provide statistical evidence). We can interpret this finding such that elementary educators and others simply have different opinions about why textbooks are not useful sources of information, but they are in agreement that other sources of information are more appropriate when seeking new strategies for instructional practices.

Chapter IV: Discussion

The purpose of the current study was to examine the attitudes of pre-service teachers on translating educational research into classroom practice by gathering information on their use of academic and non-academic sources of information. We also gathered the opinion of these participants as to how educators and researchers might work together to close the research-to-practice gap. By doing this we aim to introduce practical interventions that will improve the use of educational research in the classroom. One thing that is important to note is that improving the quality of education on a per-classroom basis through use of educational research is a complicated task. We do not assume that all interventions will be successful in every classroom but we do believe that knowing the barriers teachers face and their willingness to participate in educational research allows us to make improvements in how teachers access educational research and eventually put it to practice in their classrooms.

In his book *Someone Has to Fail: The Zero-Sum Game of Public Schooling*, David Labaree (2010) discusses the demands placed on educators. Teachers are asked to build strong relationships with all students whether these students want to be in the classroom or not; maintain a classroom environment that is positive, encouraging, and exciting; manage students with a range of abilities and emotional states; differentiate instruction; and ultimately prepare the students adequately for higher education or to be successful in the job market, not to mention ensuring that they are prepared for standardized tests (Labaree, 2010). Researchers know that there are a variety of factors that can affect student's performance in and out of the classroom and we expect teachers to know this and consider this in their instruction. According to Labaree (2010), society asks teachers to know the whole student: their "emotional life, family situation, social condition, cultural capital, cognitive capacities" (p. 143). This is quite a tall order,

particularly, as Labaree describes, when teachers are disconnected from other professionals, isolated in their own classrooms providing little time for feedback or assistance with instruction when they need it (Labaree, 2010). In fact, Labaree (2010) describes how the hierarchical structure of schools can be a barrier to effecting change in the classroom as well. We simply ask teachers to manage many challenges on a daily basis, and we do not intend to diminish the complexity of classroom instruction. With the information gathered in the current study we can work to face these challenges and provide more practical assistance to teachers.

As one participant noted in their suggestion to close the gap, "researchers view the students as data points and not individuals with unique needs and experiences", it is important to note that this is an over-generalization of educational researchers. Many researchers understand that all students are unique, they respond to interventions in various ways, and that interventions should be designed with consideration for the classrooms in which they will be implemented. The current study aims to provide suggestions for researchers to aid teachers in accessing practical, informative, and useful information that they can actually put to use.

Sources of information

In the current study we found that the least commonly used source of information that pre-service teachers reported was What Works Clearinghouse (WWC), and the reason cited most for not using this source was that participants are unaware of what this resource is. From the homepage of the What Works Clearinghouse website, we see that their "goal is to provide educators with the information they need to make evidence-based decisions" by focusing "on the results from high-quality research to answer the question 'What works in education?'" (Institute of Education Sciences [IES] What Works Clearinghouse, n.d.). If these pre-service teachers are

unaware of what the WWC is, then it is a clear failure of their mission and the translation of educational research into classroom practice.

One avenue for closing the research-to-practice gap in relation to this finding is for teacher educators to inform pre-service teachers about these types of resources. Similar to the NAEYC Center for Applied Research that works to join the research and teaching communities, resources like WWC, Edutopia, the Education Resource Information Center (ERIC), and local organizations like the Kansas Technical Assistance System Network (TASN), can help teachers link educational research to classroom instruction practices. These sources are free, provide information on a variety of topics, and include easy-to-read snapshots of academic educational research studies. These resources put in the work to minimize the barriers of access, complex technical language, and applicability that teachers face when using educational research. However, if educators are not aware of such resources, they will certainly go to waste.

Teacher educators can work to inform pre-service teachers about these resources and others that they will have access to when they are no longer a part of the university. Providing them with these means of accessing academic sources of information will hopefully deter them from using other forms of gathering information such as using generic search engines that can provide untrustworthy material. Research agencies, as well, can invest more efforts to support these resources to facilitate translation of research into practice as suggested by Deshler (2003) and Kane (2016).

