PART I

Designing and conducting physical education research

Introduction

One of my (Cathy’s) graduate students once asked, “Has anyone ever invented a curricular-ometer?” The student went on to explain that there must be a way to put a “sensor” on each aspect of the gymnasium environment – students, teachers, equipment, etc. – to gather “full and complete information” from and about each important aspect of the PE learning environment (Isn’t there an app for that?). The curricular-ometer would then assist researchers to integrate these to understand effective teaching and learning practices. As we write this introduction to the research part, we are fairly certain that a curricular-ometer has not yet been developed. Currently, researchers’ paper and pencils, cameras, laptops, accelerometers, tablets, and apps (to name a few), as well as their eyes, ears, and intuition will continue to be the primary data collection and analysis tools available. Yet, almost 40 years after William Anderson’s and Gary Barrette’s (1978) original question, “What’s going on in gym?” scholars are still working to answer this question. It is a question which has led us to increasingly more sophisticated insights about the interactions and events in physical education that have motivated several generations of physical education pedagogy researchers from around the world.

Conducting research in physical education can be at once a most exciting, perplexing, and exhilarating experience. The opportunity to pose and answer questions about a subject area that we greatly value is without question an energizing and, at times, frustrating experience for pedagogical scholars and researchers. The research opportunities in physical education are rich and varied. Some researchers are eager to delve deeply into the physical education classroom, broadening our perspectives with in-depth analyses of teachers, and students’ many experiences and perceptions. Others are employing statistical modeling techniques to scale research findings, linking variables across classrooms, settings, and geographic areas. They are using complex research designs to reveal insights into relationships among students’ cognitions, attitudes, motivation, and impressions of class climate. Currently, researchers are conceptualizing significant research questions using many different research designs. Their graduate students are soon to be the mid-twenty-first century scholars who are as equally comfortable conducting case studies and life histories as designing modeling studies examining complex relationships across rich data sets of pedagogical variables.
The Designing and Conducting Physical Education Research part opens with a chapter introducing readers to a few of the most important paradigms and procedures currently used to conduct physical education research – broadly defined. Templin and Richards begin with a look at research on teaching in physical education and physical education teacher education. They point out the very real challenges of “real world” research and the dizzying array of perspectives, methods, and contexts where researchers seek answers to better understand what is occurring in physical education. After a brief history, these authors begin by describing the development of physical education research questions and the explicit and implicit links from the research question to the selection of study methods. They conclude by addressing the question, “To what extent does research influence practice?”

Certainly, there have been important findings with lasting benefits to teachers and students currently implemented as evidence-based practice. Templin and Richards point out that evidence-based practice research puts children’s needs first, encouraging practitioners to adopt an orientation toward life-long learning to stay up-to-date in a rapidly evolving profession. Unfortunately, much of the research supporting best practices has not yet reached some teacher education programs or physical education classrooms. A case in point is the rapidly accumulating findings underpinning pedagogical models which appear to hold promise to revolutionize physical education, although as yet have not been widely accepted by practitioners or implemented in practice.

The second chapter in this opening part places the spotlight directly on interpretive and critical research philosophies and practices. Qualitative research has helped researchers move from their mile-high ivory tower perspective on schools and classrooms to become “up close and personal” with teachers and students in their world. Ethnographers, phenomenologists, and critical scholars have revealed in impressive detail and with riveting analyses the microcosm of the school world. In Chapter 2, Woods and Graber provide a look at qualitative research genres with emphasis on the roles and responsibilities of qualitative researchers. They direct the reader to significant research in each genre and point out essential characteristics of research conducted from each perspective. Woods and Graber conclude by assisting novice researchers to think critically and reflectively about the qualitative research process, assisting with such important elements as planning a study, selecting participants, and collecting and analyzing data. Of utmost importance are the underlying foundations of qualitative research, credibility, dependability, and confirmability essential to the design of research studies of high quality. These key elements make a meaningful difference as we work to understand teacher–learner interactions within varied school and physical education contexts.

