Place-related Approaches in Teacher Education
A Review of Literature on Place-related Approaches in Preservice Teacher Education

By
Sarah Thacher
B.A., New York University, 2014

Plan B Project
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Masters Committee:
Dr. Alan Buss, Chair
Dr. Leslie Rush
Dr. Jayne Jenkins
Dr. Kevin Krasnow, Teton Science Schools
Abstract

Place-based education is a pedagogical approach that advocates for using one’s surrounding cultural, economic, and ecological phenomena as meaningful places for students to learn interdisciplinary content and skills. This and similar pedagogies have been examined in previous literature, yet few emphasize and evaluate its integration into preservice teacher education. Through examining 38 peer-reviewed studies on the diverse approaches of programs that integrate place-related educational approaches into preservice teacher education, this paper presents a synthesis of common findings in their implementation and outcomes. It found that characteristics of these programs diverge in their duration and intensity, course focus, and geographical and political contexts, each imparting an influence on how preservice teachers learn place-related approaches. Evidence for impact of these programs was explored in the literature in both qualitative and quantitative studies measuring self-efficacy, attitudes, beliefs and intentions, teachers’ conceptions of learning, and skill and content development. The three prevalent themes discussed in this paper are integration of theory and practice, organizational coherence, and bridging instructional contexts, which appear as important considerations for integration of place-related approaches into a wide range of preservice teacher education programs. These themes were used to provide recommendations for program development broadly and specifically for the Storer Scholars Program at Teton Science Schools.
Acknowledgments

I have an incredible amount of gratitude for all of those who have helped support me throughout this project. First, many thanks to the guidance of my committee. I could not have imagined a committee chair as supportive and compassionate as Dr. Alan Buss; thank you for giving me the confidence to push through each obstacle I met along the way. Thank you to the Science and Mathematics Teaching Center, especially Sylvia Parker for your continuous advice and encouragement. I am so thankful for the Teton Science Schools, especially Dr. Kevin Krasnow and Leslie Cook, who shared their insight and passion for place-based education throughout the year. I am additionally grateful for the Storer Foundation for supporting and advancing place-based education through work like this and for the Storer alumni who participated in my survey.

To my family, thank you for loving and supporting me in endless and incredible ways. I feel incredibly lucky to have had the support of my partner. Sam, I know this has been a difficult journey for the both of us, but you reminded me that the most important things in life were always there. I am grateful for Ty Tedmon-Jones for helping me find courage and self-compassion throughout this year. Lastly, so many thanks to my cohort of TSS grad extraordinaires. You have all changed me for the better, thank you.
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table of Contents</td>
<td>iii</td>
</tr>
<tr>
<td>Chapter One: Introduction</td>
<td>2</td>
</tr>
<tr>
<td>Purpose of this Research</td>
<td>7</td>
</tr>
<tr>
<td>Research Questions</td>
<td>8</td>
</tr>
<tr>
<td>Overview of Plan B and Paper</td>
<td>8</td>
</tr>
<tr>
<td>Chapter 2: Methodology</td>
<td>10</td>
</tr>
<tr>
<td>Introduction</td>
<td>10</td>
</tr>
<tr>
<td>Source Selection: Developing an Initial Corpus</td>
<td>10</td>
</tr>
<tr>
<td>Inclusion Criteria: Defining Place-related Approaches</td>
<td>12</td>
</tr>
<tr>
<td>Methods: Preliminary Evaluation of the TSS Storer Scholars Program</td>
<td>15</td>
</tr>
<tr>
<td>Chapter 3: Literature Review</td>
<td>18</td>
</tr>
<tr>
<td>Introduction</td>
<td>18</td>
</tr>
<tr>
<td>Place-based Teacher Education: Key Concepts</td>
<td>18</td>
</tr>
<tr>
<td>Findings</td>
<td>22</td>
</tr>
<tr>
<td>Thematic Analysis of Findings</td>
<td>38</td>
</tr>
<tr>
<td>Chapter 4: Discussion</td>
<td>54</td>
</tr>
<tr>
<td>Recommendations</td>
<td>54</td>
</tr>
<tr>
<td>Chapter 5: Conclusion</td>
<td>61</td>
</tr>
<tr>
<td>Limitations</td>
<td>65</td>
</tr>
<tr>
<td>Ideas for Future Research</td>
<td>66</td>
</tr>
<tr>
<td>References</td>
<td>69</td>
</tr>
</tbody>
</table>
Chapter One: Introduction

Background

“What does it mean to live well in a place?” This is a question that lies at the core of my graduate studies and has inspired the following rigorous research process. For two years, I have been steeped in place-based pedagogies as both student and educator. The most recent course I took on this topic, Place-based Learning in the Science and Mathematics Teaching Center, opened with this question written across the whiteboard. Through my experience and training in place-based education through the Teton Science Schools Graduate Program, I have reflected on my answer and the value of the question itself many times.

For me, living well in a place is the intention to get familiar with all elements of one’s locale, its ecological systems, cultural history, social dynamics, and economic basis. Grasping these takes time and concerted energy, but in understanding each element and their interdependence, one is able to critically examine and then question the practices, assumptions, and systems inherent to a place. This process of critical thinking and questioning in place can lead to action, whether in supporting needs identified or dismantling existing oppression of groups or histories in that place. These are the necessary steps for engaging in a community and forming a sense of place. The actions taken in the process are a commitment to a place and the basis for democratic citizenship. In this progression, living well in a place gains a broader purpose in the well-being of places themselves.

This question of living well in a place evolved as the course session went on. Although my classmates and I placed a different emphasis on the aspects of place interaction and sense-making based on our own life experiences, we agreed on the value of connecting to place through various opportunities in education, work, and everyday life. Eventually, our
conversations were brought back to frame the real question driving the course: What is the role of the educator in living well in place? As these two questions embraced me, I dove into the study of teacher preparation in place-related approaches to education.

Place in the context of education is not a new phenomenon; however, it remains largely unfamiliar to mainstream teaching. Yet, before the American educational system we have today, most schools were naturally approaching learning through the specifics of their place to some extent (Gruenewald & Smith, 2014). Furthermore, the concept of place-based education can be found in Aristotle’s writings and emerged again through education reformer John Dewey’s writings in the early 20th century (Buxton & Provenzo, 2012). Not only educators but philosophers, cognitive psychologists, and cultural anthropologists have contributed to a historical and theoretical basis for a model of learning meaningfully rooted in the local community and environment (Buxton & Provenzo, 2012). Despite this, a shift away from locally situated learning occurred with a rapidly globalizing social and economic world (Gruenewald & Smith, 2014).

However deep these roots are, American public education today has largely replaced local and contextualized learning with standardization and place agnostic curriculum and approaches across the United States at a cost to students. Policies like No Child Left Behind have left a legacy that forces teachers to focus on covering standards and bolstering test scores, adopting conventional approaches to teaching that further decontextualize student learning from their local communities and environments (Webber & Miller, 2016). In an effort to prepare students for competition in a globalized market over the past century, the educational curriculum was standardized across geographically and culturally diverse places across the U.S. (Gruenewald, 2003). Smith and Sobel (2010) hold this educational transition responsible for
creating a disconnect between children and their environment that offers meaningful learning opportunities. In addition, this educational system has particularly struggled to serve the needs of a diverse student population with a range of backgrounds and experiences, including diverse language abilities, socioeconomic contexts, and support systems (National Commission on Teaching and America's Future, 2016). An approach to teaching primarily focused on decontextualized standards struggles to account for the ways in which students learn best and ultimately does not serve the diversity of learners in the U.S (National Commission on Teaching and America's Future, 2016). Despite the tendency toward education removed from place, some teachers and teacher educators across the world have shifted toward pedagogical approaches that give import to local learning experiences (Gruenewald & Smith, 2014).

Place-based education advocates for using one’s surrounding cultural, economic, and ecological phenomena as meaningful places for students to learn necessary content and skills. As an educational approach, the various dimensions of place are integrated across curriculum and serve as a starting point for learner-centered inquiry, critical problem-solving, and meaningful community engagement (Gruenewald & Smith, 2014). An extensive body of literature from the past several decades suggests a multitude of benefits for students, teachers, and communities and advocates for a shift to more contextualized learning (Buxton & Provenzo, 2012; Lieberman & Hoody, 1998; Powers, 2004; Smith & Gruenewald, 2014; Sobel, 2004). Integrating a student’s community and surrounding environment into the school curriculum has been proposed as an antidote to an educational system that has been increasingly disconnected from a student’s life (Gruenewald & Smith, 2014). However, while many individual practitioners and even entire schools have adopted principles of place-based education into their practice, a formal integration
of such progressive, community- and environment-based pedagogies into teacher preparation has yet to be tackled.

After learning and teaching in the framework of place for a year, I had a clear idea of why I believed this was an important approach to developing deeper engagement and understanding with students, but I was still unsure about how this pedagogy could reach a wider audience. Upon arriving at the University of Wyoming where I would have the opportunity to dive into research of my own inquiry and inspiration, I knew I wanted to explore the existing and potential future avenues for teacher training in place-related pedagogies. I was interested in identifying the potential of place-based education in our educational system at a large and accessible scale, which led me to identify preservice teacher education as a significant point of leverage. From here I was left with questions of what: What preservice teacher training programs already exist in place-related approaches and what outcomes have been observed? What are the potential impacts of place-based education in preservice teacher training? What drivers and barriers have been encountered in this process? I sought to answer these questions through mapping and synthesizing relevant literature on existing preservice teacher education opportunities integrating place-related approaches. This review would inform recommendations for existing and future programs.

The Teton Science Schools (TSS) of Jackson, WY offered an initial example of institutions breaking the mold of teacher preparation through place-based education. The non-profit organization is committed to promoting and improving place-based education through field education programming, classroom education, and educator development. In service of this mission, the TSS Storer Scholars Program offers scholarships to up to ten undergraduate preservice teachers and one graduate student in the College of Education at University of
Wyoming for a two-week long training and practicum in place-based science education. The Storer Scholars Program served as both a launching and landing point for this research project investigating the existence and efficacy of similar opportunities in teacher preparation across the globe.

This study examines the teacher education literature for theoretical models, exemplars, and case studies of teacher preparation in place-related approaches in an effort to extract how it has been done in the past to inform future recommendations. In addition to a critical review of the literature, anecdotal data from a preliminary evaluation of the TSS Storer Scholars Program were used in relation to the findings and conclusions drawn from the literature review.

Statement of the Problem

As the world faces rapid economic, social, and environmental transformations, the U.S. continuously examines and attempts to reform the enormous educational system in response to the changing demands of the 21st century. Rising out of an era of “teach to the test” with a rigid emphasis on standards over students, educational reformists and policymakers have recognized that a new approach to public education is sorely needed to prepare students for the complex, interdisciplinary problems and opportunities that characterize the 21st-century (National Commission on Teaching and America's Future, 2016). In this transition, teacher education has become the focus of educational reform efforts both in the U.S. and internationally.

An increasingly common narrative places colleges of education and teacher preparation programs at fault for an educational system that repeatedly fails its students and teachers (Darling-Hammond 2010; Green, 2016; Hodge & Baum, 2019; National Commission on Teaching and America's Future, 2016). Observation of evolving educational policies reveals that “accountability for student achievement is increasingly being moved from teacher, school and
district, onto the universities that prepare them” (Hodge & Baum, 2019, p. xxv). As nationwide debates over the most effective and important approach to improving the quality of teacher education have been ongoing for several decades now, a theme for reform is emerging that centers around investment in preservice teacher education.

Teacher preparation programs are responding to criticisms through innovative programs that link schools, local communities, and universities in order to address a gap between theory and practice in education and deepen the understanding of how students learn (Hodge & Baum, 2019; Korthagen, 2017). Many of these programs use principles of place-based education to develop teacher competencies in student-centered, inquiry-based, and community-based instructional strategies. However, the literature pays little attention to the integration of these place-related approaches in teacher preparation programs. Furthermore, while some studies report on approaches and impacts of specific preservice environmental- and community-based programs, there is a lack of connection to a bigger picture. A broad analysis of existing research on programs with components of place-related pedagogies must be done in order to understand the best practices for integration and prospective impacts for teacher educators, teachers, and students.

Individual programs across the country have begun to recognize the value of place and environmental-based education, but it has not been substantially integrated into teacher education at large. For example, many researchers have examined some of the ways in which teacher preparation programs have included environmental education in curricula; however, the extent to which these programs are effectively integrated into teachers’ practices and the relationship these approaches have to place-based pedagogies is unclear. Moreover, due to the lack of high-quality research on pre-service place-based education teacher preparation programs, other community-
based, environment-based, critical, and place-conscious pedagogies must also be considered in order to extrapolate the potential approaches and outcomes of this type of teacher training. In order to understand the role place-based education can play in preparing teachers for the complexities and opportunities of a diverse student body in the 21st century and lead an effective integration into teacher education, a systematic review of the relevant literature must be conducted.