The current study also found that two of the most commonly used sources of information that pre-service teachers seek out when facing challenges in the classroom are colleagues and their school psychologist or other school professionals. Along the lines of Neal and colleagues (2015), in their semi-structured interviews examining the brokerage typology, the current study

found that these personal relationships are valuable and meaningful ways through which information is transferred. Another suggestion for closing the research-to-practice gap is to provide more opportunities for educators to engage with each other, as well as with school professionals, in regards to what is transpiring in their classrooms. Researchers, too, should take advantage of the current modes of information transfer and encourage open lines of communication between the teaching and research communities as suggested by participants in the open-ended questionnaire item.

Motives for selecting sources of information

It is useful to discuss these findings in relation to specific sources of information and the main reasons participants are likely or unlikely to use them. For instance, we found that academic journals articles are tied with news outlets for the third least likely source to be used to inform classroom practice when facing challenges. When we look at the reasons why pre-service teachers are unlikely to use journal articles, we see that it is because they provide statistical evidence that can be difficult to understand. However, journal article's inclusion of statistical evidence is also why other participants are more *likely* to use them to gather information. This suggests that there are inconsistent opinions about the provision of statistical evidence in journals articles as to whether it is a benefit or a deficit in terms of its use in informing classroom practice.

The contradictory nature of this finding, in regards to the reasons for and against using journal articles as a source of information, is reflective in the inconsistent findings within the current literature. While Meline and Paradiso (2003), found that their participants were not deterred by the presence of statistical analyses in a journal article, Vanderlinde and van Braak (2010) found that school leaders found the technical language in which research articles are

written to be a barrier to accessing and comprehending the content. The current study, interestingly, did not find complex language to be a main reason for either selecting a source or not selecting a source. There still appears to be an inconclusive decision as to whether pre-service teachers are informed enough to analyze academic literature when it includes statistical evidence. As Everett, Luera, and Otto (2006) found, it may be beneficial for student to receive more support when engaging with academic journal articles to ensure that they are prepared to gather the relevant information they are seeking out.

Teacher educators can work to provide pre-service teachers with knowledge of trustworthy sources of information to which they will have access and they can also work to improve student's skills in consuming academic knowledge through engaging with journal articles. Teacher educators can inform their students how to gather pertinent information from journal articles considering the study topic, the population of interest, and the context of the intervention. This information will aid pre-service teachers in examining educational research for practical strategies they can use in their practice and successfully implement them in their classrooms. These two suggestions presented here will benefit teachers in their access and comprehension of educational research in hopes to improve its use in the classroom.

A final suggestion for future efforts to close the research-to-practice gap based in the findings to research questions two and three (reasons for selecting or not selecting a source) is for researchers to provide more practical applications of their findings. The main reason pre-service teachers indicated for selecting a source of information was because it provided practical information for problems they encounter in their classrooms. If researchers are interested in developing strategies for educators to use in the classroom to improve student educational outcomes (Kane, 2016), then providing practical guidance and interventions that are appropriate

for classroom implementation is a critical and essential step. This can be accomplished through collaboration and open lines of communication with educators.

Pre-service teachers suggestions for closing the research-to-practice gap

All of these suggestions to close the research-to-practice gap are supported by the suggestions made by the pre-service teachers. The most common theme that developed from analyzing the responses to this item was the collaboration between researchers and educators. Opportunities for collaboration on educational research like that of the Minority Students Achievement Network will allow educators to gain knowledge of teacher's daily processes and difficulties they encounter. In turn, it may also instill in educators an interest and value in educational research, if their voice as educators is heard and taken into consideration by researchers. Another minor theme that appeared in our analysis of the participant's suggestions to close the gap, which is also not found in the current literature, is teacher preparation improvements. These pre-service teachers found that more time in the classroom during their undergraduate program, more encounters with researcher articles, and open lines of discussion with educational researchers would facilitate the use of research findings in their future classroom practices.

Limitations of the Study

There are two main limitations of the current study. As one important feature of the study was feasibility, the use of a convenience sample as opposed to a random sample of pre-service teachers is one limitation. This convenience sample does not allow us to successfully generalize our findings to the overall population of pre-service teachers. In future studies, gathering a more representative sample of pre-service teachers across various universities would provide a better picture of the opinions of these future educators. It may also be interesting to compare the

responses based on the school the participants are attending, as some universities may be more successful at preparing pre-service teachers for using research in the classroom and informing them about trustworthy sources of information to which they have access when compared to competing universities.