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THE RESEARCH ENTERPRISE IN PHYSICAL EDUCATION

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Compared to some of the most established fields within the social sciences, research on teaching in physical education (PE) and physical education teacher education (PETE) is a relatively young discipline. Since its resurgence as an enterprise once described as a “dismal science” (Locke, 1977), we have witnessed expansive growth of research publication in mainstream PE or sport pedagogy journals. This research has addressed a myriad of topics linked to the study of curriculum, teaching, teachers, and teacher education in PE (Housner, Metzler, Schempp, & Templin, 2009; Kulinna, Scrabis-Fletcher, Kodish, Phillips, & Silverman, 2009; Silverman & Skonie, 1997; Ward & Ko, 2006). Journals such as Journal of Teaching in Physical Education (28 volumes), Research Quarterly for Exercise and Sport (86 volumes), Physical Education and Sport Pedagogy (20 volumes), and the European Physical Education Review (21 volumes) represent some of the prominent publication outlets used by PE scholars. As an illustration of the broader reach of PE scholarship, Kulinna and her colleagues (Kulinna et al., 2009) noted 1,819 PE focused research articles within 94 journals worldwide.

Despite this growth, scholarship in the discipline has not come without challenges. It has been argued that the path taken by PE has been uncertain, non-linear, and, at times, tenuous at best (Kirk, Macdonald, & O’Sullivan, 2006). Many PE scholars and PETE programs continue to vie for status and resources in departments of Kinesiology in the midst of ever-changing values and identities (Lawson, 2007; Templin, Blankenship, & Richards, 2014). PE faculty and PETE programs serve two masters. They stand straddled, with one leg in kinesiology and another in educational research. Research in PE is, therefore, likely the only educational discipline informed by scholarship in both the natural and social sciences. While in some instances this diversity has positive implications for the field, the work of PETE faculty is often divorced from that of faculty in other kinesiology sub-disciplines and the practitioners for whom their work has implications (Bailey & Kirk, 2009). Equally, some of the methodologies used by PE scholars to conduct field studies are foreign to experimentalists or laboratory scientists who, in some instances, still marginalize qualitative research designs.

While challenges continue to impact the work of PE scholars, research in the discipline continues to expand through four generations of sport pedagogy scholars. This research has potential to yield important implications for both PE practice and the training of PE teachers. Research tests theories of education and instructional approaches, leading to the
The development of practices supported by empirical evidence. It similarly helps to uncover the student experience, identifying practices that work best in increasing student physical activity, motivation, and enjoyment (Armour & Macdonald, 2012). While much of the research in PE began rooted in positivism (i.e., an approach to research which begins with the assumption that there is a “real world” out there that can be objectively measured), the field has evolved to include a variety of interpretivist, critical, feminist, and post-modernist perspectives (Macdonald et al., 2009). To some extent, theoretical perspectives guide methodological decisions. Early scholars adopted descriptive methodologies relying on quantitative frameworks for data collection and analysis (Silverman, 1991). As evident in this volume, contemporary scholars now draw on a wider range of methodological approaches, including qualitative, modeling, and mixed-method/multi-method designs (Hemphill, Richards, Templin, & Blankenship, 2012).

Numerous textbooks have been written to address the process of conducting research in education (e.g., Cohen, Manion, & Morrison, 2011) and PE (e.g., Armour & Macdonald, 2012; Sparkes & Smith, 2014; Thomas, Nelson, & Silverman, 2015), as well as those that examine qualitative (Patton, 2015) and quantitative (Tabachnick & Fidell, 2007) research methodologies more generally. Rather than discuss specific research methodologies, this chapter focuses on the broader research enterprise in PE. We begin by discussing motives that influence research and then turn to the importance of crafting research questions to focus a study. Next we consider the need for evidence-based practice and the extent to which research impacts practice before concluding with some recommendations for approaching the research process.

### The broad view: reasons and motives for pursuing research directions

The first step in the research process typically involves identifying an area of inquiry in which the scholar has an interest. In commenting on the directions taken by scholars in pursuing research agendas, Armour and Macdonald (2012) noted that one’s research “reflects who you are and your interests … therefore, it is important to reflect on the source of your motivation to undertake research in a particular area and for a particular purpose” (p. 9). Macdonald and McCuaig (2012) also recommend that scholars follow their interests and strengths in pursuing research topics, especially since individual research projects represent long-term commitments that could span months if not years. For many, research motives emerge from first-hand experience teaching in K-12 and PETE settings (see Casey & Fletcher, 2012). The topics scholars pursue, therefore, often arise through their work with children, teachers, and PETE students in the complex, sociopolitical contexts of schools and universities.