**Purpose of this Research**

Place-based education and similar pedagogies have been examined in previous literature, yet few emphasize and evaluate these programs within preservice teacher education. The main intent of this project is to examine and synthesize recent studies, seminal texts, and journal articles on the implementation and outcomes of place-based pedagogies in teacher preparation programs across the world. The diversity of programs in approach, emphasis, duration, balance of content and pedagogy, and use of field-experiences prevents a simple synthesis of the impacts of place-based pedagogy in teacher education; however, this paper presents a model for understanding recent literature on structure and outcomes of place-based preservice teacher training integration.

In addition, this project conducted a preliminary evaluation of the Teton Science Schools and University of Wyoming Storer Scholars Program for the potential long-term impacts on participants’ perceived practices of place-based education. During this stage of the project, data were gathered from past participants of the program who entered as preservice University of Wyoming undergraduate students, attended a week-long training at Teton Science Schools, and applied their learning to a week-long summer school program in Lander, WY or Saratoga, WY through observation and implementation. Through post-program self-reported surveys, teachers
provided their experience of the impacts of the program on their current teaching practices and conceptions of place-based education. Participants’ responses are provided in order to discuss the context of the literature review findings and reveal relevant insight and practical recommendations to the Storer Scholars Program and other similar programs.

In sum, this project is an exploration of the role of place-based pedagogies in preservice teacher education. Through a critical examination of place-related approaches and a synthesis of literature on existing programs, I hope to establish a case for integration. Outcomes of this study include a state of the relevant research and recommendations for universities, teacher educators, planners, and policy-makers in the effective implementation of place-related approaches for preservice teachers. Through this project, I argue that there is not only a potential place for this work but an already successful field in which best practices can be extracted.

**Research Questions**

Research Question 1: How are place-based pedagogies being integrated into pre-service teacher education, according to recent educational research literature?

Research Question 2: What are the impacts of place-based learning and teaching experiences for preservice teachers?

**Overview of Plan B and Paper**

My research involves a critical review of the literature on place-related approaches in preservice teacher education and a preliminary study of the Storer Scholars Program, a relevant Northwestern Wyoming program. Chapter 1 lays the groundwork for the topic, including a brief overview of place-based education and the role of teacher preparation in both the educational system and well-being of society. Chapter 2 outlines the methodology engaged in during the
critical literature review, including the systematic literature gathering process, avoidance of bias, and synthesis format, and the methodology used in the preliminary study of the Storer Scholars Program. Chapter 3 includes an organized review of the literature with findings and thematic analysis. Chapter 4 discusses the literature by providing recommendations for place-based teacher preparation broadly and the Storer Scholars Program itself. Finally, Chapter 5 provides a conclusion through a final reflection of the project, limitations, and directions for future research.
Chapter 2: Methodology

Introduction

This literature review serves the purpose of identifying, integrating and summarizing what is known about place-based pedagogies in teacher education in order to further our collective knowledge about the state of research on this topic. Fink (2010) defines this process as a “systematic, explicit and reproducible method for identifying, evaluating, and synthesizing the existing body of completed and recorded work produced by researchers, scholars, and practitioners” (p. 6). As such, a formal methodology was used to ensure a replicable, systematic process that minimized potential research bias. While this literature review played a significant role in providing recommendations for the Storer Scholars Program (Chapter 5), the main goal was to understand how place-based pedagogies are currently being integrated into preservice teacher education and what impacts, if any, they have on teachers.

Source Selection: Developing an Initial Corpus

In this critical literature review, I sought to examine relevant literature on implementation of place-based and similar pedagogies into teacher education. Given the difficulty of finding literature specifically addressing place-based pedagogies within teacher education, a broader perspective of related progressive pedagogies in teacher education was used. In this initial phase, a list of key search terms was created to encompass any progressive pedagogies relevant to a place-based approach. Using the definition of place-based education provided earlier and key words provided in a handful of seminal works on place-based education, the following list was formed: place-based education, pedagogy of place, environmental education, environmental-based education, outdoor education, experiential learning, education for sustainability,
community-based education, service-based education, field-based education, inquiry-based education, and critical pedagogy. Additionally, teacher education, preservice teacher education, and preservice professional development were used to refine search results to research regarding programs interested or integrated into teacher education.

Summon, the University of Wyoming library research engine, was utilized initially, followed by focused searches in the Education Resources Information Center (ERIC). Specific journals were identified in this process and used for additional narrow searches. These included the Australian Journal of Environmental Education, Journal of Outdoor and Environmental Education, Journal of Science Teacher Education, Journal of Teacher Education for Sustainability, Applied Environmental Education and Communication, and Teaching and Teacher Education. The references cited by articles that appeared relevant to the topic of this study were reviewed for new studies. Lastly, a recently published handbook on field-based teacher education was used to identify new studies.

As such searches produced tens of thousands of articles, a prioritization schema was created. With the search terms listed above, a publication date filter was applied to limit studies shown to publication between 2008 and the present. The search was also refined to only produce scholarly and peer-reviewed articles. Throughout the process, other search filters were experimented with, such as content type, discipline and subject terms. Lastly, search results were manually scanned using a preview function on the research engine that displayed the title, abstract, source, subjects, and how often it has been cited. This information was used to determine potential relevancy to my research questions, leading to the compilation of over sixty articles for review.
The literature produced in this open search had to be further reduced to approximately 40 articles most relevant to this study. In order to do so, the abstract of each article was scanned. The following questions were asked in order to determine relevancy: Does the educational approach include both local place or community elements and an experiential learning component? Is a place-based approach mentioned? Is the focus of the findings on teacher education and/or development? Reference to place, community, local environments, and progressive pedagogies was highlighted, as well as indication of an evaluation of a pre-service teacher training. With this criteria, 40 unique articles remained for the analytical literature review, which were organized in a spreadsheet with the headings shown in Figure 1.

<table>
<thead>
<tr>
<th>#</th>
<th>Citation</th>
<th>Research Question</th>
<th>Methodology</th>
<th>Scope (participants)</th>
<th>Outcomes Measured</th>
<th>Summary of Major Findings</th>
<th>Course Focus</th>
<th>Duration/Timing</th>
<th>Barriers reported</th>
<th>Theoretical Framework</th>
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**Figure 1.** Spreadsheet organization utilized in initial stages of the literature review

**Inclusion Criteria: Defining Place-related Approaches**

In the initial stages of this project, it became clear that there was not enough literature addressing or evaluating place-based education teacher preparation to produce a meaningful synthesis and recommendations. Only 10 articles addressed programs using the term “place-based” or “place-conscious” to describe the teaching approach utilized for preservice teacher training. In order to expand the parameters of the literature review to include programs utilizing a similar approach without using the technical term of “place,” a specific criteria encapsulating the elements that make place-based education unique had to be created.

Breaking down place-based education into discrete principles allows for simple comparison to similar pedagogical approaches. In collaboration with the University of Wyoming, Teton Science Schools adapted a set of principles to guide curriculum development, teach, and evaluate place-based learning from work by the Rural School and Community Trust (2009).
Table 1 provides the six TSS principles with definitions. Using this set of principles was beneficial to this project as it serves as a useful and simple context for relating other progressive pedagogies to place and is particularly relevant for the Storer Scholars evaluation.

**Table 1**

**Principles of place-based education and their definitions, developed and used by Teton Science Schools**

<table>
<thead>
<tr>
<th>PBE Principles</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local to global context</td>
<td>Local learning serves as a model for understanding regional and global challenges, opportunities and connections. An understanding of self is a starting point to understanding place.</td>
</tr>
<tr>
<td>Learner-centered</td>
<td>Learning is personally relevant to students and enables student agency. The teacher serves as a guide or facilitator to learning.</td>
</tr>
<tr>
<td>Inquiry-based</td>
<td>Learning is grounded in observing, asking relevant questions, making predictions, and collecting data to understand the world through economic, ecological, and cultural lenses.</td>
</tr>
<tr>
<td>Design thinking</td>
<td>Design thinking provides a systematic approach for students to make meaningful impact in communities through the curriculum.</td>
</tr>
<tr>
<td>Community as classroom</td>
<td>Communities serve as learning ecosystems for schools where local and regional experts, experiences, and places are part of the expanded definition of a classroom.</td>
</tr>
<tr>
<td>Interdisciplinary approach</td>
<td>The curriculum matches the real world where the traditional subject area content, skills, and dispositions are taught through an integrated and frequently project-based approach where all learners are accountable and challenged.</td>
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Using the TSS Principles and the foundational literature on place-based education as a framework, the overlap with other pedagogies that were common in recent research literature was discovered and utilized in this review. Environmental-based education, critical pedagogy, service-learning, inquiry-based education, and experiential education repeatedly showed up in
the literature search. In uncovering the elements of each approach, some to all of the core elements of place-based education were present. Figure 2 illustrates the overlap between these approaches and place-based education, creating an argument for a broad definition of place-related approaches.

![Diagram of relationships between principles of place-based education and similar pedagogies](image)

**Figure 2.** Depicts the relationships between the principles of place-based education (used by TSS) and similar and overlapping pedagogies, further arguing for the broad definition of place-related approaches.

Place-related approaches as defined by this study includes educational approaches that are inherently interdisciplinary, learner-centered and contextualize learning in students’ local context, while often incorporating additional elements of community-based, experiential, and environmental learning. Therefore, teacher preparation programs in environmental-based
education, education for sustainability, critical- and community-based education, inquiry-based education, and experiential education are candidates for this review. However, it has also been acknowledged that while there is often overlap, not all programs in these pedagogies effectively meet the criteria for place-based pedagogies. For example, some environmental education programs focus exclusively on environmental science content and attitudes in a curriculum-driven manner that does not qualify as a place-related approach. The program approach in each study was critically analyzed in order to determine its fit into the place-related approaches definition provided above. If it lacked any of the crucial elements of interdisciplinary, learner-centered, and local, it was not included in this review.

Methods: Preliminary Evaluation of the TSS Storer Scholars Program

In the initial stages of this project, an investigation of the impacts of the Teton Science Schools Storer Scholars Program was undertaken through an evaluation approach. The original goal was to make claims of impact of the program through the comparison of existing quantitative and qualitative survey data from participants pre- and post-program participation and a new post-post survey with repeat measures. However, due to minor changes in survey questions over the program’s existence and a lack of participant responses to this project (29% response), the research became a systematic review of relevant literature.

While the evaluation was not robust enough to stand alone as a project, relevant responses to the survey were still included in this study. The process of creating and implementing the survey remained a valuable part of the project experience. The open-ended responses gathered from a small portion of participants of the Storer Scholars Program provide interesting insights relevant to the research questions. In particular, many responses touch on the
barriers encountered in implementation of place-related approaches as participants moved into their teaching professions, offering a unique perspective into the impacts of these experiences.

Due to their incomplete nature, these data have been included in this project as raw data serving to draw anecdotal connections to the literature. No formal analysis was done. Rather, after a draft of the literature review was completed, the raw data were read through in order to draw relevant connections between past participants responses and finding from the literature. Anecdotes were then brought into the literature review and expanded upon in the discussion. In this way, the Storer Scholars survey deepens the inquiry and extends practical recommendations from this investigation.

**Participant selection.** The population for the survey included past participants of the Storer Scholars Program, which has taken place in Jackson Hole, Wyoming through the Teton Science Schools from the summers of 2012 to 2018. All participants are currently enrolled or have completed an undergraduate degree at the University of Wyoming in the School of Education. At the time of participation in the Storer Scholars Program, participants were preservice teachers referred to as Storer Scholars or simply as Scholars.

Four to seven individuals were granted scholarships to participate in the program each year, from 2012 through 2018. There is a total population of 42 participants who completed in program over this time period, and 12 participated in this research. This population includes both males and females, primarily residing in Wyoming.

**Context of the study.** The Storer Scholars Program takes place every summer at the Teton Science Schools in northwest Wyoming. Teton Science Schools is a non-profit organization with a mission to “inspire curiosity, engagement and leadership through transformative place-based education.” The Storer Scholars Program falls within the Teacher
Learning Center, which creates programs for educator development in place-based pedagogy. The name of the program derives from scholarship funds that facilitate participation free of cost for preservice teachers by the Storer Foundation. Goals of the programs include introducing place-based education to preservice teachers, modeling field-based science education, and discussing risk management in outdoor education.

