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**An Evaluation of the Impacts of the Teton Science Schools Place-Based Education  
Professional Development Workshops for Teachers in Bhutan**

By

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## **Abstract**

The Kingdom of Bhutan is a small Himalayan country located between India and China whose education system is changing. Current education reform efforts include professional development workshops for teachers. Since 2008, the Teton Science Schools (TSS) has partnered with the Royal Education Council of Bhutan to conduct several workshops to teach place-based education (PBE) to Bhutanese teachers. TSS is an organization with multiple program areas focused on using place-based methods to educate people. Place is defined as the biophysical setting in which events take place. PBE is an educational philosophy related to environmental education, experiential education, and outdoor education which emphasizes the connection of students and curriculum content to the local natural and cultural environment. My primary research question is, “What impacts, if any, do the TSS place-based education professional development workshops have on Bhutanese teachers?” I used qualitative and quantitative methods to analyze data collected with surveys, interviews, observations, and examination of extant documents during two workshops in January, 2016. My analyses show that the workshops produced nine positive impacts on 15 Bhutanese primary school teachers. Four main challenges were also identified. Additionally, I found that TSS has influenced the quality of education in Bhutan by influencing course design at the Samtse College of Education and national curriculum development. The analyses informed final recommendations for the Teton Science Schools.

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## **List of Acronyms**

NIE	National Institute of Education (Singapore)
PBE	Place-Based Education
REC	Royal Education Counsel (Bhutan)
RUB	Royal University of Bhutan (Bhutan)
TSS	Teton Science Schools (U.S.A.)
TTI	Teacher Training Institute (U.S.A.)

## **Chapter 1**

### **Introduction**

Imagine you are a tailor who was hired to create a thick winter coat for a child. You spend many hours sewing together heavy fabric and insulating materials to make the coat as warm as possible. Now imagine giving this coat to the child, only to learn that the child lives in a tropical environment where the temperature is always warm and there is no use for warm winter coats. The child may accept the coat, but it will ultimately end up lost or stored in a closet, perpetually waiting for a cold day that may not come. Education that does not connect to the student's cultural and ecological environment may as well be a thick winter parka in South Florida. The student may retain the knowledge, but its usefulness and meaning for the student are debatable.

Place-based education (PBE) is an educational philosophy that emphasizes connecting learners to their local natural and cultural environment for the sake of creating meaningful learning experiences for students. The Teton Science Schools (TSS) is an organization with multiple program areas unified by a common belief in PBE. The Royal Education Council of Bhutan (REC), which is responsible for curriculum development and professional development, has identified a need to connect students' learning to their local place. The REC has partnered with TSS to conduct PBE professional development workshops for teachers in Bhutan in order to teach Bhutanese educators how to connect their lessons to their local place in more meaningful ways. The goal of my study is to evaluate how, if at all, the TSS workshops have impacted Bhutanese teachers.

### **Inspiration**

My study aims to gain an understanding of Bhutanese culture, educational philosophy, and educational practice. My inspiration for this study rose out of my interest in Himalayan culture and PBE. I saw the Himalayas for the first time in 2013, when I spent two months traveling and volunteering in Nepal. I learned about PBE while studying as a graduate student at TSS. As a student at TSS, I became deeply connected to the cultural and ecological landscape around me. Through this personal experience, I learned the significance of studying natural science education while intentionally connecting to a place in meaningful ways.

### **Bhutan's Need for Educational Reform**

The Himalayan kingdom of Bhutan, located between India and China, has recognized its need for curriculum and instruction that is uniquely suited for Bhutanese people. For years, Bhutan adopted educational styles and materials from other countries, including England and India. Until recently, the Bhutanese system strongly reflected Indian models of assessment and instruction (Maxwell, Rinchen, & Cooksey, 2010, p. 273). Today, many Bhutanese teachers rarely teach outside of the classroom and continue to use teacher-centered models, requiring students to learn large amounts of content through note taking and rote memorization.

### **Teton Science School's Relationship with Bhutan**

As part of an effort to make learning relevant, meaningful, and connected to Bhutanese life, the REC, Royal University of Bhutan (RUB), and the Bhutanese Ministry of Education have partnered with TSS to include PBE principles and strategies in the Bhutanese national curriculum (Teton Science Schools, 2015a). Over the years, their relationship has taken several forms, all focused on the professional development of educators. TSS has worked in partnership with the government of Bhutan since 2008, when the first TSS workshop in Bhutan was conducted with 8 total teachers. That same year, 2 Bhutanese graduate students completed the

TSS Graduate Program. The Graduate Program is a 1-year residential experience on the TSS campus in Kelly, Wyoming. Graduate students gain experience as teachers in the classroom and outside as place-based natural science educators and complete courses in the fields of PBE and natural science. The following table (Table 1) displays the number of Bhutanese graduate students at TSS in Wyoming and the number of teachers in TSS workshops in Bhutan from 2008 to 2015 (Teton Science Schools, 2015a).

Table 1 <i>Bhutanese yearly participation in TSS programming</i>		
<u>Year</u>	<u>Graduate Students</u>	<u>Teachers in Workshops</u>
2008	2	8
2009	2	0
2010	1	7
2011	1	8
2012	1	0
2013	0	61
2014	0	24
2015	0	24
Total	7	132

Adapted from *Teton Science Schools, 2015a, unpublished manuscript.*

### **TSS Professional Development Workshops**

In 2013, TSS began focusing primarily on professional development workshops for educators in Bhutan. My study collected data from teachers who attended workshops in 2013, 2014, and 2015. TSS administered assessments during and after their workshops. TSS also requested follow-up reports from workshop participants to monitor their implementation of workshop content and to promote teachers' continued reflection on their teaching methods (Teton Science Schools, 2016a). However, no formal evaluation investigating the impacts of their workshops over a period of months or years was conducted before this study.