The second limitation of the current study was the small sample size (n = 28). This small sample size increases the likelihood of a Type II error rate when interpreting the chi-squared statistic giving us an underestimate of the association between the compared groups of pre-service teachers. Again, feasibility was important and recruiting 103 pre-service teachers to participate in the study was a small target population for survey research standards. Efforts to gather a larger sample size were unsuccessful, perhaps because data collection began towards the end of the spring semester. These students are planning on graduating and may be busy with other class projects and therefore less likely to participate in online research studies. Other efforts to reach out to more students should be put forth in future studies such as earlier contact with the School of Education, possibly providing class credit for study participation, or using other means of data collection such as Amazon's Mechanical Turk. These efforts were not made for the current study, as feasibility was a driving force behind study design. Gathering a high response rate was not possible for the current study and future research can address this by using a larger sample size of pre-service teachers and more wide-reaching means of recruiting participants. However, this study does present a wide variety of responses with some consistency across the 28 participants and provides a stepping-stone for future research.

Future Directions

Future research efforts can be aimed at examining the behaviors of current teachers and their processes for accessing educational research. Similar to the current study, examining the

behaviors of current teachers will provide insight into modes of information transfer to target when developing interventions and will also provide insight into ways that may be more practical for teachers to use research in their classrooms. To synthesize the findings of the current study with the literature review, we can see that by accessing new information through colleagues and personal relationships, barriers are limited. The information is easily accessible, it is relevant to the instructor's classroom practice, and educators are able to get examples from experienced professionals. Future research should examine these forms of interaction and information transfer to determine whether these pathways would be successful at getting more evidence-based practices into the classroom. Future research can also look at how some of these interventions may improve the use of research in the classroom, and whether these interventions would be practical, applicable for current teachers, and long-lasting in their implementation. As one participant suggested, longitudinal analysis of implementation of research-based practices in the classroom would provide better information as to "What works in education?"

Another avenue for future research can be to examine what teachers think the term "evidence-based" actually means to them in their daily practice. Researchers and teachers may differ on their definitions and expectations for providing evidence-based instruction. Gathering this information would be beneficial when designing interventions to aid teachers in using new practices in the classroom. If educators are held accountable for meeting standards and preparing students with evidence-based practices, and perhaps face consequences when they fail to do so as Labaree (2010) suggests, then they need to have a consistent and clear understanding of what society and researchers are expecting of them to achieve in the classroom. Understanding what they believe "evidence-based" means would be a first step in this direction.

Future researchers may also be interested in examining further the differences between elementary school, middle school, and high school educators and their processes for selecting sources of information. Though these educators may face similar barriers to accessing educational research, it is possible that some schools provide opportunities for collaboration and communication within the teaching community to allow educators to better apply research in their classroom. This is an avenue worth examining further as the small sample size of the current study disabled us from gathering more representative data. Similar to this avenue comparing teachers based on their classroom experience, it may also be interesting to examine how educators in the United States compare to teachers in other countries. As the current study found that pre-service teachers are more likely to use generic search engines and sources of information that are most accessible, it would be interesting to see if the trend is similar in other countries. The advancement of technology and the availability of both reliable and unreliable information, via the Internet, may influence exactly how teachers are accessing new information and to what extent these sources of information are influencing teaching practices.

Finally, future researchers can examine how programs that facilitate collaboration and communication between teaching and research communities, as suggested by the pre-service teachers in the current study, would be beneficial for resource allocation and future reform efforts. Working to get not only classroom teachers but also school leaders, administrators, and important decision makers invested in educational research could potentially dismantle some of the structural barriers that teachers face to accessing and implementing new strategies. To improve the perceptions of school leaders, parents, and decision makers as to the value of educational research it is necessary to show these stakeholders exactly how evidence-based practices can have positive impacts on student performance. Future efforts to examine the

influence of evidence-based practices in the classroom would aid decision makers in creating policies that benefit their schools. This knowledge of the benefits and deficits of researcher-teacher collaborations as well as the benefits of utilizing educational research in the classroom will better inform future practices and work to improve performance for all students.