The first week of the program occurs on the Teton Science Schools’ Kelly Campus in Grand Teton National Park, where participants engage in classroom and outdoor experiences related to the implementation of place-based education. Summer teaching assignments occur during the second week of the program, where participants travel to a Wyoming school district to observe and practice place-based lessons in an elementary school summer science enrichment program.

**Data collection methods.** An online survey was used to contact, gain consent, and collect data from Storer Scholars Participants (see Appendix A). The survey consisted of three sections. The first gathered demographic information on participants such as year of participation in the program, current occupation, and number of years teaching. The second section consisted of open and closed ended questions regarding perceptions of impact of the program on participants and their students and perceived barriers and drivers in implementation of place-related approaches. The third section collected quantitative data that is no longer relevant to this project and therefore was not included.
Chapter 3: Literature Review

Introduction

Given that this study included a wide suite of pedagogies that I have termed place-related approaches, it is not surprising that the body of literature reviewed includes a multitude of varying approaches to implementing and evaluating preservice teacher training programs. This review attempts to paint a broad picture of the landscape with regard to the highly variable elements of scope, study focus, program integration, curriculum, and evaluation emphasis across programs. Despite this diversity, several clear trends emerged throughout the literature base.

The themes that will be further discussed in this chapter include integrating theory and practice, organizational coherence, and bridging instructional contexts. Prior to illustrating the scope of the programs and analyzing themes identified within, it is important to provide the context of place-based education.

Place-based Teacher Education: Key Concepts

What is Place-based Education? As this review of place-related approaches in preservice teacher education emerges out of an interest in place-based education, it is essential to first gain an understanding of this pedagogy. As stated earlier, place-based education is a progressive educational pedagogy that is emergent from a school's context, is inherently multidisciplinary and experiential, and purposefully creates connections between self, community, and place (Woodhouse & Knapp, 2000). Using place and experience as central tenets, local phenomena serve as a cornerstone for teaching concepts in a way that leverages student experience in their surroundings. To serve this mission, the pedagogy often incorporates progressive instructional strategies such as project-based learning, inquiry-based learning,
culturally-responsive learning, and constructivist learning (Smith & Sobel, 2010). Importantly, it is not limited to learning within and about the natural world as this approach can include elements as diverse as culture, history, social issues, and the built environment of a place as well (Duffin, Powers, & Tremblay, 2004). Throughout various interpretations of place-based education, the emphasis remains on learning in and with the surrounding environment and community through student-centered, hands-on learning experiences.

The Role of “Place” in Place-based Education. Beyond the location where someone resides, “place” encompasses both the physical elements of a location and the human attachment to it, referred to as sense of place. It is a concept studied extensively in disciplines as diverse as geography, architecture, and neurobiology (Ardoin, 2006; Semken, Ward, Moosavi, & Chinn, 2017). Place-meanings constitute value from aesthetic to economic or a combination of these and similar elements (Semken & Freeman, 2008).

As a significant influence on the nature of the interaction between diverse people and the natural world, sense of place is a construct critical to the education of social and environmental citizenship (Semken et al. 2017). Cultivation of a sense of place has been a common strategy in place-related educational approaches as a means to encourage place-protective behavior and engagement (Ardoin, 2006). This stems from studies on the connection between sense of place development, pro-environmental behaviors, and learning motivation in geoscience and environmental science (Kudryavtsev, Stedman, & Krasny, 2012; Van der Hoeven Kraft, Srogi, Husman, Semken, & Fuhrman, 2011). As the goals of place-based educators go beyond achieving desired student outcomes and into the development of democratic citizenship and improved social and environmental efficacy, sense of place research has a critical role in the development and assessment of place-based education.
Place integrated into curriculum can take on many forms. A commonly referenced approach is found in bringing students outside of the classroom for learning, such as monitoring water quality in a nearby stream and connecting the experience to science, social studies, math and other subjects. Community-service experiences can be used as a strategy for teaching and learning. Local issues, professionals, and experts can be brought into the classroom for place-based learning as well. Overall, any form of using local places and people to deepen and extend learning, whether indoors, outdoors, on school grounds or in the community, creates opportunity for place connection.

**Benefits of Place-based Education.** Place-based and other related educational approaches have a wide range of benefits for students across academic dimensions. When compared to peers engaged in traditional learning, these approaches produce equal or increased measures of student learning, particularly with interdisciplinary content (Adams, Miller, Saul, & Pegg, 2014; Chawla & Escalante, 2007; Bartosh, 2003; Duffin et al. 2004; Lieberman & Hoody, 1998; Smith, 2007). Not only can place-related approaches improve critical thinking skills, they have also been shown to impact a student’s disposition towards critical thinking, including the students’ ability to take responsibility in their learning, engage in metacognition, and connect their learning to the outside world (Ernst & Monroe, 2004; Quitadamo, Faiola, Johnson, & Kurtz, 2008). Bauerle and Park (2012) found that place-related experiences integrated into curriculum enhanced knowledge retention, and other studies have also suggested increases in student interest, engagement, and motivation during integrated learning (Athman & Monroe, 2004). As more educators across the globe adopt place-based approaches to curricula, the research outlining academic, social, and emotional benefits continues to grow.
Learning in the contextualized, interdisciplinary, and student-driven contexts that place-related approaches offer has also shown critical benefits that go far beyond what is typically measured in school achievement. In addition to student achievement, there can be reductions in discipline and behavior management problems (Lieberman & Hoody 1998; South Carolina Department of Education, 2004). An often emphasized and unique benefit of place-based pedagogies is the influence of student engagement in the well-being of the local community and environment (Chawla & Derr, 2012; Gruenewald, 2003). Several researchers have paid specific attention to the influence of place-related approaches on members of indigenous communities and inhabitants of displaced and contested places (Semken & Brandt, 2010). In addition to student impacts, effects on teachers from using place-based strategies include increased interdisciplinary teaching, better collaboration with other teachers and outside community members, and improved belief in/perceptions of student ability (Powers, 2004; White & Reid, 2008).

Many practitioners of place-related approaches focus on the potential benefit of students as democratic citizens (Gruenewald, 2003; Sobel, 2004; Woodhouse & Knapp, 2000). Through problem-based, student-driven, and community immersed curricula, students have the opportunity to see themselves as actively engaged members of their place and agents of change (Gruenewald and Smith, 2014). This concept is attributed to the effects of enhanced place-meaning and attachment, which has been measured in place-related learning treatments (Semken & Freeman, 2008). As students build connections with their communities, opportunities to contribute to the creation of a sustainable and just future become more apparent (Gruenewald & Smith, 2014). Research on the implementation of place-based education across settings and populations continues to reveal a diversity of impacts like those mentioned above.
Challenges and Limitations for Place-based Education. While wide ranging benefits have been reported in the implementation of place-based education, there are several factors that are often cited as challenges to this approach. As schools are often characterized by discrete academic discipline segregation, interdisciplinary pedagogies are difficult to implement and assess (Powers, 2004). Place-based education faces other challenges in the public school system as it is often perceived as incongruent with mandated standards. Teachers are already feeling cramped for time in addressing curricular requirements and express concern for the additional time needed to prep place-based experiences (Powers, 2004). Other conditions within the school that impede place-based lessons include rigid time-tables, transportation systems, and field trip paperwork. As a still emerging pedagogical approach, teachers have reported difficulty gaining support from school administration and districts (Ernst, 2007; Kennelly, Taylor, & Serow, 2012; Linnemanstons & Jordan, 2017). In addition, unpredictable weather and risk management are often among the initial hesitations from teachers and school administration (Linnemanstons & Jordan, 2017; Pasiechnyk, 2018).

Findings

This literature review was driven by the question, how are place-related pedagogies being integrated into pre-service teacher education? I found that there is an interdisciplinary group of scholarly researchers investigating different forms of integration of place-related pedagogies in teacher education and their potential impacts on preservice teachers. The following is a report on the characteristics of these programs and common themes identified across the articles. I begin by addressing the general similarities and differences in program characteristics such as program duration, course format, and political and geographical contexts. Then I explore outcomes and
impacts found by researchers. Before finishing the chapter with a thematic analysis, I turn to the barriers and challenges to the integration of place-related approaches in teacher education.

**Program Characteristics.** There is a wide range of program characteristics across teacher preparation programs in place-based pedagogies. The major differences among programs examined in this literature review included their duration, program focus, and context. These structural differences have important implications for the potential impact of the program on preservice teachers.

**Duration.** The duration of teacher preparation programs in place-related pedagogies varies across the literature, with the majority of program integration in semester long credit-bearing courses. The duration of this course-based approach occurs over an 11- to 15-week course with at least one meeting per week and involves wider university structures such as student grading systems. There are also various levels of intensity for courses determined by the number of meetings per week, length of class meetings, and required out of class activities. The sequential impact of two or more courses studied by Richardson, Liang, and Wake (2014), deepens an understanding of the wider integration of place-related approaches into a preservice teacher’s education (see Richardson et al., 2014). While the general duration of course-based programs may be similar, programs are also diverse in instructional approach, background of professors, subject, field-based activity involvement, and course format.

The duration of other programs reflects an approach similar to professional development workshops. Place-based professional development (PD) programs for *in-service* teachers were included in this review to examine commonalities and opportunities of this structure for *preservice* teachers (see Meichtry & Smith, 2007; Ernst, 2007; Linnemanstons & Jordan, 2017; Rosenthal, 2011; Sarkar & Frazier, 2010). For example, the specifically place-based PD program
studied by Meichtry and Smith (2007) consisted of a 6-day workshop with two follow-up sessions for K-12 teachers in Kentucky. As context for this project, the two-week long TSS Storer Scholars Program that initiated this research project has a similar duration for a preservice teacher population. The Storer Scholars Program is characterized by an intensive week-long training followed by a week-long elementary science program for observation and implementation. In comparison, research conducted by Moseley, Reinke, and Bookout (2003) examined Adventures Beyond the Classroom (ABC), the shortest-term program included in this review which involved a 6-hour Project WILD training, an independent planning period, and implementation in a three-day elementary program. These programs offer insight into how a professional development style course may offer unique benefits to preservice teacher education.

The amount of time devoted to place-related approaches can have a significant impact on preservice teacher conceptualizations of place in curriculum. Environmental curricula such as Project Learning Tree and Project WILD have gained popularity, but research suggests that while these resources can be valuable, they are often used as activities in isolation with little to no lasting impact (Weiland & Morrison, 2013). Furthermore, many researchers and educators critique “one-way” or “add-on” approaches to environmental, community, and place-based education in teacher training as ineffective (Tomas, Girgenti, & Jackson, 2017; Weiland & Morrison, 2013). This creates a perspective of place-related approaches as another thing to add to an overcrowded agenda, as opposed to an approach to integration and increased student outcomes (Weiland & Morrison, 2013). In addition, meaningfully addressing the complex nature of social and environmental issues requires more than an add-on unit (Tomas et al., 2017). In contrast, the inclusion of place-related approaches into semester and year-long courses offers a potentially more extensive and integrated impact on preservice teachers’ beliefs, attitudes, and
intentions regarding environment and place as context for teaching and learning. Table 2 provides the literature organized by the duration and degree of integration into coursework.

Table 2: Literature broken down by integration into coursework and participant population

<table>
<thead>
<tr>
<th>Main Focus</th>
<th>Course Focus</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>PST</td>
<td>Program-wide integration</td>
<td>1: Wright (graduate programs), 2018</td>
</tr>
<tr>
<td></td>
<td>Dedicated course-based</td>
<td>10: Trauth-Nare, 2015; Tomas et al., 2015; Kennelly et al., 2008; Nielsen et al., 2012; Kennelly et al., 2012; Adams et al., 2014; Gross &amp; Hochberg, 2016; Green, 2016; Zygmunt-Fillwalk, 2010; Cian, 2017</td>
</tr>
<tr>
<td></td>
<td>Activity-based</td>
<td>7: Moseley et al., 2003; Best et al., 2017; Ajayi, 2014; Azano &amp; Stewart, 2015; Harshman, 2017; Baldwin et al., 2007; Tinkler et al., 2019</td>
</tr>
<tr>
<td>Other</td>
<td>Other</td>
<td>1: Community members: Guillen &amp; Zeichner, 2018</td>
</tr>
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</table>

Course Focus. The focus of courses related to this topic vary across programs depending on the university or faculty interests. While place-related approaches have gained some national and international recognition, they are not currently viewed as a priority in teacher preparation.
programs and therefore no requirements or standards exist (Weiland & Morrison, 2013). The three common course foci that have emerged in place-related program implementation include content-driven courses, methods-driven courses, and activity-based courses. Each course focus offers a unique lens to preparation that suggests various types and levels of impact on preservice teachers.