Beyond first-hand experience, individual researchers may have a variety of motives for asking research questions. For example, a scholar may be motivated by a desire to learn about the teachers’ and children’s lived experiences to give voice to underrepresented groups, or to diagnose potential problems in practice and formulate solutions. Siedentop (2009) explained that PETE scholars represent a research profession whose primary purpose is to serve the discipline of PE. Research and scholarship, from this perspective, relate to improving PE practices in schools. Different research traditions and theoretical orientations also lend themselves to certain types of research inspired by different motives. Critical theorists, for example, seek to critique fundamental democratic assumptions prevalent in much of the Western world, viewing research as a “form of social or cultural criticism” (Kinchoe & McLaren, 2005, p. 303). Participatory action researchers view research as being directly relevant to a particular group of people, and they seek to empower those people through the process of constructing and using knowledge (Nieuwenhuys, 2004).
Beyond an individual’s motives for pursuing a topic, scholars also acknowledge sociopolitical factors that influence research agendas. The selection of research topics and identification of research questions are influenced by a myriad of factors including epistemological beliefs, interests and methodological orientations, availability of funding, and current trends in the research literature (Armour & Macdonald, 2012). Macdonald and McCuaig (2012) argue that research in PE and sport pedagogy is “overlaid by a research context that is frequently political, of public interest, and potentially attracts a range of opinion” (p. 16). Much of this complexity is attributable to differing expectations and priorities related to the role of PE in the larger school curriculum and in children’s lives outside of school.

University and departmental priorities similarly influence research agendas. Funded research is often given priority over the generation of knowledge and understanding for its own sake. As universities have become increasingly entrepreneurial, research has become a commodity and “knowledge is and will be produced in order to be sold” (Lyotard, 1984, pp. 4–5). This is evidenced by faculty reward structures in countries such as the US, UK, New Zealand, and Australia that emphasize grant funding as a key indicator of success (Armour & Macdonald, 2012). Hiring decisions may be based on funding history, the perceived fundability of one’s research line, and prospects for tenure and promotion may be connected to the acquisition of grant funding. Scholars who only pursue research that appeases a grant agency may prioritize the interests of others over their own. In these environments, overreliance on one’s interests may make research unfundable and have negative implications for the researcher. Researchers thus need to balance their interests for engaging in research with the type of work that is attractive to funding agencies (Armour & Macdonald, 2012).

**Narrowing the focus: the development of research questions**

Having identified an area of research that one finds to be interesting, the next step is to consider the role of research questions in helping to focus a study. Whether the questions evolve from “logic, practicality, or serendipity” (Locke, Spirduso, & Silverman, 2014, p. 46), the question or set of questions (and hypotheses in quantitative or mixed-method research) should serve as the foundation of one’s research project. Nevertheless, it is not uncommon for a neophyte researcher to approach a project without in-depth reflection about the central questions or sub-questions that will guide the project. Consider the following exchange between a graduate student and research advisor:

**Graduate student:** “Dr. Templin, I have been thinking about my dissertation topic and am really interested in studying how beginning teachers adjust to their first jobs within a school setting.”

**Professor:** “Well that’s great. Can you give me a little bit more information to help me understand what you are interested in studying?”

**Graduate student:** “You know, we have learned about occupational socialization theory, and I would like to study the organizational socialization of beginning teachers. You and your students have been studying this topic for a long time, haven’t you?”

**Professor:** “Ok, that’s good, but you will need to focus your study a little more than that. What is the purpose of your study and what are the specific research questions you want to ask? These questions should be grounded in the framework of occupational socialization theory, past literature on beginning teachers, and the precise constructs and variables you want to study. You can’t try to do it all, so you need to consider what elements of the first-year experience you are interested in studying. Once you have identified
some questions, think about the type of research methods you will use to answer them. Will your questions call for a quantitative, qualitative, or mixed-methods design?”

The graduate student in the preceding dialogue has identified a broad area of interest, but failed to focus that interest into a manageable set of research questions. The professor’s advice is aimed at helping the student narrow the focus as he provides encouragement related to developing questions to guide the inquiry. The professor’s advice is mirrored in numerous research methods texts where authors have addressed the necessity of crafting research questions (Armour & Macdonald, 2012; Creswell, 2014; Locke et al., 2014; Maxwell, 2013). Also important in the professor’s advice is the need to connect research questions to a theoretical framework related to the purpose of the study. Theories provide researchers with a unified body of literature related to a topic and help to inform assumptions or hypotheses with which the researcher approaches a given study. An appropriate theory can both focus the study and guide the research questions that are asked. Theories also help to identify the contributions of research and situate it within a body of knowledge. Physical education researchers have used a variety of theories to guide their work. Examples include occupational socialization theory (Richards, Templin, & Graber, 2014), experiential learning theory (Kolb & Kolb, 2005), self-determination theory (Deci & Ryan, 1985), the theory of planned behavior (Ajzen, 2012), and different strands of critical and feminist theories (e.g., Acker, 1987).