Conclusion

This study serves to demonstrate that teachers are willing and interested in using research in their classrooms. These pre-service teachers have indicated similar barriers to accessing and using educational research to inform their practices as those presented in the literature and they provide insight into their resource selection processes. By understanding that teachers are seeking out resources that are easily accessible and provide practical information goes beyond what we previously knew about the research-to-practice gap. We can see that researchers and teacher educators can do much to help inform future teachers about trustworthy and evidence-based resources that they *do* have access to in hopes to minimize the use of generic search engines. Researchers can also work to provide more collaboration between teaching and research communities to provide more practical classroom-based interventions that are applicable for educators. These connections between communities will also break down barriers that educators face when seeking out answers to challenges and allow them the means to gain reliable solutions through the use of educational research. It is also important to educate school administrators and decision makers, as Kane (2016) emphasizes, to ensure that policies effecting teaching practices are reflective of successful evidence-based practices and not simply strategies that are most popular.

The current study complements current literature on barriers educators face (Chafouleas & Riley-Tillman, 2005; Everett, Luera, & Otto, 2006; Meline & Paradiso, 2003; Neal et. al.,

2015; Vanderlinde & van Braak, 2010) and reiterates the possible solutions suggested by Deshler (2003) and Kane (2016). The current study also advances upon these studies by providing the perspective of pre-service teachers and describing their processes for seeking out new information. These findings support efforts to join the research and teaching communities through collaboration in hopes to increase the use of educational research in the classroom to improve the outcomes of all students.

Chapter V: References

Anderman, L. H., Andrzejewski, C. E., & Allen, J. (2011). How do teachers support students' motivation and learning in their classrooms? *Teachers College Record, 113*, 969-1003.

Biesta, G. (2007). Why "What works" won't work: Evidence-based practice and the democratic deficit in educational research. *Educational Theory, 57*, 1-22. doi: 10.1111/j.1741-5446.2006.00241.x

Booth, J. L., Cooper, L. A., Donovan, M. S., Huyghe, H., Koedinger, K. R., & Paré-Blagoev, E. J. (2015). Design-based research within the constraints of practice: AlgebraByExample. *Journal of Education for Students Placed at Risk (JESPAR), 20,* 79-100. doi;10.1080/10824669.2014.986674

Bundick, M.J., Quaglia, R. J., Corso, M. J., & Haywood, D. E. (2014). Promoting student engagement in the classroom. *Teachers College Record, 116,* 1-34.

Chafouleas, S. M., & Riley-Tillman, T.C. (2005). Accepting the gap: An introduction to the special issue on bridging research and practice. *Psychology in the Schools, 42,* 455-458. doi:10.1002/pits.20084

Cheung, M., Ma, A. K., Thyer, B. A., & Webb, A. E. (2015). Research-practice integration in real practice settings: Issues and suggestions. *Research on Social Work Practice, 25,* 523-530. doi:10.1177/1049731514540479

Cooper, L. A. (2007). Why closing the research-practice gap is critical to closing student achievement gaps. *Theory Into Practice, 46,* 317-324. doi:10.1080/00405840701593907

Crooke, P. J., & Olswang, L. B. (2015). Practice-based research: Another pathway for closing the research-practice gap. *Journal of Speech, Language, and Hearing Research, 58,* S1871-S1882. doi:10.1044/2015_JSLHR-L-15-0243

Davis, S., Gervin, D., White, G., Williams, A., Taylor, A., & McGriff, E. (2013). Bridging the gap between research, evaluation, and evidence-based practice. *Journal of Social Work Education, 49,* 16-29.

Deshler, D. D. (2003). Intervention research and bridging the gap between research and practice. *Learning Disabilities: A Contemporary Journal, 1,* 1-7.