Teacher preparation curriculum is commonly divided into courses with a focus on foundational content or methods, and this construct is reflected in the literature on place-related approaches. Content courses as described by the literature in the review emphasize the knowledge required to understand and teach concepts, particularly as defined by standards. The focus is on strengthening content competencies, with natural science most common in this topic. On the other hand, methods courses focus on pedagogical understanding, including how student learn and best practices for teaching based on research. This course focus is designed to introduce and develop practical tools and strategies for teaching, often includes unit planning and field-based experiences with students and school contexts. As these course foci offer different instructional goals and uses of practical experiences, the research generally characterizes programs on this distinction and attributes outcomes to particularities of the focus.

While the majority of studies in this review advocated for the inclusion of place-related approaches in methods courses, there was no evidence to support this focus as the only approach to effective integration. Methods courses offer an opportunity to connect theory with practice through instruction on practices, unit planning, assessment, and classroom management, and as such this course focus is often characterized as more conducive to teaching place-related approaches to preservice teachers (Weiland & Morrison, 2013). Methods courses that allow preservice teachers to gain practical experience with students can reduce fears and lack of
confidence, producing increases in self-efficacy by the end of the course (Adams et al., 2014). Weiland and Morrison (2013) hypothesized that as methods courses allow for more rigorous, inquiry-based and reflection-oriented opportunities, place-related approaches would have a greater impact on preservice teachers understandings, confidence, and intentions. Examining two cases at American universities, the researchers used pre- and post- surveys to compare changes in preservice teacher understandings of place-related approaches and their intentions to integrate them into future teaching plans. They found that both course foci promoted content knowledge, instructional understanding, and conceptualization of place as a context for integrating instruction. While the preservice teacher’s conceptions differed according to the nature of the course focus, both were influential on student understanding. In conclusion, Weiland and Morrison (2013) suggest that either approach is conducive to integration of place-related approaches in teacher education but there are several other course factors that have an influence such as reflection orientation and opportunities to plan and implement place-related units.

**Context.** Place-related approaches have been integrated into teacher training programs across the globe, responding to diverse places, cultures, and contexts. Programs in this review span across the U.S., covering regions of the Midwest (13%), Northeast (28%), and Western States (13%). Twenty percent of the programs reviewed here occurred in an Australian University, which may be attributed to the country’s progressive policy initiatives that emphasize sustainability for both teacher education and school curriculum (Mills & Tomas, 2013). Other countries represented include Belgium, Hong Kong, and Canada.

As a central tenet of place-related approaches is the use of local context and phenomena as a model to explore global challenges, opportunities, and connections, the context of a teacher preparation program regarding place can impact preservice teacher understandings of the
approaches. For example, several programs are specific to preparation for rural education and therefore the strategies and goals of the program are particularly focused on a pedagogy responsive to rural places (Ajayi, 2014; Azano & Stewart, 2015; Vernikoff et al., 2019). The majority of programs are situated in a context with available local natural spaces, such as a river, forest, or park. However, other programs emphasize opportunities to embed place in curriculum within an urban context (Baldwin, Buchanan, & Rudisill, 2007; Harshman, 2017; Tinkler, Tinkler, Reyes, & Elkin, 2019; Zygmunt-Fillwalk, Malaby, & Clausen, 2010).

Other characteristics of context that are seen in the literature include the social and political context and government mandates. In cases of teacher preparation in Australia, a national sustainability curriculum framework and prioritization of Education for Sustainability into teacher preparation provides a context conducive for progressive pedagogies addressing place as context for teaching and learning (Tomas et al., 2017). Several studies recognized timely contexts for the implementation of their programs, such as a community-based program that coincided with the Black Lives Matter movement and Ferguson, MO uprising (Guillen & Zeichner, 2018). These factors can play a critical role in teaching and learning place-related approaches; therefore, context is an important characteristic to consider in developing and evaluating its integration in preservice teacher education.

**Outcomes Measured.** To investigate my second research question, *what are the impacts of place-based learning and teaching experiences for preservice teachers*, I focused on the preservice teacher outcomes reported in the literature. This section serves to outline the measurements used and outcomes reported, ranging from quantitative measures of self-efficacy to qualitative measures of attitudes, understandings, and intentions.
Quantitative Measures: Self-efficacy in Place-related Approaches. The only quantitative measure investigated in this body of literature was change in teachers’ self-efficacy. Teacher self-efficacy has been linked to positive student outcomes and therefore is a concept many educational researchers are interested in (Moseley et al., 2003). Stemming from Bandura’s social-cognitive theory from 1977, personal self-efficacy is a measure of a person’s belief in their ability to perform a task effectively (Richardson, Byrne, & Liang, 2018). It has been applied to educational research to measure teachers’ perceptions of their instructional capabilities. Bandura’s theory claims that low self-efficacy can lead to less effort, decreased adaptability, negative outlooks on the task at hand, and increased stress. Therefore, low self-efficacy in teachers poses a risk to both student outcomes and teacher retention (Moseley et al., 2003). From an evaluator’s perspective, change in self-efficacy provides insight into the effectiveness of a training program.

Several instruments have been adapted to measure self-efficacy changes specific to science and environmental education. The Science Teaching Efficacy Belief Instrument (STEBI) and Sia’s 1992 Environmental Education Efficacy Belief Instrument (EEEBI) was utilized by several of the studies in this review (Moseley et al., 2003; Richardson et al., 2018; Richardson et al., 2014; Trauth-Nare, 2015). Using a Likert-scale response system, both instruments contain items that reflect teaching capabilities such as understanding of environmental concepts, relevant strategies, and ability to support students in environmental concept and attitude development. Utilizing a pre-/post-test design, studies measured the change in self-efficacy before and after a preparation program or course introducing place-related approaches. Many of these studies share the same rationale behind using a self-efficacy measurement, arguing that preservice teacher
beliefs are a critical indicator of intended behavior and an important avenue for influencing change in teacher behavior (Moseley et al, 2003).

Of six articles focused primarily on changes in self-efficacy of preservice teachers, five found statistically significant increases immediately following a course or workshop in place-related approaches related to active engagement and increased content understanding. Trauth-Nare (2015) studied participants of a course intended to prepare preservice teachers in science concepts related to state-mandated environmental education standards in an effort to understand changes in self-efficacy and the potential causes of change. The participants attributed their increases in self-efficacy to learning ecological concepts through field-based inquiry, time allocated to curriculum development, implementation of their curriculum, and the service-learning experience. The researcher elaborated their finding through Bandura’s concept of mastery experiences as a powerful influence on self-efficacy, crediting its increased self-efficacy to the hands-on, experiential opportunities of the field course (Trauth-Nare, 2015). Richardson et al. (2018) similarly emphasized the active engagement and problem-based learning during the first year in their study as the cause for a significant increase in self-efficacy of preservice teachers, although the durability of the increase over time did not stand. The increase in confidence and self-efficacy in a study by Tomas et al. (2017) was explained in interviews that suggested subject understanding was the primary cause for the increase. Kennelly et al. (2012) reported both increases in content and pedagogical knowledge through their treatment as the reason for growth in confidence.

Moseley et al. (2003) was the only quantitative study that found no significant change in self-efficacy scores in a pre-/post-test survey of their place-related program utilizing a Project WILD training curriculum. The training provided by this program was six-hours long followed
by a planning period and practical experience through a three-day elementary program. While
the researchers found no significant change in self-efficacy immediately following the program,
a significant drop was revealed in a survey completed five weeks post-program. Moseley et al.
(2003) hypothesized that the short time-frame of the program with a very rigid structure that
assigned specific activities for the lesson did not allow preservice teachers adequate opportunity
to challenge and reflect on their abilities. Additionally, they suggest that the drop in self-efficacy
after five weeks was a result of a lack of reinforcement of place-related approaches in their
subsequent teacher preparation coursework.

Moseley et al. (2003) draw attention to the need for place-related approaches in teacher
education to move from “add-on” training to meaningful integration. A similar conclusion was
drawn by Richardson et al. (2014) in a two-year methods course sequence that taught place-
related approaches to preservice teachers. While participants showed significant changes in self-
efficacy beliefs in the first year, this increase was not sustained at the conclusion of the second
year. The researchers pointed to a shift in instructional environments as a source of this drop in
self-efficacy, as approaches were not as explicitly integrated in the second year of the course
sequence. As a result, preservice teachers were not encouraged to continue practicing and
reflecting on these teaching approaches. While Richardson et al. (2014) expected the preservice
teachers to independently transfer and build on their self-efficacy, they found that “movement of
knowledge across settings doesn’t happen easily and the nature of instructional contexts is
critical to that transfer” (p. 45). This lack of durability in self-efficacy and persistence points to a
needed focus in teacher preparation on future instructional contexts and the barriers they may
present.
Qualitative Measures: Attitudes, Understandings, and Intentions. The majority of research questions regarding teacher preparation programs in place-related approaches examine impact through a qualitative perspective, likely due to the complex and unique real-world contexts in which teacher education operates in (Vinlove, 2012). Impacts explored by studies varied and range from intentions for future teaching practice to formations of place identity. Qualitative researchers explore phenomena from an open-ended approach focused on exploration and discovery (Burke Johnson & Christensen, 2016). In this nature, the goal of qualitative research is not about generalizing but rather providing rich, contextualized understanding of experiences through intensive study of specific cases. While the range of outcomes reported across the literature limit a simple comparison across programs, they offer complex insight into preservice teacher’s experiences. Comparing outcomes across studies that utilize different methodologies and seek to answer very different questions regarding the topic of place-based approaches in preservice teacher education presents a barrier to creating a cohesive, integrated summary of impact. However, this is not the aim of my literature review; rather, a broad summary of the qualitative outcomes is presented to inform the thematic analysis following it.

Preservice teacher attitudes towards place-related approaches including their confidence, perceptions of value, and their future intentions in teaching give insight into overall program impact. Many research questions investigated these by asking what, for example: what are preservice teachers’ perceptions (Blatt & Patrick, 2014), what are preservice teachers’ understandings (Weiland & Morrison, 2013), and what links did participant teachers make to their future teaching practice (Kennelly, Taylor, & Maxwell, 2008). Researchers also dug into questions of how programs support, challenge, help, inform, effect, and shape preservice teachers understandings, perceptions, confidence, and identify formation (Adams et al., 2014; Green,
Multiple studies focus on teacher conceptions of their future practice through investigating intentions, commitment, and confidence regarding implementation of place-related approaches (Adams et al., 2014; Azano & Stewart, 2015; Kennelly et al., 2012; Weiland & Morrison, 2013). Related to their future conceptions (or actual experiences in the case of several longitudinal studies surveying current teachers), there is also a focus in the literature on identifying perceived drivers and barriers to implementing place-related approaches.

Preservice teachers’ understandings of place-related approaches improved in a number of ways after participation in place-related programs, with each researcher attributing these outcomes to different programmatic factors. Through reflective writing and focus group interviews, Adams et al. (2014) found deeper knowledge, higher retention, and complex connections between knowledge and experience in preservice teachers. Other researchers found positive changes in preservice teachers’ understandings of place-related approaches as a context for integrated learning rather than “add-on” to curriculum (Kennelly et al., 2012; Richardson, 2014; Tomas 2017; Weiland & Morrison, 2013). In a comparison of outcomes from two divergent course approaches, Weiland & Morrison (2013) suggested that the nature of preservice teacher understanding is consistent with how place-related approaches are presented to preservice teachers. Understanding of how students learn, the nature of science, related scientific concepts, instructional strategies, and environment and sustainability issues also increased as a result of participation in these programs (Kennelly et al., 2008; Kennelly et al., 2012; Preston, Harvie, & Wallace, 2018; Trauth-Nare, 2015; Tomas et al, 2017).

Several researchers investigated changes in confidence through preservice teacher narratives (Adams et al., 2014; Kennelly et al., 2008; Green, 2016; Gross & Hochberg, 2016;
Tomas et al., 2017; Trauth-Nare, 2015). Adams et al. (2014) measured changes in confidence before and after a methods block course including a series of integrated, place-based inquiry activities; the findings indicated that these experiences reduced discomfort and developed positive attitudes, leading to more confidence in teaching their subjects. Other studies reported increases in confidence with development linked to the explicit connections made between learning theory in the classroom and engaging in practice of place-related approaches (Kennelly, 2012; Gross & Hochberg, 2016; Tomas et al., 2015; Trauth-Nare, 2015). Increases in confidence were also linked to preservice teachers’ desires and intentions to incorporate place-related approaches into their future teaching practice (Adams et al., 2014; Green, 2016; Tomas et al., 2015). As Preston et al. (2018) recognized in their study, it is important to note that while greater confidence in teaching place-related approaches was reported across studies, this confidence cannot be directly linked to improved practice or confidence in other aspects of teaching.