### **Statement of the Problem**

TSS and the REC partnership began in 2008. Their relationship has taken different forms over the years. Bhutan first sent teachers to complete the TSS Graduate Program, and some of those students went on to complete their Master's of Science at the University of Wyoming. Since then, Bhutanese delegates traveled to Wyoming to receive training, and TSS faculty have traveled to Bhutan to conduct workshops with educators. In 2013, TSS faculty started conducting workshops in Bhutan for K-12 teachers and RUB lecturers. These workshops are conducted with the support of the Royal Education Council of Bhutan for the professional development of Bhutanese K-12 teachers. TSS faculty provided questionnaires at the end of each workshop, conducted exit interviews, and wrote summaries of each workshop (Teton Science Schools, 2015). Few studies have been conducted on the connection between professional development practice and teacher learning (Fishman, Marx, Best, & Tal, 2003, p. 644). My study will provide insight into the impacts of one organization's professional development workshops.

### **Overview of the Plan B**

My study investigates the impacts of the Teton Science Schools PBE professional development workshops on Bhutanese educators. In January, 2016, I traveled to Bhutan with TSS faculty to assist with the facilitation of two workshops and speak with the participants. The data gathered is primarily comprised of the impressions of workshop participants reflecting on their past experiences with TSS. The reflections of participants on the January 2016 workshop as it was taking place are also considered. Chapter 1 provides the necessary backdrop for this study, including a brief history of education in Bhutan and a rationale for PBE in Bhutan. Chapter 2 provides a literature review of professional development and PBE professional development in particular. Chapter 3 outlines the methods of the study, including interviews, surveys, observations, and review of extant documents. Chapter 4 is an analysis of the data, focused on

identifying themes and grouping together related findings from the multiple data sources.

Chapter 5 includes a discussion of the findings and final reflections on the study.

### **Purpose of the Study**

The purpose of my Master's research is to conduct an evaluation of the TSS PBE workshops in Bhutan. I will gain insight into how Bhutanese teachers have used content, strategies, and ideas from past TSS workshops to modify their teaching practice. This study will produce evidence-based conclusions about the impacts of the workshops on Bhutanese teachers. Final reflections in Chapter 5 are intended to support TSS and the Bhutanese government in future efforts related to PBE professional development. This study may be used by TSS and the REC to further their efforts to develop Bhutan's K-12 curriculum and professional development for teachers and lecturers.

### **Research Questions**

The guiding question of my research is: What impacts, if any, do the TSS PBE professional development workshops have on Bhutanese teachers? This question was intentionally designed to be broad in order to allow for unexpected responses. The supporting questions asked in this study include the following: How do Bhutanese teachers define PBE? In what specific ways have teachers altered their planning process, instructional methods, and assessments by implementing content, skills, or experiences gained at a TSS workshop? In what ways are Bhutanese educators using place to foster promotion and conservation of the environment in their teaching practice? The interviews and survey questions in this study were designed to point toward these primary questions throughout the study.

## Chapter 2

### Literature Review

#### Introduction

Through the literature, I will develop the background of the current educational context in Bhutan in which the TSS workshops took place. I will:

- First explore the history of traditional monastic education and the emergence of modern education.
- Examine current educational structures such as higher education and the REC.
- Review the need for professional development for teachers in Bhutan, what past studies have shown to comprise effective professional development for teachers, the challenges facing educational reform, and the existing supports of educational reform in Bhutan.
- Identify the key concepts of PBE and Gross National Happiness (GNH).

Together, the literature review will provide contextual information and assist in answering my research questions.

#### History of Education in Bhutan

Understanding Bhutanese educational history is needed to understand the present education system and the context for the TSS workshops. Education has a multifaceted history in Bhutan. The literature describes three types of formal education in the Himalayan kingdom: traditional monastic Buddhist education, modern education, and continuing education.

**Monastic Buddhist education.** Monastic education first emerged in the region now known as Bhutan along with the introduction of Mahayana Buddhism by Guru Rinpoche in 747 A.D. At this time, Bhutan was not unified as one kingdom. Over the roughly 1000 years that



followed, eight monastic schools emerged, each with somewhat different practices and ideologies (Denman & Namgyel, 2008, p. 478). In the 17<sup>th</sup> century, Zhabdrung Ngawang Namgyal entered Bhutan from Tibet, unified the country, established a governance system, and formed the Central Monk Body, which was responsible for providing training in traditions, philosophy, dialects, and linguistics to monks (Phuntsho, 2000, p. 109). In the years that followed, in-fighting between regional leaders continued until the late 1800s when Ugyen Wangchuck succeeded in establishing himself as the dominant leader (Denman & Namgyel, 2008, p. 478). In 1907 Ugyen Wangchuck was unanimously chosen by a collection of religious and political figures to become the first hereditary king of Bhutan. He set the current standard for government sponsorship of monastic education, setting a trend of supporting education which would be followed by his successors (Wangmo & Choden, 2011, p. 444). While monastic education provided literacy to some males, women were not allowed to study in the monasteries. Women were not allowed to attend Western-style schools either until the 1950s (Kapoor, 2010, p. 7). Today, women may become nuns, and while gender equality is improving in Bhutan, a gender bias still exists in various ways, including in Bhutanese schools. Girls are less likely to receive an education because Bhutanese families are more likely to keep their daughters at home either to help with household tasks or out of fear of sending them away. Once they are in the school system, girls and boys receive an equal allocation of resources (Choden & Sarkar, 2013, p. 513).

While many monks study within Bhutan, a large percentage also travel to Nepal and India in pursuit of training. Monks continue to play an important role in Bhutanese society, acting as the religious authorities for day to day life as well as auspicious occasions throughout

the year (Phuntsho, 2000, pp. 105, 111). Traditional monastic education and Mahayana Buddhism are prominent parts of Bhutanese culture today.