Everett, S. A., Luera, G. R., & Otto, C. A. (2006). Pre-service elementary teachers bridge the gap between research and practice. *International Journal of Science and Mathematics, 6,* 1-17. doi:10.1007/s10763-006-9063-6

Gould, R. V., & Fernandez, R. M. (1989). Structures of mediation: A formal approach to brokerage in transaction networks. *Sociological Methodology, 19,* 89-126. doi:10.2307/270949

Gravetter, F. J., & Forzano, L. B. (2012). *Research methods for the behavioral sciences.* (4th ed.). Belmont, CA: Wadsworth Cengage Learning.

Greenwood, C. R., & Abbott, M. (2001). The research to practice gap in special education. *Teacher Education and Special Education, 24,* 276-289. doi:10.1177/088840640102400403

Hughes, J. N., Luo, W., Kwok, O., & Loyd, L. K. (2008). Teacher-student support, effortful engagement, and achievement: A 3-year longitudinal study. *Journal of Educational Psychology, 100,* 1-14.

Institute of Education Sciences, What Works Clearinghouse. (n.d.). Retrieved from https://ies.ed.gov/ncee/wwc/FWW

Kane, T. J. (2016). Connecting to practice: How we can put education research to work. *Education Next, 16,* 80-87.

Klem, A. M., & Connell, J. P. (2004). Relationships matter: Linking teacher support to student engagement and achievement. *Journal of School Health, 74,* 262-273.

Labaree, D. F. (2010). *Someone has to fail: The zero-sum game of public schooling.* Cambridge, MA: Harvard University Press.

Meline, T., & Paradiso, T. (2003). Evidence-based practice in schools: Evaluating research and reducing barriers. *Language, Speech & Hearing Services In Schools*, *34*(4), 273-283. doi:10.1044/0161-1461

Neal, J.W., Neal, Z.P., Kornbluh, M., Mills, K.J., & Lawlor, J.A. (2015). Brokering the research-practice gap: A typology. *American Journal of Community Psychology*, 56, 422–435. doi:10.1007/s10464-015-9745-8

Olswang, L. B., & Prelock, P. A. (2015). Bridging the gap between research and practice: Implementation science. *Journal of Speech, Language, and Hearing Research, 58,* S1818-S1826. doi:10.1044/2015_JSLHR-L-14-0305

Riley-Tillman, T. C., Chafouleas, S. M., Eckert, T. L., & Kelleher, C. (2005). Bridging the gap between research and practice: A framework for building research agendas in school psychology. *Psychology in the Schools, 42,* 459-473. doi:10.1002/pits.20085

Rust, F.O. (2009). Teacher research and the problem of practice. *Teachers College Record, 111,* 1882-1893.

Snow, K. (2011). A bridge between early childhood research and practice. *Young Children, 66,* 63-65.

Spencer, S. S., & Logan, K. R. (2003). Bridging the gap: A school based staff development model that bridges the gap from research to practice. *Teacher Educational and Special Education, 26,* 51-62. doi:10.1177/088840640302600106

Vanderlinde, R., & van Braak, J. (2010). The gap between educational research and practice: Views of teachers, school leaders, intermediaries and researchers. *British Educational Research Journal, 36,* 299-316. doi:10.1080/01411920902919257

Weston, M. E., & Bain, A. (2015). Bridging the research-to-practice gap in education: A software-mediated approach for improving classroom instruction. *British Journal Of Educational Technology, 46,* 608-618. doi:10.1111/bjet.12157

Appendix A: Questionnaire

***Note to reviewer:** As this is an online questionnaire, the logic of how questions will appear differs based on student response. Below is a breakdown of the questions and answer options that will appear for the participants, though may not appear exactly as they are below. For example, Questions 5 and 6 will appear for *each source* the student indicates "Not likely to use this source" and "Somewhat unlikely to use this source" in the previous question (question 5) and "Somewhat likely to use this source" and "Very likely to use this source" (question 6).*

Translating Educational Research into Classroom Practice:
Working Together to Close the Gap

The first section will cover specific sources you may or may not use when facing challenges in the classroom.