An investigation of confidence in designing and implementing place-related approaches in the Storer Scholars survey revealed moderately high levels of confidence in both. Some of the self-reported impacts of the program include building confidence and resources to implement place-based education on a regular basis, opening their eyes to place-based approaches, knowledge of using the environment as a teaching resource, showing opportunity for team building, inquiry, collaboration, and emotional expression, and applying learning to the real-world. When asked to describe factors affecting confidence, responses suggested that the training, available resources, and effective modeling by teachers and professors were cited as affecting high confidence. Conversely, participants expressed concerns meeting standards, lack of knowledge and additional training, and difficulty in implementation in relation to their
confidence. This gives anecdotal insight into some of the impacts of the program as well as direction for addressing challenges these participants encountered as they entered their careers.

Measuring preservice teachers’ outcomes regarding their intentions, commitments and confidence in incorporating concepts into their teaching after completion of a program gives a perspective on long-term program impact. Participant survey responses and reflections following an immersive two-day program involving both learning and student teaching in a local place/community framework revealed interest, enthusiasm, and confidence in incorporating these approaches in future teaching (Green, 2016). The positive participant responses were contrasted to early course assessments in the study that revealed low confidence and few aspirations in place-related approaches. Through their study, Adams et al. (2014) suggested a link between preservice teacher hands-on experience with teaching integrated place-related approaches and intentions to use them in future teaching situations. In contrast, a program studied by Zimmer (2010) identified frustration and dislike of courses including place-related approaches from participants and revealed no intentions to incorporate it into future practice.

Many qualitative studies directly examined the associations between the outcomes in understanding, confidence, and future teaching intentions, and participants’ perceptions of course factors most influential on the development of those outcomes. Factors that were described by preservice teachers as influential include direct experience with curriculum development, working with local communities, reflecting on experiences, implementing approaches with children, and gaining conceptual content knowledge (Adams et al., 2014; Harshman, 2017; O’Connor, 2016; Wright, 2018; Zimmer, 2010). For example, Adams et al. (2014) drew links between positive outcomes and the use of authentic place-related tasks with teachers through the reflections they shared with the researchers. The personal graphic organizer below presents a
simple visualization of all the course factors reported across studies, in relation to the outcomes discussed here. Factors that were highlighted in multiple studies are further explored through a thematic analysis in this chapter as well as in the recommendations provided in Chapter 4.

Figure 3. Graphic organizer illustrating the perceived course factors relevant to participants’ development of outcomes in understanding, relevance and future practice, and self-efficacy regarding place-related approaches

**Barriers to Integration of Place-related Approaches in Teacher Education.** Barriers to the integration of place-related approaches into teacher education can arise from several levels. On one level, there are a number of contextual factors emerging from the social and political contexts of a program that pose challenges. Two studies that surveyed professors and faculty of teacher preparation programs across the country identified time pressures as the most prominent barrier in integration (Heimlich, Braus, Olivolo, McKeown-Ice, & Barringer-Smith, 2004; Powers, 2004). The participating teacher educators reported that an already overcrowded curriculum for preservice teachers prevents them from adding additional coursework. Related to
this perceived barrier, Heimlich et al. (2004) identified a second barrier associated with state and national mandates. Place-related approaches are not mandated by any entity in the U.S., and teacher educators feel more pressure to emphasize subjects directly correlated with standardized testing (Heimlich et al., 2004). Some teacher educators feel the need for defined directives from the state or district in order to know what should be taught (Linnemanstons & Jordan, 2017). Additional barriers that can arise from outside of institutions include the political and societal orientations towards progressive approaches in surrounding communities (Powers, 2004).

There are other difficulties at play on an outside level that directly interacts with a program. Strong partnerships with the community outside of an institution are important in modeling and practicing place-related approaches and can be difficult to foster (Guillen and Zeichner, 2018; Powers, 2004). The opportunity for preservice teachers to work with teacher role models and students is a key factor in their education, yet this requires identifying and establishing relationships with schools in the community using place-related approaches (Powers, 2004). Furthermore, authentic place-related lessons often involve working with community organizations, requiring the formation of partnerships between the community and teacher education program (Guillen and Zeichner, 2018).

Factors operating within the university or organization level can also inhibit the successful integration of place-related approaches into a program. The disposition of teacher educators and faculty have a substantial effect on how this integration is approached, as an educator’s perceived relevance of place-related approaches to their subject influences their desire to incorporate it into their courses (Mills & Tomas, 2013; Powers, 2004). This willingness to adopt place-related approaches is also influenced by the degree of expertise of faculty and teacher educators (Mills & Tomas, 2013). Van Petegem, Blieck, & Boeve-De Pauw (2007)
describes integration of place-related approaches as a “process of social change” requiring patience, persistence, cooperation, and commitment (p. 52). In their interdisciplinary nature, place-related approaches rely on collaboration between faculty and staff across departments, an often difficult task in typical discipline segregated institutions (Van Petegem et al., 2007). Gaining this dedication and cooperation serves as a barrier to integration as well as the pathway towards integration.

**Thematic Analysis of Findings**

Despite the diversity of approaches taken in place-related teacher education, several clear trends emerged across the literature regarding how place-related approaches are currently incorporated in teacher education. I have framed the research findings into three themes in the following model. The model includes integrating theory and practices, organizational coherence, and bridging instructional contexts, which are organized into three levels of considerations in preservice teacher education in place-related approaches. This model is depicted in Figure 4 and elaborated on in this section with findings from the literature base.
Figure 4. Themes identified in the literature organized into three levels of consideration for integration of place-related approaches in preservice teacher education.

**Integrating theory and practice.** The relationship between theory and practice in teacher education has been a subject of focus for many decades (Kretchmar & Zeichner, 2016). University programs, which traditionally consist of coursework isolated from a defined period of student teaching during the last portion of the program, are often critiqued for a persistent disconnect between theory and practice (Darling-Hammond, 2006; Kretchmar & Zeichner, 2016; Webber & Miller, 2016). In order for preservice teachers to skillfully integrate and use knowledge gained from programs, teacher candidates need practical experiences that are explicitly tied to principles and pedagogies learned in coursework (Darling-Hammond, 2006). Darling-Hammond (2006) refers to this coherence and integration between coursework and clinical work as a pedagogical cornerstone in good teacher education. In one of her studies of
teacher education in the U.S., Darling-Hammond (2006) determined that highly effective programs are “carefully sequenced based on a strong theory of learning to teach; courses are designed to intersect with each other, are aggregated into a well-understood landscape of learning, and are tightly interwoven with the advisement process and students’ work in schools” (p. 4). In alignment with this general principle of effective teacher education, research on place-related approaches also recognizes that coursework and fieldwork must overlap in an effort to clearly expose the relationship between theory and practices and develop innovative teaching competencies (Lowenstein, Grewal, Nielsen, Erkaeva, & Voelker, 2018; Webber & Miller, 2016). Three common strategies for integration are through direct experience, recognition of the role of content and theory understanding, and structured reflective practice.

**Theory and practice integration through direct experience.** A critical pillar of place-related approaches is the use of experience to inform deep understanding; it promotes the expanding of classroom walls into local spaces where students can interact directly with communities and places. Therefore, it makes sense that many teacher education programs in place-related approaches engage teachers in this type of experiential, constructivist learning experience. This process of using real-world experiences as education can offer an integration of theory and practice (Lowenstein et al., 2018). Through much of the literature, importance is clearly placed on engaging teachers as learners, modeling place-based learning, and involving teachers in local community experiences to deepen their understanding of the theories within place-related approaches.

One approach to teacher education is through modeling place-related approaches so that teachers initially engage as learners. This included both short learning activities and entire courses, where preservice teachers were immersed in direct learning experiences with the
community or local environment. By intentionally engaging teachers as learners, programs have
the capacity to support development of confidence and skills in place-related approaches (Adams
et al., 2014). Nielson at al (2012) designed a course to explicitly engage preservice teachers as
students in order to help them better understand the student perspective of place-related
approaches, its perceived relevance, and the benefits to student learning. Modeling place-related
approaches can allow preservice teachers to examine the learning potential offered by local
contexts (Lowenstein et al., 2018; Preston, et al. 2018; Sarkar & Frazier, 2010). It may also allow
educators to develop their own place-consciousness and place-identity, further supporting their
ability to support their students in doing the same (Harshman, 2017; Rosenthal, 2011). Modeling
as a strategy was additionally emphasized in studies on service-learning as place-related
approach (Baldwin et al., 2007; Tinkler et al., 2019; Trauth-Nare, 2014; Zygmunt-Fillwalk et al.,
2010). When teachers become learners in their training experiences, the potential for cohesion of
theory and practice is supported and their capacity and commitment to place-related approaches
increases (Adams et al, 2014).

While learning through experience is a common thread throughout teacher education by
way of student teaching opportunities, the value of experiential learning is particularly relevant
in teacher preparation for place-related approaches (Lowenstein et al., 2018). Experiential
learning in place-related programs comes in many forms as well, including observation of K-12
field trips in local areas, interactions with teachers and community members, using design-based
learning, developing and implementing lessons with young students, and participating in
community service-learning projects with and without students (Baldwin et al., 2007; Best,
MacGregor, & Price, 2017; Gross & Hochberg, 2014; O’Connor, 2010; Vinlove, 2012). Trauth-
Nare (2015) asserted that supporting development of place-related pedagogical knowledge
involves “inquiry techniques that allow PSTs to be active learners and model appropriate teaching techniques that can be used in their future classrooms” (2015, p. 500). This approach of providing direct experience with K-12 students in a place-related lesson was connected to gains in preservice teacher self-efficacy (Trauth-Nare, 2015). Practical experiences like these allow opportunity for development of mastery experiences and reflection on action (Ajayi, 2014; Azano & Stewart, 2015; Baldwin et al., 2007; Cian, Dsouza, Lyons, & Cook, 2017; Harshman 2017; Powers, 2004; Richardson, 2014; Richardson, 2018; Sarkar & Frazier, 2010; Tinkler et al., 2019; Trauth-Nare, 2015). Time designated to developing units is helpful in developing understanding and commitment to place-related approaches and the impact is stronger when teachers are afforded the opportunity to implement their lesson plans (Linnemanstons & Jordan, 2017; Trauth-Nare, 2015). However, practical experience does not act alone in teacher preparation, but rather works in tandem with theory and content knowledge and a reflective practice.

The role of theory and content knowledge. While practical experience is thoroughly emphasized, theory and relevant content knowledge continually play a role in teacher confidence and future intentions in place-related approaches. In one study, preservice teachers identified both place-related science content and pedagogical theory as most beneficial to the development of their confidence during the program (Trauth-Nare, 2015). Kennelly et al. (2012) additionally found content knowledge development to be crucially linked to positive self-efficacy development. Participants described the perceived need to feel secure in content knowledge in order to confidently respond to children’s learning and that “knowing more is significant as it influences what is taught, how it is taught, the level of classroom discourse and the selection of resources used” (Kennelly et al., 2012, p. 144).
Content knowledge specific to place plays a particularly important role in place-related approaches. Place-related approaches create locally contextualized learning, where a common concept of “place as text,” describes the process by which content emerges from the students’ surroundings (Wright, 2018, p 190). To effectively implement place-related approaches, teachers must be familiar with this “text” of their local surroundings. “Place as text” presents the additional challenge of attaining flexibility with unexpected teachable moments that arise through encounters with natural and social phenomena (Green, 2016). Although incorporating this locally specific content and flexibility as pedagogy into programs is difficult and will be further discussed in the section on instructional contexts, a couple of programs offered opportunity for students to develop this knowledge of place surrounding the educational program (Green, 2016; Trauth-Nare, 2015). Additionally, findings in place-related rural teacher preparation suggest the importance of incorporating relevant rural content in preparing preservice teachers for place-related approaches in rural education (Azano & Stewart, 2015).

Pedagogical content knowledge (PCK) served as one theoretical foundation to teacher education in place-related approaches as it reflects the domains of knowledge underlying teacher practice. Richardson et al. (2018) focused on pedagogical content knowledge as a bridge between theory and practices and found increases in self-efficacy as PCK regarding place-related approaches rose. Research by Kennelly at al. (2008) corroborates this idea as preservice teachers indicated that conceptual understanding in conjunction with the pedagogical skills and resources specifically tied to these concepts influenced their attitudes. Overall, the literature suggests that both theoretical content and practical experiences support development of place-related approaches; thus, program integration must strike a balance between both.
While identified as a primary influence in preservice teacher outcomes in several studies, this content knowledge does not act alone. “A sound knowledge of sustainability issues – in addition to the necessary pedagogical skills, values and attitudes – will support their confidence and readiness to enact EfS in schools” (Tomas et al., 2017, p. 327). The researcher indicates that while “sound knowledge” of the issues has been shown to support positive outcomes, it works in conjunction with pedagogical knowledge and skills as well as a personal commitment. Trauth-Nare (2015) similarly concluded that practical experiences with students were not the only factor in influencing preservice teachers’ self-efficacy, as participants indicated that learning ecological concepts was crucial in their building as well. Formal training for preservice teachers in place-related approaches as represented by the literature shows a consideration of and research interest in the sum of the parts, including content knowledge, theory, practical experience, and a reflective practice.