**Entrance of Western education.** The first Western-style school in Bhutan was established by Scottish missionaries in Kalimpong in 1914 with a class of 46 boys. In that same year, the Bhutanese government responded and established its first Western-style school in the district of Haa. In 1915, another school was founded at the King's palace in Bumthang for the education of the Crown Prince, Jigme Wangchuck. These schools existed as much for the development of Buddhist values as they did for language skills. During this period, math, science, social studies, and other subjects currently present in the Bhutanese curriculum were absent (Wangmo & Choden, 2011, p.446). These first Western schools emphasized English and Tibetan reading and writing and signified an important shift in Bhutanese culture and governance. By the 1950s, modern education began to take an increasingly important role with the development of a more comprehensive curriculum (Denman & Namgyel, 2008; Phuntsho, 2000). By 1961, a total of 400 students were enrolled in 11 modern schools across the kingdom (Wangmo & Choden, 2011, p.446). Phuntsho (2000, p. 107) provides a graph illustrating the rise of schools, students, and literacy from 1959-2000 (Figure 1).

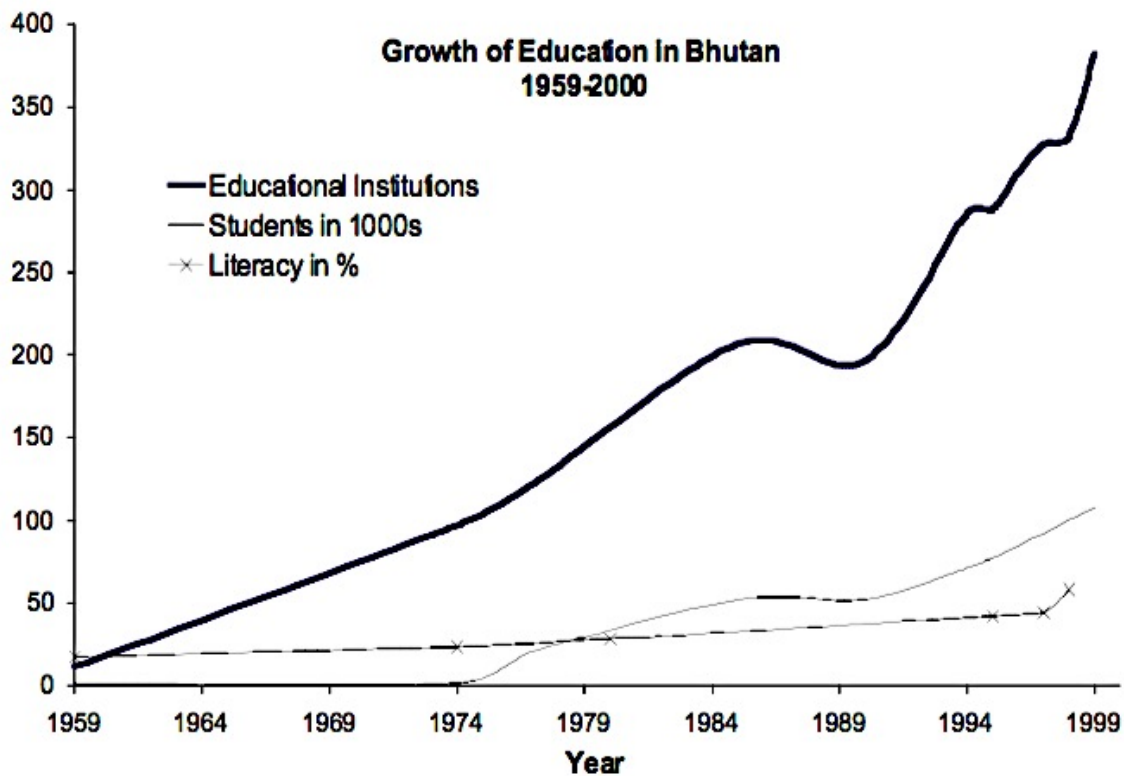


Figure 1. This graph illustrates the rise of education in Bhutan (Phuntsho, 2000, p. 107).

**Modern education today.** In 2013, there were 665 total primary and secondary schools in Bhutan (Demography Statistics of Bhutan, 2016). Since the 1960s, the Bhutanese school system has evolved in response to a growing demand to keep pace with international standards while maintaining a traditional Bhutanese culture (Denman & Namgyel, 2008, p. 484). The rapid changes in education since the 1950s is one of the most drastic changes in Bhutanese society (Denman & Namgyel, 2008; Phuntsho, 2000). The key learning areas in Bhutanese schools are English, Dzongkha (the national language), mathematics, environmental science (taught in Dzongkha), social studies, integrated science, non-integrated sciences including physics, chemistry, and biology, health, physical education, and economics (Denman & Namgyel, 2008, p. 480). Bhutanese education also includes life skills and values education, called Tse-Thong Yon, which incorporates, “Buddhist teaching of goodness, compassion and respect for all that

surrounds him including the environment” (Wangmo & Choden, 2011, p. 445). The incorporation of values education is aimed at sustaining traditional Bhutanese morality in regards to family, the community, health, and care for the natural environment (Wangmo & Choden, 2011, p. 445). This emphasis on respect for the environment is inherently place-based and may inform how Bhutanese teachers perceive PBE. Likewise, values education may promote conservation of the natural environment.

Modern education in Bhutan is expected to contribute toward the quality of life for individuals and the society (Phuntsho, 2000, p. 101). Bhutanese students are expected to progress through 13 years of schooling, from pre-primary (PP) through class X. After completing class X, students take the Bhutan Certificate for Secondary Education (BCSE) exam (Denman & Namgyel, 2008; Wangmo & Choden, 2011). Depending on their BCSE scores, students then advance to either vocational training or years XI and XII, equivalent to eleventh and twelfth grade in the United States. After completing class XII, students may take the Bhutan Higher Secondary Education Certificate (BHSEC) exam, which determines eligibility for admittance into the various colleges of the Royal University of Bhutan. A small percentage of Bhutanese also choose to attend university in India or other countries in Europe or North America (Wangmo & Choden, 2011, p.448).