1) Describe one challenge you have encountered as a teacher or observer in the classroom for which you would have liked more information for future classroom practice. (Perhaps an instructional or behavioral challenge)

2) Imagine, as a teacher, you experience this challenge in the classroom and you cannot seem to solve it on your own. Where would you look to gather information and find a solution?
Select all that apply

- Generic search engines (e.g., Google, Yahoo, Bing, etc.)
- Google Scholar
- TED talks
- Youtube or other video resources (excluding TED talks)
- News organizations online or in print (e.g., NPR, CNN, local news, etc.)
- Edutopia
- What Works Clearinghouse
- Academic journal articles (e.g., Early Childhood Education Journal, Journal of Special Education, American Journal of Education, etc.)
- Professional workshops
- Colleagues or other teachers
- School Psychologist or other school professionals
- Textbooks or other print resources
- Other (please specify) _____
- Not likely to seek out a solution to the challenge

3) On the previous question you indicated "Not likely to seek out a solution to the problem". In the space below, please explain why you selected this choice.

4) Please indicate the **likelihood** that you will use the following sources to gather information and solve a challenge you encounter in the classroom.

This can be for the specific challenge you described previously or any other you imagine encountering as a teacher in the classroom. *Please provide a response for each source listed.* (Response options include: Not likely to use this source, Somewhat unlikely to use this source, Somewhat likely to use this source, and Very likely to use this source)

- Generic search engines (e.g., Google, Yahoo, Bing, etc.)
- Google Scholar
- TED talks
- Youtube or other video resources (excluding TED talks)
- News organizations online or in print (e.g., NPR, CNN, local news, etc.)
- Edutopia
- What Works Clearinghouse
- Academic journal articles (e.g., Early Childhood Education Journal, Journal of Special Education, American Journal of Education, etc.)
- Professional workshops
- Colleagues or other teachers
- School Psychologist or other school professionals
- Textbooks or other print resources
- Other (please specify) _____

*The following section will cover possible **reasons** for which you may or may not use a particular source.*

5) Below are the sources for which you indicated:
"Not likely to use this source" or "Somewhat unlikely to use this source".

Please indicate the MAIN reason you are **unlikely** to use these sources.

Source

- It does not provide practical information for the problems I encounter in the classroom
- The language used in this source (or advice given) is too complex and unclear
- It provides statistical evidence that can be difficult to understand
- I do not have access to the source
- It does not provide clear examples of how to implement the solution(s) in the classroom
- I do not find this source to be trustworthy
- It does not provide statistical evidence; I would prefer sources with statistical evidence

- I do not know this source
- Other (please specify) _____

6) Below are the sources you indicated:
"Somewhat likely to use this source" or "Very likely to use this source".

Please indicate the MAIN reason you are **likely** to use these sources.

Source

- It provides practical information for the problems I encounter in the classroom
- The language used in this source (or advice given) is easy to understand
- It provides statistical evidence
- I have access to the source
- It provides clear examples of how to implement the solution(s) in the classroom
- I find this source to be trustworthy
- It does not provide statistical evidence
- The information I need is readily available and easy to find
- Other (please specify) _____

7) The research-to-practice gap has been described as a gap between what we know and what we do (Olswang & Prelock, 2015). Educational researchers and teachers alike have worked together to develop successful interventions for information to "bridge the gap" between research and practice. However, researchers have found that this disconnect still exists.

Drawing on your experience as a teacher, how do you think researchers and teachers can work to close the research-to-practice gap?

This is the final section of the questionnaire that will cover demographic information and classroom experience.

8) In what year of school are you currently?
- Freshmen
- Sophomore
- Junior
- Senior
- Graduate school

9) How many months of experience do you have working in a classroom including observation and student teaching? *Please respond in number of months.*

10) What content area(s) do you have experience teaching or observing in the classroom?

11) What grade(s) do you have experience teaching or observing in the classroom (e.g., elementary school, middle school, high school)?

12) What is your age? *Please use numbers only (i.e., 21).*

13) Check your race/ethnicity.
- Asian or Asian American
- Black/African American
- Hawaiian or Pacific Islander
- Hispanic or Latino/Latina
- Native American or Alaskan Native
- White/ Caucasian
- Prefer not to say
- Not listed _____

14) To which gender identity do you most identify?
- Female
- Male
- Transgender Female
- Transgender Male
- Gender variant/Non-conforming
- Prefer not to say
- Not listed _____

15) Upon completion of this study, would you be interested in receiving a summary report of the research?
- Yes
- No