**Theory and practice integration through reflective practice.** The concept of reflective practice in teaching and learning is well-studied, particularly in the context of experiential education, and acts as a foundational characteristic of place-related approaches in teacher education (Ajayi, 2014). Sometimes referred to as self-study in the teacher education literature, it involves “inquiry into one’s practice through a cycle of inquiry, reflection, and action” and often involves guidance of an expert, leader, or peers (Webber & Miller, 2016, p. 1072).

Serving as both activity and research data source in studies, reflective practice is a key element to many programs. Reflective essays, student journals, and thinking books served as a critical data source in the qualitative research on this topic. In constructivist and experiential perspectives, reflective writing allows for processing, consolidation, and reinforcement of understandings gained in lessons and experiences; therefore, it offers a valuable lens to student
gains and beliefs (Cian et al., 2017; Nielsen et al., 2012). Nielsen et al. (2012) found thinking books to be an “important means for pre-service teachers to recognize and explore their own positions” (p. 102). Weiland & Morrison studied two reflection-oriented programs and concluded that this approach was an effective means to infusing place-related education into methods courses, particularly in regards to preservice teacher understandings, confidence, and future intentions (2013).

Many researchers found reflection particularly prescient for the subjects they studied. For example, Azano & Stewart (2015) found reflection critical to rural education, specifically encouraging preservice teachers to “investigate how—and why—place influences young people, and to consider how they might meet the needs of those learners as rural teachers” (p. 8). Additional research on a place-related approach to rural teacher education emphasized the use of collaborative reflection in connecting preservice teachers to rural learners (Ajayi, 2014). In ecological teacher training, Wright (2018) asserts that within the programs she studied, “reflection and mentorship serves to help students with their own autonomy as educators” (p. 179). Reflective practice served as a reoccurring theme across literature, suggesting the importance of the practice to place-related approaches.

**Organizational Coherence.** Webber & Miller (2016) identified organizational coherence, the construction of an integrated learning experience across the structural, conceptual and organizational levels of teacher education programs, as one broad characteristic of effective teacher education for progressive pedagogies. Organizational coherence includes aligning courses and experiences, building sequential progressions across required courses, increasing collaboration between faculty, staff and higher administration, and establishing coherent vision and goals across universities in an effort to combat the “status quo of a patchwork of disparate
programming” (Webber & Miller, 2016, p. 1071). This sentiment of a system-level approach to infusing place-related approaches into preservice teaching training was echoed across the literature as both an opportunity and challenge in programs across the globe.

Ashmann & Franzen (2017) discuss organizational coherence as the presence of three types of resources, material, human, and social, working in tandem. For example, in their study of programs across Wisconsin they found at least one committed and knowledgeable teacher educator on each campus, referred to as a human resource. However, a particularly successful program is set apart from the rest when this human resource is supported by the driving forces of social and material resources, such as an institutional shared commitment to place-related approaches (social resource) or availability of material community resources. Without the coherence of multiple resource types, programs were inconsistent and incomplete in their training of place-related approaches (Ashmann & Franzen, 2017).

In accordance with the theory of three key resource types put forth by Ashmann & Franzen (2017), several researchers identified teacher and faculty knowledge and commitment as a crucial factor in effective training in place-related approaches. In one Australian university, staff perceptions of the integration of the place-related approach, Education for Sustainability (EfS), into the teacher education program was an enabler and constraint. While some staff perceived EfS as irrelevant to their curriculum, others were committed to its integration into their courses as they found it congruent with their teaching philosophy (Mills & Tomas, 2013). In conclusion, the researchers call for professional development to increase teacher educator understandings, capacity, and buy-in, thereby improving the human resources. Van Petegem et al. (2007) similarly found a “lack of knowledge and reluctance to venture into uncertain fields and go beyond their lesson plans” as a major constraint in implementing place-related
approaches across a university (p. 52). The perception of place-related approaches as a supplement to their topic as opposed to an integrated context caused teacher educators to feel overworked and uncommitted in its implementation (Van Petegem et al., 2007).

Organizational coherence is necessary because place-related approaches are not effective in affecting teacher change when seen as an “add-on” as opposed to an explicit component of teacher education (Heimlich et al., 2004). Place as an integrated context for education involves the complexities inherent in social, cultural, and environmental realities; therefore, it is not simply addressed in a standalone course, workshop, or lesson (Vinlove, 2012). In the context of culturally responsive teaching, Vinlove (2012) discusses this as a critical issue for structuring teacher preparation programs, as lumping issues such as diversity into a one-off course can lead to dangerous misconceptions. In their evaluation of 18 programs, Powers (2004) found agreement among respondents that an infusion of place-related approaches across a preservice teacher’s training contrasted to subject specific incorporation allows for “developing broad and comprehensive educational philosophies in preservice teachers that empower them to design longer-term units with roots in their local place” (p. 10). Adopting coherent preparation overcomes the challenges presented in an add-on format of integration, but requires breaking out of teacher education organizational norms.

A systemic approach to embedding place-related approaches into teacher education involving university policies, program-wide curricula, and a university-wide commitment, is rare in the literature; some of the reasons underlying this trend were examined in the literature. Evans, Ferreira, Davis, & Stevenson (2016) describe the field as dominated by “‘patches of green’ driven mainly by the passions and concerns of individual teacher educators,” an idea that fits with the two most common approaches to integration, place-related approaches as dedicated
courses and as discrete components of a course (p. 413). These individual actors (teacher educators) rarely have appropriate influence for a systemic approach and therefore enact integration on a smaller scale. Constraints to an integration beyond the “patches of green” can also be attributed to lack of teacher educator knowledge, perceived relevance, or commitment across an organization or university, difficulty achieving university-wide vision and leadership, and factors associated with outside community collaborators and stakeholders (Evans et al., 2016; Mills & Tomas, 2013). Some of the recommendations in the literature for increasing organizational coherence include curriculum reorientation, staff professional development opportunities, and integrating place-related expertise into new position descriptions (Evans et al., 2017). The development of a coherent program committed to training preservice teachers in place-related approaches takes long-term, complex community building involving interdisciplinary, intergenerational, and inter-organizational dialogue (Lowenstein et al., 2018). While this is not an easy task for organizations and universities, it has been identified as a necessary component for advancing training in place-related approaches.

**Bridging instructional contexts: Revealing and addressing barriers.** Without knowing the contexts preservice teachers will begin their teaching careers in, how are programs to effectively prepare their students to implement place-related approaches? As implementing these approaches requires teachers to have a level of familiarity with their local teaching context, teacher education programs are presented with the challenge of staying relevant to preservice teachers who will go on to teach in very different places. Most programs reviewed here approach instruction in place-related approaches through the use local community experiences, ecosystems, and organizations as a context for study, which may be considerably different from preservice teachers’ future contexts. For example, the Storer Scholars Program offers its training
in a national park, but some participants will go to teach in urban areas far from this access to natural space. Furthermore, while a university’s educational context is encouraging place-related approaches in the curriculum, schools may not be as supportive of these approaches. As they move into their careers, teachers may encounter barriers that inhibit implementation, such as funding and transportation issues or unsupportive communities. With all of these factors in mind, programs must actively prepare preservice teachers for a shift in instructional contexts as they enter the profession.

Programs bridge this gap between contexts through revealing and addressing the contextual factors that may encourage or inhibit the implementation of place-related approaches in teaching and learning. In this section, I use the term instructional context in reference to the unique elements of particular contexts that influence a teacher’s instruction but remain outside of a their control. The literature identifies a need to build awareness of the challenges ahead of preservice teachers as they shift into new instructional contexts, in order to increase teacher confidence and commitment when facing potential barriers (Kennelly et al., 2012). The opportunity to consider parameters of various school contexts throughout their preparation may allow preservice teachers to better anticipate and overcome adversities.

“I think I was more passionate while I was at uni learning about it. And then when I came into this context where it’s not a big focus. It’s sort of: you start to lose the drive a bit here” (Kennelly et al., 2012, p. 149). This quote from a participant in a study by Kennelly et al. (2012) points to this need to address the transition of instructional contexts as preservice teachers enter the professional field. In this case, a university program supported the development of skills, knowledge, and confidence in place-related approaches for preservice teachers within the context of the program. However, there was a discord between the experience and expectations
developed in the program and the contexts of schools where the approaches are to be implemented (Kennelly et al., 2012). The dissonance experienced by teachers in this transition can lead to frustration, disengagement, and the loss of “drive” to implement the approaches as mentioned here. Green (2016) also noted a “hesitancy in applying new learning,” due to the incongruity between developing confidence and skills in place-related approaches within the university context and the barriers that exist in schools that discourage implementation of progressive pedagogical approaches (p. 54). Avoiding this dissonance in new contexts is impossible, but revealing and addressing factors that may enhance or impede implementation of place-related approaches can help build a bridge between them.

As preservice teachers are expected to spread across state, country, and potentially the world, teacher education programs are recognizing the imperative need to reveal and address a wide range of contextual factors that influence the implementation of place-related approaches to preservice teachers. Evaluations of programs focused on place-related approaches commonly found the strongest resistance by faculty, teacher educators, and students attributed to the lack of integration of the approach into larger contextual realities such as national standards and political viewpoints (Green, 2016; Heimlich et al., 2004; Kennelly et al., 2012; Powers, 2004). Teachers reported a lack of motivation or ability to include place in instruction as they already feel cramped by time and standard requirements (Heimlich et al., 2004; Powers, 2004; Richardson et al., 2018; Van Petegem et al., 2007). Another widespread barrier to the implementation of place-related approaches is a lack of support, motivation, and resources in new instructional contexts. The key driver of these barriers, as well as others, is the context that teachers operate in, influenced by staff, school environments, community perceptions, and national politics.
Many of these same challenges to implementation were reported in the Storer Scholars survey responses. Ten of twelve participants indicated time constraints and curriculum standards as prevalent barriers to implementation of place-related approaches. Participants shared challenges of “limited time allowed to freely teaching content beyond what is tested” and “a rigorous curriculum that doesn’t allow time for ‘extra’.” Strict standards and district resistance were some of the factors reiterated in explanation of barriers affecting their practice. Other barriers cited include rigid timetables that make outdoor learning difficult within defined periods, lack of transportation, student management, unsupportive administration, and access to natural spaces. Every participant in the survey reported at least one concern to designing and implementing place-based education, with the majority aligning with those mentioned from the literature that stem from encountering new instructional contexts.

While these challenges exist across programs, teachers’ ability to persevere and problem-solve in the face of these adversities can be influenced by teacher education programs. Finding similar barriers reported in his evaluation, Richardson et al. (2014) offers the influence of instructional context as an explanation to drops in EE self-efficacy observed in students over two years. As they state, “the movement of knowledge across settings doesn’t happen easily and the nature of instructional contexts is critical to that transfer,” Richardson et al. (2014) identify a need for teacher training to acknowledge changing instructional contexts (p. 45). Likewise, the study by Kennelly et al. (2012) emphasizes the importance of context, suggesting that preservice teachers need the opportunity to consider in advance their commitment to place-related approaches and the implications of these in future schools with different cultural, environmental, and institutional contexts. Taking into consideration realistic parameters that exist in school contexts such as limitations presented in transportation, bell schedules, and risk management
policies when learning about place-related approaches can build awareness and confidence in overcoming barriers (Kennelly et al., 2012). Building a bridge from the context of preservice teacher education to potential professional instructional contexts in this way may increase intentions, confidence and perceptions of place-related approaches (Richardson et al., 2014).

Partnerships between programs and outside communities can also help bridge contexts by providing preservice teachers with meaningful experiences in a real-world context (Lowenstein et al., 2018). Creating and maintaining these partnerships enable the success of a teacher training program, as Mills & Tomas (2013) found in the case study of an Australian university program. Guillen & Zeichner (2018) examined this partnership from the perspective of community mentors who have worked with preservice teacher in community-based teacher education programs, and they found receptiveness and dedication from the community members. The place-related program studied by O’Connor (2016) was found to stand out from other university-based courses because of its use of community partnerships to bridge contexts. This program uses community ties and collaboration to develop supportive relationships that continue in the transition to a new teaching context (O’Connor, 2016).