**Cultural tension.** In the early days of modern education, there was cultural tension between proponents of modern and traditional schooling. However, by the 1980s, such discord was largely erased (Phuntsho, 2000, p. 112). Although there is no longer strong divisiveness between modern and traditional education systems, the two systems exist as separate entities (Phuntsho, 2000, p. 113). This aligns with the Bhutanese worldview, which tends to view contradictions such as modern and traditional education or sustainability and productivity as

interdependent and compatible, rather than in competition (Schroeder & Schroeder, 2014, p. 3530). As Denman and Namgyal stated in 2008, “Addressing teaching and learning, educational reform in Bhutan has demonstrated that the country’s dual system – monastic and modern – is evolutionary, not revolutionary” (p. 488).

**Teacher training and continuing education.** The first Teacher Training Institutes (TTI) were established in Samtse in 1968 and Paro in 1975 for the purpose of educating teachers and expand the national school system. In 1983, the Samtse TTI was upgraded to become the National Institute of Education (NIE), offering Bachelor’s of Education courses. The Paro TTI was upgraded to be the second NIE in 2000. In 2003, the Royal University of Bhutan was established along with many other educational reforms in the country including the upgrade of the two NIE’s to Colleges of Education and their inclusion within the Royal University (Wangmo & Choden, 2011, p. 448-449). In 2003, the Paro College of Education started the Master of Education in Educational Leadership and Management program in partnership with St. Francis Xavier University in Canada. The Paro College of Education took full control of the Master’s of Education program in 2006 (Paro College of Education, 2016). The Samtse College of Education is also preparing to launch their first Master’s program, offering a Master’s of Education in the near future (Interview 7, personal communication, January 20, 2016).

**Royal Education Council.** The REC was formed in 2007 for the purpose of bringing about educational reforms. Although the REC is technically an autonomous council, it works closely with the Ministry of Education and the Royal University of Bhutan to pursue its mission and mandate, “The Royal Education Council shall be an autonomous research organization, an intellectual community, an innovator, and a leader for the achievement of educational excellence,

the goals of Gross National Happiness and a vibrant national democracy” (Royal Education Council, 2012, p. 3).

The REC’s goals are listed on the REC website (Royal Education Council, 2012, p. 3).

1. Conduct research in the field of education and related areas,
2. Review, assess, and recommend education policies, practices, and programmes,
3. Develop and pilot innovative approaches to instruction, learning, assessment, and institutional management, to enhance student achievement and teacher competencies,
4. Develop and pilot innovative educational materials,
5. Design, develop and conduct systemic assessments through national standardized tests and indicators,
6. Provide technical expertise and assistance to education institutions and organizations,
7. Publish educational literature and resources,
8. Provide a forum for exchange of information among national and international educational institutions and organizations,
9. Pioneer the innovative use of ICT [information communication technology] in education,
10. Work in collaboration with the Ministry of Education, the Royal University of Bhutan and other national and international education institutions and organizations.
11. Seek to mobilize funds, in addition to grants provided by the Royal Government, to carry out any of the above functions. (Royal Education Council, 2012, p. 3).

The mandated goals 2, 4, and 6 enable the REC to encourage the inclusion of PBE and account for the REC’s support of the TSS workshops.

### **Summary of History of Education in Bhutan**

As modern education progresses in Bhutan, the culture continues to experience friction between traditionalists and those who favored modern education. This tension is seen across Bhutan, where modernists argue that the traditional ways are outdated and archaic, and traditionalists point out the erosion of their historic way of life (Phuntsho, 2000, p.113). Yet despite this tension, old and new ways of living and educating persist and coexist. The Bhutanese worldview allows for the coexistence and interdependence of apparent dichotomies and is able to accept two realities that are distinct but interdependent, while also seemingly in tension (Schroeder & Schroeder, 2014, p.3527). The two educational systems can be said to inform one another and are a symbol of the modern and traditional across the country. Another example of this coexistence lies inside the great Dzongs, or fortresses, which to this day house both the government and religious leaders in each district. This state of tension and harmony, results in a way of life that is distinctly Bhutanese (Schroeder & Schroeder, 2014, p.3527).

In summary, education in Bhutan is a reflection of the nation's tendency to bring together traditional values and modern practices while continuing to look toward further advancement in continuing education for teachers. The government's Gross National Happiness policy and existing cultural values provide a supportive structure for the introduction of PBE. The later sections of this literature review will reveal the challenges facing educational development in Bhutan.

### **Gross National Happiness Background**

Bhutan is well known around the world for their policy of Gross National Happiness (GNH). There are multiple myths regarding when GNH was first first mentioned, including reference to a speech in 1972 by the fourth king of Bhutan, Jigme Singye Wangchuck (Munro, 2016, p. 82). However, there is no evidence of GNH in the literature prior to 1996, when GNH

was officially established as national development policy (Munro, 2016, p. 71). This excerpt from Bhutan's official GNH website provides a definition of GNH:

The concept implies that sustainable development should take a holistic approach towards notions of progress and give equal importance to non-economic aspects of wellbeing. The concept of GNH has often been explained by its four pillars: good governance, sustainable socio-economic development, cultural preservation, and environmental conservation. Lately the four pillars have been further classified into nine domains in order to create widespread understanding of GNH and to reflect the holistic range of GNH values. The nine domains are: psychological wellbeing, health, education, time use, cultural diversity and resilience, good governance, community vitality, ecological diversity and resilience, and living standards. The domains represent each of the components of wellbeing of the Bhutanese people, and the term 'wellbeing' here refers to fulfilling conditions of a 'good life' as per the values and principles laid down by the concept of Gross National Happiness. (GNH Index, 2016)

In Bhutan, "Gross National Happiness is more important than Gross Domestic Product (GDP)" (Wangmo & Choden, 2011, p. 446). Happiness in this context is a translation of the Dzongkha word, "sukha," which, "Unlike notions of happiness as immediate pleasure fulfillment, sukha balances mental, emotional and spiritual conditions regardless of changes in material conditions" (Schroeder & Schroeder, 2014, p.3523). GNH is a nationalistic policy, intended to promote social cohesion and well-being (Munro, 2016, p. 86). GNH has produced holistic government policies, including education, where the government continues to establish a curriculum that works to balance materialism and spiritualism (Childs, Tenzin, Johnson, & Ramachandran, 2012, p. 394).