Research questions should be developed prior to and serve to guide the methods employed by the researcher. Ideally, rather than relying on one’s preferences for data collection and analysis techniques, research methods should be guided by the questions one asks (Creswell, 2014). This speaks to the importance of developing an appreciation for and the ability to use both qualitative and quantitative research methods. Generally, questions that are guided by “how” and “why” are qualitative in nature, whereas those that begin with words such as “what” and “how many” are more quantitatively driven (Patton, 2015). Mixed-methods questions lead to both qualitative and quantitative methods independently and in an integrated way. Granted, one cannot expect to be an expert in all research methods, but understanding the type of methods that can be used to address specific research questions can aid in study design. In the following sections we discuss the development of research questions driven by quantitative, qualitative, and mixed-methods approaches. Table 1.1 provides an overview of the stated purposes and research questions from recent studies published in the JTPE to which we will refer.

### The relationship between research questions and study methods

In quantitative research, research questions are typically crafted in advance and are used to develop hypotheses that guide statistical testing (Creswell, 2014; Maxwell, 2013). Quantitative research questions can be descriptive, predictive, or causal (McBride, 2013). Descriptive questions seek to describe what is occurring in a particular setting. This could involve quantifying a variable, examining the relationship among variables, and examining changes in a variable over time. Predictive questions seek to determine whether one or more variables can be used to predict another. Causal questions seek to determine directional causation in the relationship among variables. The use of causal questions is increasing as more PE faculty apply for large, externally funded grants; however, these questions require experimental manipulation of variables, which has been a rarity in educational research. Further, Locke and colleagues (2014) outline three tests of clarity and inclusiveness typically connected to quantitative research: 1) Is the question free of ambiguity? 2) Is a relationship among variables expressed? and 3) Does the question imply an empirical test? The first row of Table 1.1 provides an overview of a recent quantitative
<table>
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<th>Citation</th>
<th>Design</th>
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<td>(Webster et al., 2013)</td>
<td>Quantitative</td>
<td>To test a theoretical model of South Carolina’s Early Classroom Teachers’ (ECTs) adoption of Physical Activity Promotion in the Academic Classroom (PAPAC), and to test the psychometric properties of the measures employed in this study and establish their validity and reliability</td>
<td>1) What are the relationships amongst ECTs’ awareness of the Student Health and Fitness Act, perceived school support of PAPAC, perceived attributes of PAPAC, domain-specific innovativeness, and self-reported PAPAC?</td>
<td>1) Direct and positive relationships between policy awareness and perceived school support, perceived school report and intrapersonal factors, and intrapersonal factors and self-reported PAPAC. 2) Indirect and positive relationships between policy awareness and intrapersonal variables, policy awareness and self-reported PAPAC, and perceived school support and self-reported PAPAC.</td>
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<td>(Patton et al., 2013)</td>
<td>Qualitative</td>
<td>To examine the pedagogy of facilitation within physical education professional development</td>
<td>1) What were the self-identified pedagogical strategies employed by facilitators in professional development (PD)? 2) From the perspective of the teachers, what strategies contributed to their growth as teachers?</td>
<td>N/A</td>
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<td>(Richards et al., 2015)</td>
<td>Mixed method</td>
<td>Provide a comprehensive, in-depth evaluation of college students’ experiences participating in a physical activity-based SL program for children with disabilities</td>
<td>1) What is the impact of program involvement on college student participants’ perceptions of academic and civic learning? 2) What role do gender, prior program experience, and volunteer status play as moderating variables in participants’ civic learning? 3) How do participants view program involvement as relevant to their personal and professional identities?</td>
<td>N/A</td>
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study conducted by Webster et al. (2013). Here we illustrate how the stated purpose of the study connects to the research question and study hypotheses.