Another suggestion for supporting implementation of place-related approaches comes from place-based professional development programs. Feedback from participants indicated that follow-up workshops a year after experience in a program would allow teachers to exchange ideas and experiences, encourage them to plan for their upcoming year, and have the opportunity to mentor a new cohort (Linnemanstons & Jordan, 2017). In one professional development program, this additional support was offered through two follow-up sessions as well as the development of a network of professionals, classroom resources, a unit of study aligned with state standards to be used by teachers, and a program website with contact information (Meichtry
& Smith, 2007). The importance of continued support in sustaining changes in teacher practice indicated in research on professional development may offer effective strategies to bridging instructional contexts for preservice teachers.
Chapter 4: Discussion

In this chapter, I will present a discussion of the practical implications, limitations, and suggestions for future research. This discussion is based on the findings presented in chapter 3 from a systematic review of the literature on place-related approaches in preservice teacher education.

Recommendations

A major finding of this project was the identification of three considerations (Figure 4) presented in the thematic analysis of the findings. These recommendations can be considered as a synthesis of the lessons learned through the literature on place-related approaches in teacher education programs. How can this information be used? Program organizers, curriculum developers, teacher educators, and other individuals working towards the implementation or improvement of a preservice teacher program in place-related approaches can look towards this model for guidance.

To illustrate how this model can be used for program development, I have provided practical recommendations for the TSS Storer Scholars Program. Survey respondents shared several positive outcomes of the program including the use of local resources and increased confidence in connecting lessons to place. At the same time, participants reported many barriers to implementation of place-related approaches, which can inform the success of future programs. As a preliminary formative evaluation, the survey’s intended purpose was to analyze the potential impacts it had on past participants and identify the ways in which the Storer Scholar Program can improve their approach. By using the survey data in combination with the literature findings, I hope to inform the directions for improvement.
**Recommendation 1: Integrating theory and practice.** Programs must provide and integrate both theory and practice in place-related approaches. In order to do so, existing programs have included theory and content relevant to place-related approaches through lecture-based, seminar-based, and hands-on approaches. This development of content and pedagogical knowledge was indicated by preservice teachers as critical to the development of confidence and commitment to these approaches (Adams et al., 2014; Kennelly et al., 2012; Trauth-Nare, 2015). Therefore, programs should provide opportunities for preservice teachers to develop understanding of theory and content appropriate for implementing place-related approaches, such as inquiry-based, design-based, and learner-centered pedagogy as well as social and ecological concepts that inform understanding of local phenomena. Developing understanding of the theoretical basis to place-related knowledge is as critical as practice, but must be meaningfully integrated with that experience (Webber & Miller, 2016).

Existing programs conjoin this theoretical background with practice through strategies such as engaging teachers as learners, modeling place-related approaches, providing experiential learning opportunities, and allowing preservice teachers to develop and implement lessons for students. New and existing programs should develop experiences for preservice teachers that are interwoven with coursework on theory (Darling-Hammond, 2006). This could be done through providing place-related learning experiences that allow preservice teachers to act as the learners while simultaneously reflecting on the pedagogy underpinning the lesson. Coherence of theory and practice could also be achieved through the development and implementation of place-related lessons and units by preservice teachers. While many programs engage preservice
teachers in unit planning, implementing these lessons with students allows preservice teachers
the opportunity to gain experience with students, receive feedback, and adapt their lessons
accordingly. Regardless of the strategy, programs should be developed with an awareness of how
theory and practice interrelate.

Reflection plays a critical role in the process of integrating theory and practice, as
preservice teachers consciously make meaning from their experiences with place-related
approaches. Reflective practice is an integral component of teacher education as it assists in the
formation of knowledge, practice, and identity regarding implementation of progressive
pedagogies (Webber & Miller, 2016). However, despite evidence indicating that strong
professionals can be characterized by a regular reflective practice, many preservice teachers and
practicing teachers consider reflection as vague and useless to them (Korthagen, 2017).
Preservice teachers should consciously engage in the cycle of inquiry, reflection, and action
throughout their training in place-related approaches to deepen their understanding of content,
theory, and practice. Programs should implement active and structured support systems in
developing this reflective practice with preservice teachers. One effective reflection orientation
towards teaching promoted by Weiland and Morrison (2013) includes a three-fold reflection on
expert opinion, teaching done by others, and one’s own teaching. From full university curriculum
integrations to short term trainings like the Storer Scholars Program, structured self-study could
serve as a foundation for integrating theory and practice.

As an experiential, field-based program with a week-long student teaching practicum, the
Storer Scholars Program already puts an emphasis on the integration of theory and practice in a
short amount of time. However, the survey data suggests that some alumni of the program have a
definition of place-related approaches that is limited to teaching outdoors, making connections
between humans and nature, and focusing on local ecosystems. The first week of the Storer Scholars Program, including the vast majority of instruction on place-based education theory, takes place within a national park in the Greater Yellowstone Ecosystem. In this way, the theoretical and content knowledge may lean towards a focus on outdoor and natural environment-based place-related approaches. In light of the prevalence of participants’ description of place-related approaches in relation to natural environments, as well as responses indicating urban environments as much more difficult for place-related approaches, the Storer Scholars Program should evaluate their approach to defining these strategies. It is possible that a comprehensive theoretical background with applications of place-related approaches to a diversity of settings can offer a more balanced understanding. With a broader theoretical understanding of place-related approaches and practice that reflects this, preservice teachers may have improved conceptions of how place-related approaches relate to their future instructional contexts.

**Recommendation 2: Organizational Coherence.** A systemic approach to integrating place-related approaches is the most effective for preservice teacher education, but it requires alignment in vision, leadership, and funding across a program (Ashmann & Franzen, 2017; Mills & Tomas, 2013). A strong shared vision for the integration of place-related approaches into the curriculum creates a foundation for supporting commitment of faculty and developing effective courses. In the case of an Australian university, systemic integration of place-related approaches into curriculum created a “directive” and served as “validation” and “encouragement” for staff (Mills & Tomas, 2013, p. 161). With organizational support for place-related approaches either in the form of formal university curriculum or a generally supportive culture, faculty and teacher educators will be more encouraged to incorporate these approaches into their courses. Additional
organizational coherence and support could be offered through professional development opportunities for teacher educators to enhance their understanding and buy-in of place-related approaches (Mills & Tomas, 2013; Van Petegem et al., 2007). Other approaches to program alignment include integrating place-related approaches into multiple courses, adding these approaches to required coursework, encouraging faculty collaboration within and across departments, and intentionally sequencing place-related approaches across courses in order to scaffold and deepen preservice teacher competencies.

As the Storer Scholars Program is offered as a short-term program in a unique partnership with the University of Wyoming, the opportunity for organizational coherence differs from that of traditional university programs. As part of the Teton Science Schools, the faculty involved in Scholars Program are thoroughly steeped in a mission of place-related approaches with strong organizational alignment. However, there is opportunity for establishing a stronger vision and coherence between the University of Wyoming and TSS which may better support students before and after their participation the program. With increased collaboration between College of Education faculty and TSS instructors, the university can offer courses that expose preservice teachers to place-related approaches earlier in their college career. As participants of the Storer Scholars Program range from sophomore to senior college levels, some students will have the opportunity to implement place-related approaches in their student teaching following the program. Increased coherence between programs can allow for students to deepen their place-related teaching competencies in a supportive environment.

Additional opportunities for bridging instructional contexts during the Storer Scholars Program exist in the partnerships between the program and Wyoming schools. The program currently works with Wyoming districts during the second week of the training where preservice
teachers are given the opportunity to observe and implement place-related strategies in an elementary summer school science program. The relationship with these schools offers an opportunity for preservice teachers to observe a school context, reflect on challenges that may be present, and identify the strategies or resources the Teton Science Schools has used in building a successful partnership. In addition, the Storer Scholars program could use stories of their own process creating school partnerships to help preservice teachers understand how to build these collaborations in the future.

**Recommendation 3: Bridging instructional contexts.** In order to successfully implement place-related approaches in their teaching careers, preservice teachers need the opportunity to consider the implications of shifting to a new instructional context as they enter their career (Kennelly et al., 2012). As expressed in the literature and by Storer Scholars alumni, new instructional contexts pose new barriers to implementation place-related approaches. Programs could create a bridge between the program context and future contexts by identifying the commonly experienced barriers in place-related approaches and the resources and strategies to overcome them. For example, programs could invite alumni and other teachers who have used place-related approaches in their classrooms to discuss their early career experiences with place-related approaches. Visiting local schools that display various instructional contexts could also help preservice teachers develop additional perspectives. Regardless of strategy, the research suggests that this opportunity for preservice teachers to reflect on their perceptions of place-related approaches as well as consider and anticipate new instructional contexts has important implications on their future teaching decisions (Kennelly et al., 2012).

This is an important recommendation in light of the responses provided by Storer Scholars Program alumni. Survey participants provided lengthy responses to the question of
barriers encountered in implementing place-related approaches, with a majority referencing the curriculum and time constraints presented by their instructional contexts as the greatest difficulty. As several respondents also acknowledged the lack of support from administration and districts, the instructional contexts teachers find themselves in following graduation is clearly different from their training environment. Acknowledging and discussing these barriers during the Storer Scholars Program may give preservice teachers perspective of future contexts and an improved ability to persist through challenges.

Bridging instructional contexts may also include continued and structured support from training programs. As participants go into teaching contexts, opportunities to tap into the community formed during the Storer Scholars Program can offer creative resources and perspectives for addressing barriers and sharing solutions. Additional weekend or summer workshops in place-related approaches following the Storer Scholars Program could further professional development. As participants disperse, establishing a structured online platform could also enable continued community collaboration. Building a network of past participants could be further strengthened by encouraging past participants to take on mentorship roles with early career teachers, as an opportunity to support their own practice and the practice of others. These strategies could strengthen the bridge between instructional contexts and therefore increase the successful implementation of place-related approaches by program participants.
Chapter 5: Conclusion

The plain fact is that the planet does not need more successful people. But it does desperately need more peacemakers, healers, restorers, storytellers, and lovers of every kind. It needs people who live well in their places.

- David Orr, What Is Education For?, 1991

Over the course of my graduate education, I was fortunate enough to both have deeply inspiring place-based learning experiences myself as well as create and witness them in students aged two to twenty-two. However, I know from my own struggles as a young student and the anecdotes I have collected as a burgeoning educator that this academic engagement is an exception, not a rule. I set out on this journey with the intentions of bringing an awareness to ways of making meaningful learning experiences that foster authentic engagement and a sense of wonder in the world around us accessible to more students. As I dug into this research-based portion of my studies, I found my path towards this objective by investigating the existing opportunities for preservice teachers to be exposed to place-related educational approaches in their formal and informal training. At the core of it, I wanted to see how teacher education trains educators to inspire the next generation not to be merely successful, but to also know how to live well in their places.

What I discovered was that there are a number of ways in which place-related approaches are already being incorporated into preservice teacher education. An exploration of the literature on this topic revealed the ways in which these programs impact preservice teachers and a number of factors suggested as influential to these outcomes. Characteristics of these programs diverge in their duration and intensity, course focus, and geographical and political contexts, with each characteristic imparting an influence on how preservice teachers learn place-related approaches.
For example, an Australian university methods course focused on place-related approaches through experiential activity-based sessions is a very different experience from a six-hour training followed by a planning period and implementation during a three-day program in Midwestern U.S. (Moseley et al., 2003; Nielsen et al., 2012). With distinct foci both in program characteristics and research interests, I learned that a cross comparison of outcomes is intrinsically flawed. Yet, reviewing the main findings in program-wide, teacher educator, and preservice teacher outcomes and insights offers light on the many possibilities of place-related approaches in teacher education.

Examining the diverse approaches of programs integrating place-related educational approaches into preservice teacher education depicted in 38 published studies allowed for a synthesis of common findings in their implementation and outcomes. The three prevalent themes discussed in this paper were integration of theory and practice, organizational coherence, and bridging instructional contexts. Integration of theory and practice was an important consideration in many studies, and programs responded to this focus through engaging teachers as learners, dedicating time to unit development, providing hands-on opportunities with PK-12 students and employing a reflective practice. Many studies illustrated the need for clear connections between program educators, faculty, university, and outside community members to facilitate coherent, effective learning for preservice teachers. The last theme describes the process by which programs can prepare preservice teachers for the barriers they may encounter as they implement place-related approaches in future instructional contexts. These three themes appeared as important considerations for integration of place-related approaches into a wide range of preservice teacher education programs.
A concrete objective for this project was to provide practical recommendations for the Storer Scholars program as it continues to train preservice teachers to implement place-based education. I have provided several recommendations based on the themes discovered from reviewing the literature. The preliminary survey I conducted in the process hinted at some of the impacts the program has already had, while also suggesting areas within which the program can improve. My hope is that these recommendations will be considered by the Storer Scholars Program educators and that the program continues to be evaluated and studied for its impacts.