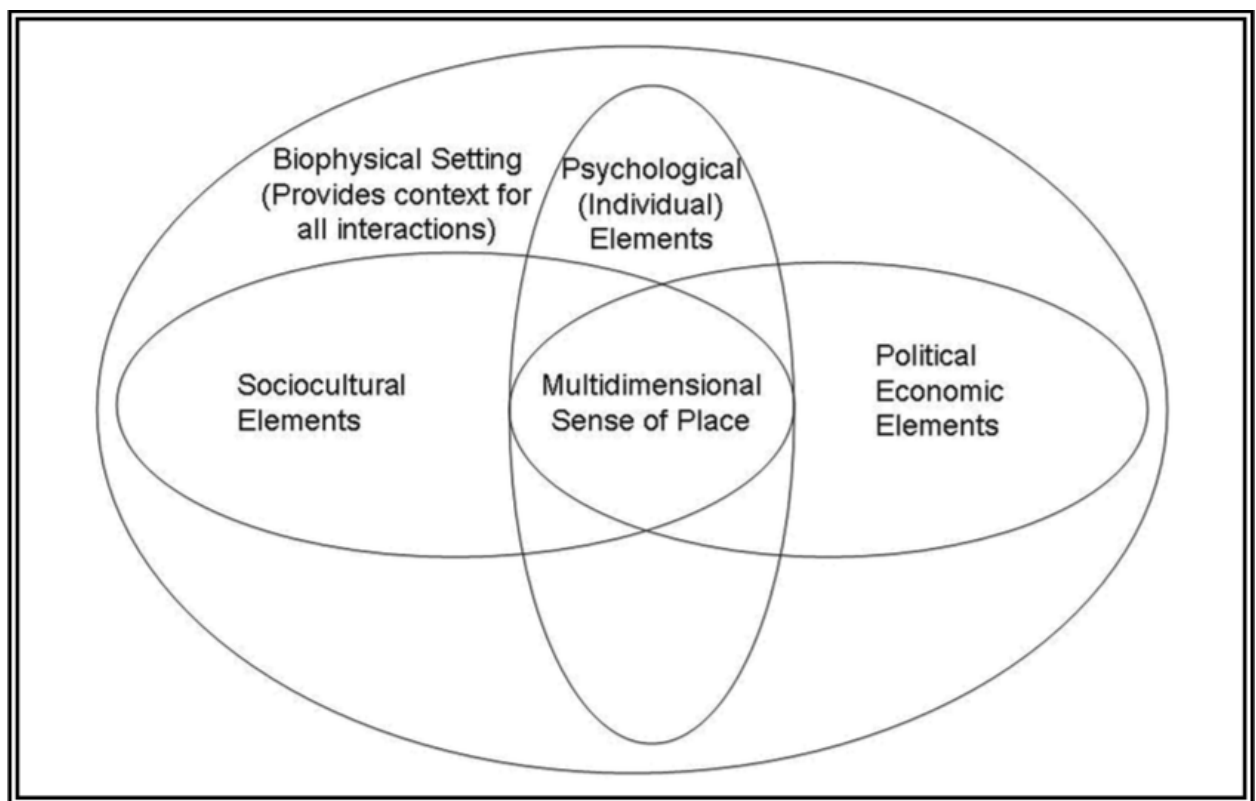


GNH is not without its shortcomings. GNH is an imposed nationalist strategy to unify an otherwise plural society (Metz, 2014, p. 229). Bhutan is home to numerous ethnic, linguistic, and religious groups, including who practice Hinduism, Islam, Christianity, and indigenous religions such as Bonism. In contrast, GNH promotes an invented tradition containing an idealized set of values, beliefs, and behaviors defined by the ruling class. In its attempt to objectively quantify human happiness and subsequently base government welfare programs on those numbers, key elements of the human experience are overlooked. The GNH index does not account for the benefit of negative emotions such as justified anger and grief. Another shortcoming is GNH's failure to measure inequality. Although attention is given to the worst-off in society, the index does not account for such inequalities as wealth and education (Metz, 2014, p. 228). Other criticisms include the arbitrary nature of a happiness index and the government's inability to provide basic services in spite of a preoccupation with measuring happiness (Bergink, 2014, p.7).

**GNH workshops.** In 2009 and 2010, the Bhutanese government held workshops to encourage the integration of GNH principles into educational practices. Bhutanese educators at this conferences pointed to the need for inclusion of traditional meditative practices alongside modern educational strategies (Tenzin, 2010, p. 19). These workshops focused on how and why to implement educational frameworks grounded in the four pillars of GNH. Of interest to this study, much of the content called for promoting traditional values and connecting their students' learning to their local communities in more meaningful ways (Tenzin, 2010, p. 21). PBE is aligned with the aspect of GNH requiring meaningful connections to the local place. The TSS workshops in Bhutan train teachers to educate in student-centered and place-based ways.

### **Sense of Place**

Sense of place is an interdisciplinary concept which is defined in different ways throughout the literature. Ardoin developed a framework for understanding the dimensions in which we develop a sense of place (Figure 2). Place is defined as the biophysical setting which includes the natural and built environment in which all experiences occur. The figure below illustrates how the individual psychological elements, political economic elements, and sociocultural elements exist within the biophysical setting and add up to the individual's multidimensional sense of place (Ardoin, 2006, p. 114). This means that a student's sense of place is complex and may consist of many different kinds of knowledge, experiences, and feelings.



*Figure 2.* Dimensions of sense of place. This figure illustrates the multidimensional sense of place (Ardoin, 2006, p. 114).