Whereas the relationship between research questions, hypotheses, and methods is often quite clear in quantitative research, the role of research questions in qualitative inquiry is less straightforward. Some qualitative experts believe that specific questions should be established in advance, while others take the position that they should emerge from a larger, more general question (Patton, 2015). We believe that both approaches should be utilized in a qualitative study. However, locking into a predetermined set of questions can give rise to what Maxwell (2013) referred to as Type III error, which involves “answering the wrong question” (p. 73). Maxwell goes on to explain that “early provisional questions frame the study in important ways, guide decisions about methods, and influence (and are influenced by) the conceptual framework, preliminary results, and potential validity concerns”; however, “well focused questions are generally the result of an interactive design process, rather than the starting point for developing a design” (p. 73). As a result, the focus of the inquiry may evolve over time, and the final set of research questions may differ from those that initially drove the inquiry. Regardless of the approach taken, the final set of questions should relate to and elaborate upon the stated purpose of the study. The second row of Table 1.1 provides example research questions from a qualitative study conducted by Patton, Parker, and Pratt (2013). Here we document how the authors’ purpose is connected to the research questions.

Beyond purely qualitative and quantitative designs, there has been a trend toward mixed-method and multi-method designs that “combine elements of qualitative and quantitative research approaches … for the broad purposes of breadth and depth of understanding and corroboration” (Johnson, Onwuegbuzie, & Turner, 2007, p. 123). Such approaches capitalize on the strengths of both research traditions, such as the generalizability possible in quantitative inquiry and the detailed description provided through qualitative methods (Tashakkori & Teddlie, 2003). The use of multiple methods, therefore, facilitates triangulation which can increase the reliability and relevance of findings (Patton, 2015). Both “how/why” and “what/how many” questions should be used to guide mixed-method and multi-method designs in order to focus the method on both areas of inquiry. While mixed methods have the potential to yield interesting and meaningful results, the quantitative and qualitative elements of the study should be selected with purpose. Creswell (2014) recommends that qualitative and quantitative methodologies be chosen intentionally to complement one another. The third row of Table 1.1 overviews a mixed-method study conducted by Richards, Eberline, Padaruth, and Templin (in press). Here we illustrate how the purpose of the study relates to its research questions. The first two questions guided quantitative data collection and analysis, while the third focused the qualitative component of the inquiry.

Prevalence of research questions in published studies

Hemphill et al. (2012) conducted a review of all research articles published in JTPE from 1998 to 2008. The review focused on the number and type of qualitative research articles published in the journal, as well as the foci of qualitative research and authorship trends. While this study focused on only one of many publication outlets in PE throughout the world, the authors noted an increase in the prevalence of qualitative research compared to that which had been noted in previous reviews (e.g., Byra & Goc Karp, 2000). In considering the importance of research questions as a “signpost” to guide the study design (Creswell, 2014, p. 139), we conducted a small-scale follow-up to Hemphill et al.’s (2012) study and reviewed all of the research published in the JTPE in 2013 and 2014 with a twofold purpose. First, we sought to classify the articles
The research enterprise

by methodology (i.e., qualitative, quantitative, or mixed method) and second we noted whether or not they included identifiable research questions to guide the inquiry. Given the findings of Hemphill et al.'s (2012) review, we anticipated an equal number of qualitative and quantitative studies, with somewhat fewer mixing methods. Further, since several authors cited throughout this chapter stressed the importance of research questions (e.g., Armour & Macdonald, 2012; Creswell, 2014; Locke et al., 2014; Maxwell, 2013), we expected to find clearly articulated research questions and hypotheses (in the case of quantitative research).

To our surprise, in our review of articles published in the 2013 and 2014 issues of JTPE, we found that there were nearly twice as many quantitative studies in the two-year period (n = 31) as there were qualitative studies (n = 17). This led us to wonder whether the research pendulum has swung back toward a quantitative dominance in the JTPE, or if this is just a two-year anomaly. As predicted, there were relatively few mixed-methods studies published (n = 6). More surprising was the absence of research questions and hypotheses we noted across the studies. Only 5 of the 17 qualitative studies (29.41%), 5 of the 31 (16.13%) quantitative studies, and 2 of the 6 mixed-methods studies (33.33%) clearly articulated research questions. Taken together, only 12 of 54 (22.22%) studies included research questions. Of the quantitative studies, 15 of 31 (48.39%) included hypothesis statements, and only 2 (6.45%) included both research questions and hypotheses. In total, 25 of the 54 studies (46.30%) utilized research questions and/or hypotheses.