Even before realizing that my survey would not produce extensive or rich enough data for an evaluation of impacts of the Storer Scholars Program, I was deep in literature on place-based education and related educational approaches. I quickly discovered that there are many terms used to describe an educational approach involving local, community-based, hands-on learning experiences. As a result, I had to use twelve different search terms to find studies on programs addressing this type of place-related approach, ranging from pedagogy of place to education for sustainability to community-based education. As I did these complicated searches, I wondered about the implications of this multitude of terms and definitions on this field of research. I imagine that such a wide distribution of studies between fields of science education, rural education, critical pedagogy, and sustainability weakens and dilutes the impact this research can have. After this project, I sympathize with the need to create new terms to encompass one’s focus as I had to create and define “place-related approaches” myself. However the presence of many redundant terms in the research could create confusion for curriculum developers, teacher educators, teachers, and preservice teachers. Is there really a difference between some of these terms that is meaningful? Or, are some of these terms redundant? While these questions are beyond the scope of my project, I believe it is worth mentioning in conclusion of my work.
Identifying one term to encompass these approaches could have positive implications on advancing the research on this topic, as one concise term may allow for clearer synthesis of research across the globe and a more graspable, accessible concept for all.

Developing and conducting this literature review and preliminary investigation of the Storer Scholars Program has allowed me to grow as a student, researcher, and educator. But along the way, there were long stretches of cognitive and emotional discomfort. I recently came across a phrase that went something like this: remember that every road block is a detour in the right direction. While I did not have this perspective with each road block I encountered in mismatched data, lack of survey responses, or lost literature, in looking back I can see that these were the points when I learned the most as a scholar. I now recognize how much coordination is required for effective longitudinal evaluation, how difficult survey research is, and how good organization of literature can save you many hours. Each turn encouraged me to adopt new perspectives in teacher education. As I encountered road blocks in my Storer Scholars Program survey, I gained an appreciation for the complexity of program evaluation, and in the transition to a systematic literature review, my respect for the work teacher educators are doing in preparing preservice teachers grew immensely. In reflecting on my own training as a place-based educator, I see new challenges I will encounter in my career but have greater confidence in my ability to seek out support while supporting others in the journey. I am grateful for this experience of rigorous research, synthesis, and writing, and I encourage other master’s candidates to lean into and trust the messiness of this process.
Limitations

While this project set out to examine preservice teacher education programs specifically in place-based education, less than five scholarly articles turned up in searches for these programs. With this lack of research, I had to broaden my search to what I have termed place-related approaches. This process created complications as I had to evaluate each study to determine whether it fit into my criteria of place-related approaches. While there was an advantage to this process in my broad exposure to various related educational approaches, it also created challenges in synthesizing findings from diverse programs. An important limitation presented by the decision to broaden my search is the varying degree by which each study addresses the same teaching approaches. The subjective nature by which I decided to include and exclude certain studies by the predetermined place-related criteria creates limitations in claiming similar intentions across these studies. In an ideal scenario, each study would provide a definition for the place-related approaches involved in the program of focus so that comparison across programs can be achieved. As this did not exist in the literature, I had to make some assumptions from the available information in each study on the context and approach.

This review is limited in its ability to generalize across programs for several reasons. As already mentioned, as the literature reviewed encompassed a broad definition of place-related approaches, it may not be possible to make generalizations about specific approaches such as place-based education or culturally relevant pedagogies. Additionally, as this review only examined existing peer-reviewed research, there are program approaches that may have been excluded due to the nature of academic publishing. The conclusions offered by this literature may not be applicable to these programs. While this project aimed at providing a comprehensive
and broad discussion of the literature findings, it still may not address the individuality and variance of teacher education programs across the world.

Lastly, there are several limitations presented by the Storer Scholars data incorporated into this project. The population of Storer Scholars presents a self-selection bias as preservice teachers applied to the program with initial interest in learning place-based education. Twelve of the 42 Storer Scholars alumni participated in the survey, presenting the possibility of a participation bias. This may have skewed the responses towards teachers who are less busy, more committed to place-related approaches, or had motivation to share their perspective from a more or less positive experience with the program. As a self-reported survey, the resulting data presents inherent limitations as it relies on the honesty and accuracy of participants. The questions asked in the survey rely on teachers’ ability to recall their experience with the Storer Scholars Program as well as their comfort level openly sharing their use of place-related approaches. For these reasons and the lack of participant responses within the short time frame for this project, the data presented is incomplete and unanalyzed. As a result, the information presented on the Storer Scholars Program is limited to raw anecdotal accounts, and the data was presented as such with no intention of making generalizations from this population.

**Ideas for Future Research**

This review of the literature on place-related approaches in preservice teacher education provides many new directions for future research. This project was focused mainly on how programs have incorporated place-related approaches and what impacts were measured. Future literature reviews can expand on this by digging into a more specific characteristic of existing programs, such as the resources used by teacher educators or the degree of student teaching experience provided. They could also explore the various focuses in place-related approaches,
for example comparing programs focused on place-related approaches in rural contexts and those based in urban critical pedagogy. Focusing a review on the specific quantitative or qualitative impacts, such as a review of impacts of teacher training on self-efficacy, could offer an additional depth of insight not sought out in this project.

This literature review springs many questions for new research studies. Longitudinal research on the implementation of place-related approaches by teachers following their participation in these programs would give valuable insight into effective strategies for teacher education. It would be particularly interesting to examine differences in implementation by participants depending on early career instructional contexts. Stemming from this project, a study could explore the relationship between the degree of organizational coherence in a program and the longitudinal outcomes in confidence and commitment of preservice teachers. There is also so much that can be learned through the experiences of teachers as they graduate from these programs and progress in their early teaching career through qualitative case studies. Additional directions could explore preservice teachers perceptions of the effects of place-related approaches on their students, the evolution of commitment to these approaches as teachers encounter barriers, and the specific principles of place-related approaches teachers find most valuable over their careers.

The Storer Scholars Program offers many of its own research questions, including the exploration of survey data collected in this research. Questions on the survey created for this project asked participants about their definitions of place-based education resulting from their experience, the observed impacts of implementing place-based education lessons on their students, specific resources, strategies, or practices that support implementation and much more (see Appendix A for complete survey). Each of these questions lends itself to an interesting study.
examining the impacts of the program, the resulting perceptions of place-based education, and the nature of place-based education implementation.
References


Semken, S., & Brandt, E. (2010). Implications of sense of place and place-based education for


Appendix A: Storer Scholars Survey

Place-based Education Implementation Survey

(Administered via an Online Survey Form)

Section 1
Name
What year did you participate in the Storer Scholars Program?
What is your current occupation?
If you are currently working, please provide the name of the school or organization where you work.
If you teach, what grade level(s) do you teach? (Check all that apply.)
If you teach, what content area(s) do you teach?
If you teach, how many years have you been teaching?
If you do not currently teach, do you intend to teach in the future?
Is there anything else you would like to provide (i.e. previous teaching jobs, professional development courses taken, certifications, etc completed between your participation in the Storer Scholars program and now)?

Section 2
Based on your experiences, please provide your definition of place-based.
Describe the impact(s) your participation in the Storer Scholars Program has had on your teaching practices, if any
Please select any of the common difficulties and/or barriers that you have encountered in implementing place-based education and explain further below.

- Unsupportive school community
- Lack of financial resources
- Lack of other resources (teaching supplies, etc.)
- Access to transportation
- Access to outdoors
- Strict curriculum and content standards
- Time constraints
- Unsupportive schedule
- Limited training or knowledge in place-based education
- Limited training of knowledge of the local community
- Concerns about student management
Provide an explanation for 1-2 of the above items that have had the greatest influence on your practice of place-based education

Please select any of the common resources, strategies, or practices that have supported you in implementing place-based education

- Supportive school community culture
- Financial resources
- Other resources
- Access to transportation
- Access to outdoors
- Curriculum and content standards
- Supportive schedule
- Mentorship
- Continued professional development/training/knowledge
- Personal commitment/dedication to place-based education

Provide an explanation for 1-2 of the above items that have had the greatest influence on your practice of place-based education

If you have implemented place-based lessons, please describe the impact(s) they had on your students

Section 3

This survey measures the extent to which teachers have implemented a place-based philosophy in their classrooms and schools. This survey was created by Teton Science Schools based off of an earlier partnership between the University of Wyoming and Teton Science Schools grounded in the Rural School and Community Trust (2009) paper: What does place-based learning look like?

To complete this survey, please choose a descriptor that best describes your teaching the majority of the time for each of the 6 place-based education principles.

**Local to global context**: Local learning serves as a model for understanding regional and global challenges, opportunities and connections. An understanding of self is a starting point to understanding place.

1. Connections to regional and global context not attempted.
2. Students learn about local, regional, or global concepts and issues in isolation, with no identified connection between the different scales of context.
3. Students learn about relationships between local, regional and global concepts and issues in the classroom, and are given some suggestions on how the different scales of context might relate.
4. Students learn about relationships between local, regional and global concepts and explicitly learn that local and/or regional challenges relate to global concepts and challenges.
5. Students learn about relationships between local, regional and global concepts issues and make connections between themselves and the different scales of local, regional, and global contexts.

**Learner-centered:** Learning is personally relevant to students and enables student agency. The teacher serves as a guide or facilitator to learning.
1. Teacher delivers all content in the same way to the entire class and makes no intentional connections of learner to curriculum.
2. Teacher delivers all content but makes connections to the interests of learners.
3. Teacher designs and adjusts curriculum based on the needs of the individual students.
4. Teacher and students plan curriculum together, learning is more personalized with knowledge of individual student interests in mind. Students understand the knowledge, skills and dispositions required to successfully complete the curriculum.
5. Students are empowered to initiate and create curriculum that is relevant to the learner and with guidance from the teacher. Students can target the needed knowledge, skills, and dispositions appropriate for the current curriculum and the overall learning requirements.

**Inquiry-based:** Learning is grounded in observing, asking relevant questions, making predictions, and collecting data to understand the world through economic, ecological, and cultural lenses.
1. No inquiry present in class.
2. Inquiry introduced but not related to local/regional/global place.
3. Students can describe how to use the inquiry process to investigate a place and the process is modeled for them in the curriculum.
4. Students use the inquiry process to investigate a place.
5. Students demonstrate how to use the inquiry process to comprehensively analyze the economic, ecological, and cultural components of a place.

**Design thinking:** Design thinking provides a systematic approach for students to make meaningful impact in communities through the curriculum.
1. Students are not presented, or do not discover, challenges based on a design process.
2. Students implement the design process to propose a solution to a teacher-determined problem.
3. Students implement the design process to propose a solution to a student-determined challenge.
4. Students implement the design process to solve a teacher-determined challenge that is connected to the local, regional, or global community.
5. Students implement the design process to solve a student-determined challenge that is connected to the local, regional, or global community.

**Interdisciplinary approach:** The curriculum is taught through an integrated and frequently project-based approach where all learners are accountable and challenged.
1. Content is presented as discrete disciplines and disconnected parts.
2. Content is presented with links to other disciplines but they are not made explicit.
3. Content is presented with links to other disciplines, and students are prompted to explore how content connects across subject areas.
4. Connections between disciplines are emphasized, and students are expected to connect content across subject areas (project-based learning may be implemented).
5. Content is multidisciplinary and fully integrated through a project-based learning approach (often involving collaboration between teachers).

This section is uses a Concerns-based Adoption Model to gauge the concerns and use of place-based education by Storer Scholars alumni. If it looks familiar to you, that is because it has been used by Teton Science Schools during Storer Scholars Programs for the past several years.

Using a scale of 1 to 10, with 1 indicating a LOW level of concern (i.e. comfortable proceeding with implementation) and 10 indicating a HIGH level of concern (i.e. many worries and doubts make proceeding with implementation overwhelming), enter your level of concern about place-based education for each item below

Rate your level of CONCERN about DESIGNING place-based lessons or units.
Rate your level of CONCERN about IMPLEMENTING place-based lessons or units.
Rate your level of CONFIDENCE about DESIGNING place-based lessons or units.
Rate your level of CONFIDENCE about IMPLEMENTING place-based lessons or units.
Rate your level of COMMITMENT about DESIGNING place-based lessons or units.
Rate your level of COMMITMENT about IMPLEMENTING place-based lessons or units.