**Place-based education.** Place-based educators attempt to connect interdisciplinary learning to their students' multidimensional sense of place. PBE is broadly defined as an educational process which seeks to foster a sense of place, student engagement in the learning process, and meaningful interdisciplinary learning (Center for Place-based Learning and Community Engagement, 2015). PBE has the capability to produce changes in culture both inside the classroom and in the larger community. Such change is made possible in the context of critical pedagogies, which spur educators and learners to look critically at their ecological and human communities in ways that seek to identify issues and solutions (Gruenewald, 2003a, p. 10). One definition of PBE involves seeking to achieve, "A greater balance between the human and non-human, ideally providing a way to foster the sets of understanding and patterns of behavior essential to create a society that is both socially just and ecologically sustainable" (Smith & Sobel, 2010, p.22). By turning the attention of students and teachers to the cultural and ecological realities of their place, it becomes possible for education to awaken interest, awareness, and awe for both the familiar and forgotten world around them (Gruenewald, 2003b, pp. 619-621).

In its essence, PBE has existed for as long as communities have chosen to transfer knowledge, skills, and understanding to younger generations within the context of daily life in the home and community. The current vision of PBE finds its origin with John Dewey in the 1890s. Dewey was an educational researcher and director of the University of Chicago's Laboratory School, where he worked to overcome the isolation of children in schools from their communities (Smith and Sobel, 2010, p.26). Other colleagues and descendants of Dewey pursued this line of thought, bringing into focus issues such as the role of schools in shaping society, service learning, environmental education, and other specific emphases all connected in

their belief that PBE is necessary in order for schooling to address the needs of the local community (Gruenewald, 2003a; Smith & Sobel, 2010). In the modern educational context, PBE continues to go against the grain of established educational models. Today, there are numerous definitions of PBE, but they share in common the notion of citizenship, that students are to be led to engage their society and environment in ways that are meaningful and consequential in the present (Smith & Sobel, 2010, p.22). Students should be given tools to solve current problems rather than perpetually readied for, “Some future purpose” (Smith & Sobel, 2010, p.26). TSS lists the principles of PBE as seen in Table 2 below.

Table 2
<i>TSS Principles of PBE</i>
1. Learning is grounded in and supports the development of a love for one’s place.
2. Learning is focused on local issues.
3. Learning is supported by strong and varied partnerships with local organizations, agencies, businesses, and government.
4. Local learning serves as the foundation for understanding and participating appropriately in regional and global issues.
5. Learning takes place on-site in the schoolyard, and in the local community/environment.
6. Learning is personally relevant to the learner.
7. Learning is oriented so learners feel positive and in control.
8. Learning is structured to promote deep understanding of content
9. Learning engages students in investigation, inquiry, and problem solving
10. Learning is interdisciplinary.

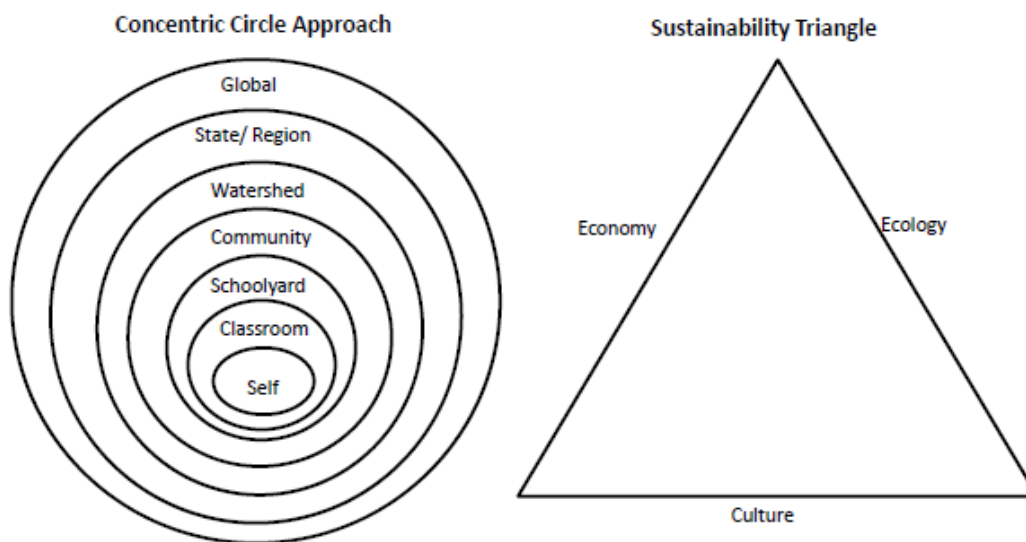
(Teton Science Schools, Internal Document, 2016)

TSS lists the attributes of PBE in 4 concise statements:

Table 3
<i>Attributes of Place-Based Education</i>
1. Strategies – experiential, inquiry-based, constructivist, student-centered, project-based
2. Approach – expanding sense of place in a way that is developmentally appropriate with students’ progress - Concentric Circles
3. Content – sustainability triangle – economy, ecology, culture; inherently interdisciplinary
4. Action-oriented – relevance of work beyond the classroom in the community

(Teton Science Schools, TSS Framework Curriculum Guide, Unpublished Manuscript, 2016)

**TSS frameworks.** TSS uses many different visual frameworks to communicate key concepts. Educational frameworks in this context are used to communicate an organized approach to teaching and learning (Figure 3). TSS' approach to PBE is illustrated with an image of concentric circles. The inner-most circle represents the need for education to begin with students' development of a sense of self and the connection of learning to themselves. The circles expand outward over time, as the students' sense of place and educational content expands to their classroom, schoolyard, and eventually the global scale. The sustainability triangle is another important concept which illustrates the interdisciplinary nature of PBE. The triangle emphasizes the goal of connecting students to the economic, ecological, and cultural elements of place (Teton Science Schools, 2016b). These frameworks and others like them may inform workshop participants' understanding of PBE.



*Figure 3.* Concentric circle approach and sustainability triangle. These two images illustrate educational frameworks (Teton Science Schools, TSS Framework Curriculum Guide, Unpublished Manuscript, 2016).