The outcomes of our informal review must be interpreted with caution as they reflect a very finite time period and only consider one of the several publication outlets favored by PE researchers. Nonetheless, they do indicate that, within this time period and in this journal, the majority of researchers did not report research questions and hypotheses in their articles. We, however, stand resolute in our belief that the development of research questions is critical in the design and conduct of a study. Equally, these questions should be clearly presented in any proposal and subsequent publication from a study. Research questions keep investigators focused on what they want to explore and aid in the analysis and communication of research. Without considering research questions prior to the inception of a study, it can be difficult for the researcher to focus the methodology on a reasonable topic within a broad area of interest. When questions are crafted, but not included in published manuscript, the reader may not be able to trace the development of the study through the literature, methods, results, and discussion.

Considering impact: to what extent does research influence practice?

The preceding sections of this chapter have dealt with motives for engaging in scholarly inquiry and the crafting of research questions to focus that inquiry. This third and final section will examine the fruits of scholarly inquiry with regard to the impact it has on practice in PE and PETE. Ideally, research allows teachers to engage in evidence-based practice, which involves the interrogation and integration of research knowledge into one’s practice (Osmond & Darlington, 2001). Evidence-based practice has been defined as methods of teaching that have been proven effective through rigorous evaluation, ideally in the form of experimental and quasi-experimental studies (Davies, 1999). Large-scale investigations, such as those conducted with the CATCH (Leupker et al., 1996) and SPARK (Sallis et al., 1996) curricula, are required to make definitive statements about the outcomes associated with instructional approaches. Alternatively, evidence can be established over the course of numerous studies that look at the efficacy of a curricular approach, as has been the case with instructional and curricular models such as sport education, teaching games for understanding, and cooperative learning (Metzler, 2011).
Evidence-based practices limit guesswork and place emphasis on systematically generated knowledge over personal interpretations and knowledge gained through experience. In PE, evidence-based practice puts children’s needs first, requiring practitioners to adopt an orientation toward life-long learning to stay current in the best pedagogies available at any given time (Gibbs, 2003). Macdonald (2009) adds that teachers should be critical consumers of research who can digest and implement lessons learned from findings to improve their pedagogy. However, this is predicated on the assumption that teachers view research as a meaningful source of knowledge. Macdonald (2009) addresses this supposition by noting that the body of knowledge accumulated through PE research “appears to have had little impact upon teacher’s practice … there is a disjunction between PE evidence and PE practice” (p. 199).

For several decades it has been recognized that traditional approaches to teaching PE dominate school settings as teachers draw upon their personal experiences rather than research-based evidence (Bailey & Kirk, 2009). Traditionalism is deeply embedded within the PE profession and is related to the way in which teachers are socialized. As children, potential recruits participate in PE classes that are often taught using traditional methodologies, and these experiences go on to shape their subjective theories of what it means to be a PE teacher (Richards et al., 2014). Subjective theories developed during this time of acculturation are difficult to change and are likely to persevere through preservice training (Green, 2002). Further, colleagues who are resistant to change can make it difficult for teachers who are interested in using research-based practices. This concern has been echoed across decades of research, as Hoffman (1971) noted that, unless evidence-based practices filter down to veteran teachers, “a powerful force for the exclusive perseverance of traditionalism remains unchecked” (p. 57). Richards et al. (2014) made this point more recently by commenting that the sociopolitical climate of schools, which focus on maintenance of the status quo, can make it difficult for new teachers to implement innovative practices.

The inability of research to impact practice goes beyond teachers’ reliance on traditional methodologies. Policymakers do not have the time to read the research literature, and there is very little evidence to suggest that research on PE and PETE has had a meaningful impact on public policy (Bailey & Kirk, 2009). Further, the type of research evidence that is most valued by policymakers – that which is derived from randomly controlled, experimental trials (Osmond & Darlington, 2001) – is rare in PE research, making it difficult to build persuasive arguments. While there has been a proliferation of qualitative research within the field (Hemphill et al., 2012), these types of studies are still not widely accepted by policymakers. In the US, the Education Science Act of 2002, which prioritized quantitative methods using experimental designs as the gold standard for educational researchers applying for federal grants (Demerath, 2006), makes this point clear. Armour and Macdonald (2012) note that the inability of PE researchers to obtain the type of funding necessary to form and maintain large researcher teams and tackle big research questions may be one reason why research in the areas has not had a large impact on practice. Further, when this type of work is conducted, it tends to be published outside of PE journals, limiting the likelihood that it will be identified as PE research as well as the possibility of increasing accessibility to or awareness of PE researchers.