### **Need for Professional Development in Bhutan**

In order for improvements to be made in an educational system, whether national, as in the case of Bhutan, or local, changes will not take place without investment in the professional development of the educators. As Garet, Porter, Desimone, Birman, and Yoon wrote, “Thus, the success of ambitious education reform initiatives hinges, in large part, on the qualifications and effectiveness of teachers” (2001, p. 916). A number of studies have pointed to the need for improved professional development opportunities for teachers in Bhutan.

**Recommendations from the literature.** As early as 2004, the Center for Educational Research and Development concluded that professional development was needed to improve the attitudes of teachers (Balamurugan, 2004, p. 49). In 2008, a government report on the quality of education in Bhutan listed professional development as one means of bringing about education reform, “Giving teachers the skills and tools to raise the quality of classroom instruction – Through continuous professional development and structured teacher-learning resources” (Idiscoveri & Royal Education Counsel of Bhutan, 2008, p. 192). A 2009 study conducted by the REC included suggestions for education reform including a need for greater professionalism and professional development across the board for administrators, lecturers, and teachers (REC & Mindful Development Consultants, 2009, p. 27). The National Educational Assessment project (NEA), conducted in 2003 by the World Bank and Australian Council for Educational Assessment, assessed multiple aspects of the Bhutanese education system, including testing and assessment in Bhutan. Among the multiple findings and recommendations which emerged from the study, need for improvement was revealed in the quality of instruction, particularly in the areas of reading, writing, and language (Maxwell, et al., 2010, p. 279).

**Skills development.** School systems go through stages of development over time, progressing towards increasing levels of appropriateness for their specific population (Beeby,

1962, pp. 5-9). For Bhutan in particular, there is need for teachers to develop the skills to implement progressive educational models. Gyamtso and Maxwell suggest that there is, “A misunderstanding of the constructivist approach to learning” (2012, p. 67). Teachers may use student-centered strategies to keep students busy, rather than to create meaningful learning experiences (2012, p. 67). VanBalkom and Sherman’s study of teacher training in Bhutan found that, “Teaching and learning resources are lacking, and overcrowded classrooms and multi-grade teaching exacerbate the challenges that teachers face” (p. 45). Rinchen, Ritchie, and Bellocchi conducted a study of the importance of emotional reactions to teacher education:

There is a need to challenge the way science is currently taught in the schools and colleges of Bhutan. Instead of following the existing curriculum and textbooks, a new approach that values students’ views and draws on wisdom of generating successful interactions between the teacher and students should be put in place. (Rinchen, et al., 2016, p. 23)

The literature is in agreement that Bhutan is in need of improved professional development opportunities to help teachers deliver curriculum content in meaningful and effective ways. With that in mind, it is important to understand what effective professional development can look like.

### **Qualities of Effective Professional Development**

Educators may pursue professional development for a number of reasons (Luft, Bang, & Hewson, 2016, p. 49). Given the diversity of teachers and the standards they are required to meet, it is difficult to create a definitive list of necessary criteria of what makes for effective professional development. However, it is possible to construct a collective picture of what researchers have found to be important for professional development for teachers. What follows are four common themes from the literature.

**Efficient Use of Time and Resources.** To begin with, professional development programs should efficiently use time and resources. Programs need to be relevant to the needs of the teachers and their students (Luft, et al., 2016, p.49). What is relevant to one teacher may not be relevant to another teacher (Hewson, 2013, p. 1201). Professional development therefore needs to help connect the teachers to themselves, other teachers, their work in the classroom, and the lives of their students (Hewson, 2013, p.1190). Professional development must also be, “Anchored by attention to students' thinking, the curriculum, and pedagogy” (Garet, et al., 2001). Many educators are very busy during the school year and any time off is considered precious. Compared to one-time workshops, evidence shows that the most successful professional development is continuous, including on-going assessment and follow-up sessions over multiple years. This offers opportunities for continued mentorship and training over an extended period of time (Loucks-Horsley, et al., 1996). Professional development that facilitates ongoing collaboration with other teachers, over multiple years, is also shown to be more effective than one-time collaborative sessions (Hiebert, 1999, p. 9). Because on-going professional development can often take place during the work day, this approach may appeal to schools and governments who may face financial and time constraints.

**Teachers as Responsible for Their Own Learning.** Teachers are neither simple disseminators of knowledge nor empty vessels which can receive direct downloads of information. Rather, professional development must view teachers as learners (Fraser, Kennedy, Reid, & Mckinney, 2007, p. 153). Research has been done to determine if adult learn in essentially different ways from children. The reality is that all people learn within specific personal, environment, and social contexts. In general, adults experience power, responsibility, and emotions in ways that are not typically experienced by children (Kerka, 2002, pp. 2-4). As



with young students, adult teachers require effective strategies in order for maximum learning to occur. Because it is impossible for teachers to perpetually attend special programming, facilitators and planners of professional development programming must empower teachers to pursue their own learning throughout the school year in the context of their role as educators (Hewson, 2013, p.1185). For learning and change to occur, it is vital for teachers to take responsibility for their own learning (Bell & Gilbert, 1996, p.498). Professional development that does not place control of the learning process will ultimately not lead to lasting changes in pedagogy (Kennedy, 2005, p. 245). With this in mind, time and resources are best spent on equipping teachers with frameworks, philosophies, and strategies to pursue on their own, as opposed to specific lessons and content.

**Teachers as Whole People.** In 1994, Bell and Gilbert published the findings of their study of what makes professional development for teachers effective. Professional development needs to address the teacher as a whole person connected to their students and educational environment. Bell and Gilbert outline the three main areas of learning for the teachers: personal, social, and professional. Teachers were documented as learning about themselves personally, including their preferences and idiosyncrasies. They learned socially, gaining understanding about how they related to their students and other teachers and the social tenor in their school. And they learned about themselves professionally, including defining their goals, strengths, and weaknesses as a teacher. In the same paper, Bell and Gilbert described the success experienced by giving teachers opportunities to direct their own learning according to their own needs and desires. In this way, Bell and Gilbert found that teachers experienced a sense of empowerment and ability to pursue their own learning (1994, p. 483).