Although evidence does not support a strong alignment between research and practice in PE, there are ways that this connection could be strengthened in the future. First, researchers must communicate more with practitioners at venues and in language accessible to them (Bailey & Kirk, 2009). This requires looking beyond publications in empirical journals and presentations at research conferences and considering outlets such as practitioner-focused journals, social media, and in online forums. Unfortunately, this would also require a reconceptualization of faculty reward structures, which tend to prioritize publication in high impact journals.
Ironically, the journals that have the best reputations and are viewed positively by tenure and promotion committees are often the least accessible to teachers.

Professional development programming has been recommended as one option for connecting in-service teachers with evidence-based practices (Armour & Yelling, 2004). While they can be impactful, these opportunities must be designed with the characteristics of adult learners in mind, and focus on factors that promote sustainability and teacher change (see Parker & Patton’s Chapter 30 in this volume). Professional development providers should also be aware of teachers’ reluctance to implement changes that are forced upon them by administrations (Guskey, 2002). What is needed is a balance. When teachers are held accountable for quality practice, but are provided some flexibility in the determination of what change will be involved, they may be more likely to embrace innovation. Fullan (2007) discussed capacity building with a focus on results as the intersection of top-down and bottom-up change initiatives. These initiatives have some degree of top-down oversight, but also empower grass-roots change.

Finally, PE researchers can design studies that place teachers and students at the center of our scholarly endeavors. Locke (1977) encouraged PE researchers to avoid valuing research for its own sake and instead focus on the potential for research to serve the greater needs of the PE community. More recently, Armour and Macdonald (2012) argued that PE researchers have a professional responsibility for doing research that has implications for the children, teachers, and policymakers they seek to serve through their work. Action research methods, which involve practitioners as collaborators in research aimed at affecting teaching practice (Nieuwenhuys, 2004), have a lot to offer in this arena. Regardless of the particular approach adopted, we should seek to ask the types of research questions that hold meaning for practitioners and have application in their setting.

Conclusions and final thoughts

The purpose of this chapter was to discuss the research enterprise in PE and PETE. We began by describing motivations for conducting research and addressed how these initial ideas for research are narrowed and formalized through the creation of research questions. In the final section, we considered the impact of research on practice and provided some recommendations for strengthening this impact. We offer three general take-away points from the preceding discussion:

1. Scholars can seek to engage in research that is both personally and professionally relevant. That is, research that is personally interesting and which has meaningful implications for the PE community as a whole.
2. Research questions help to guide both the researcher and the reader of published articles through the investigation from conception through conclusions. Research questions are linked to and guide the use of particular methodologies in a study design.
3. Ideally, research should have an identifiable impact on practice. Teacher dispositions toward reading research, the sociopolitical climate in schools, and the larger political climate surrounding education can limit the integration of research in teacher practice. We must find new, innovative ways to communicate research findings to teachers and support them as they implement new pedagogies.

In closing, we must recognize and appreciate the progress we have made over the past 40 years. The research enterprise in PE can no longer be framed as a dismal science, but a thriving field of inquiry. This has resulted from a growing body of scholars; many outlets for publication
and presentation of findings, advancement, and diversification in research methodology; an ever-expanding focus on effective teaching, student learning, and PETE; and the sociopolitical climate in which schools are situated and education occurs. The current body of literature related to PE has much to say in terms of teachers' experiences, lives, and careers, and presents evidence-based practices that support student learning. We are, however, less confident in saying that this body of research has been maximally used to inform K-12 practice. Over four decades after Hoffman (1971) called for more innovative approaches to teaching physical education, many teachers continue to embrace traditional methodologies and curricula (Richards et al., 2014). The challenge in the next four decades will be to find a way to have an evidence-based impact on the practice of K–12 PE in schools. Our research has tremendous promise to make a difference in the practice of physical education for generations to come. However, the question remains: will it make a difference?

Reflective questions for discussion

1. What topic areas in physical education are you interested in studying? What is your motivation for pursuing these areas of research?
2. Based on the information presented in this chapter, how will research questions guide your current and future research?
3. What theoretical frameworks support your identified areas of research? How can these theories inform the development of research questions?
4. Do you feel more comfortable with qualitative or quantitative research methods? How does your comfort with particular methods influence the research questions you are able to use in your research?
5. From your perspective, what type of research is most needed in the field of physical education? How will this research help to inform physical education practice in K–12 school settings?

References