Kennedy developed a framework that compared the effectiveness of different professional development models. She found that models which led to transformation in the way people teach involved higher levels of collaboration and autonomy for the participants through practices like action research and reflection (Kennedy, 2005). Hewson built upon Bell and Gilbert's study and wrote about seeing teachers as adult learners and, in regards to Bell and Gilbert's focus on personal, social, and professional development wrote, "We now know that teachers cannot be replaced by formulas or computer programs. The role of the teacher in education is nuanced and crucial to meaningful learning. Therefore, investment in supporting the continuing learning and improvement of teachers is time well spent" (Hewson, 2013, p. 1179). Hewson then went on to state, "If development is to happen, teacher development programs must address all three of these components" (2013, pp. 1181-1183).

**21<sup>st</sup> Century Skills.** Much of the literature emphasizes the importance of promoting 21<sup>st</sup> century skills. The term 21<sup>st</sup> century skills is used broadly to describe skills that are deemed useful for citizens living in the modern and rapidly changing world (Luft, et al., 2016, p.49). 21<sup>st</sup> century skills often include collaboration, communication, reflection, systems thinking, design, inquiry, and environmental literacy (Trilling & Fadel, 2009, xxvi). Effective professional development provides, "Access to alternative ideas and methods and opportunities to observe these in action and to reflect on the reasons for their effectiveness" (Garet, et al., 2001). All educators are held to a certain set of standards. In Bhutan, educational standards are set at the national level. Professional development for teachers should align with the relevant educational standards (Luft, et al., 2016, p.49). Furthermore, the professional development should work toward, "The explicit goal of improving students' achievement of clear learning goals" (Hiebert,

1999, p. 9). If the professional development is not in line with such standards, teachers may feel barred from applying what they learn.

Effective teacher professional development exhibits four main qualities. It must use time and resources efficiently, empower teachers to take responsibility for their own learning, address teachers as whole and complex individuals, and align with 21<sup>st</sup> century standards. Even if teachers in Bhutan receive effective professional development, challenges will still continue to stand in the way of implementing what they have learned.

### **Challenges of implementing professional development.**

There are four challenges which can make it difficult for teachers to adopt new teaching practices in Bhutan. These challenges are found in college student selection, the colleges of education, the Bhutanese culture, and a lack of resources. Some of these challenges arise at the college level, promoting a culture among educators that may hinder educational reforms. Certain cultural elements can also create challenges when teachers attempt to act outside of traditional norms. Finally, some challenges are related to a lack of resources.

**College student selection.** One obstacle facing professional development of teachers in Bhutan appears before teachers begin their careers. The barrier lies in the manner in which many Bhutanese are selected for the profession. VanBalkom and Sherman (2010, p. 54) explain how Bhutanese students are admitted into certain programs through the Royal University of Bhutan based solely upon their grades in secondary school. The authors found that only 15% of the students at both colleges of education claimed teaching was their first choice for a profession (VanBalkom & Sherman, 2010, p. 54). Higher-scoring students are able to pursue careers as doctors and engineers. Teaching degrees on the other hand require less impressive grades. While education is the first choice for some, others end up teaching by default, leading to the current

situation where, “The profession is unable to attract the brightest, perpetuating the issue of poor quality” (VanBalkom and Sherman, 2010, p. 45). At the same time, Bhutan faces a high demand for educators in the primary and secondary level as well as in the colleges. In the colleges of education, some of the in-service students have more primary and secondary school teaching experience than their college instructors (Maxwell & Namgay, 2014, p. 31). As a result, the colleges of education rarely fail students and nearly all of their graduates are employed as teachers in the system, even if they are poor performers (VanBalkom & Sherman, 2010, p. 45).

**College experience and student teaching practicum.** Another challenge faced by educators is the transition from their college experience into their teaching practicum as student teachers. In the colleges, lecturers may not be trained with the proper integration of printed resource and technology (VanBalkom & Sherman, 2010, p. 50). During the teaching practicum, which lasts a few months, the new student teachers are required to begin teaching right away, often without opportunities to observe their mentor teachers (VanBalkom & Sherman, 2010, p. 51). The student teachers are expected to create at least 200 lesson plans, receiving little or no feedback and in some cases their mentor teachers treat them as inferior. Because the demands on student teachers are seen as exceptionally high, by both the mentor teachers and student teachers, both parties often fall into seeing the experience as superficial and a hoop to jump through on the way to employment. Perhaps the most significant barrier facing new teachers is the disconnect between what is taught in the college classrooms and the expectations of the teaching practicum (VanBalkom & Sherman, 2010, pp. 52).

Bhutanese culture is hierarchical, a reality often seen in the schools and colleges of education. In the colleges, decision-making is handled in a way that is top-down, often excluding students from the process. With this hierarchical behavior, lecturers of different social standing

will receive different treatment, including varying work loads and different levels of access to resources and training (Maxwell & Namgay, 2014, p. 34). Many of the lecturers feel that they are overworked (VanBalkom & Sherman, 2010, pp. 54). The Strategic Plan from the Royal University of Bhutan states that ratios of students to lecturers are high (Gyamtso & Maxwell, 2012, p. 72). VanBalkom and Sherman state, “Lecturers are expected to teach every day and feel they do not have adequate time for preparation, professional renewal, providing support to individual students or research.” At the time of this study, these same lecturers suggested that more current professional development could help them to grow and persevere professionally (2010, pp. 52-53).

**Cultural barriers.** Assessments of the Bhutanese educational system have found potential cultural barriers to adopting changes to curriculum and teaching practice. Although there is little tension today between traditional and modern educational systems, the strong Buddhist worldview inherent in the culture may at times create challenges (Childs, et al., 2012, p.394). Gyamtso and Maxwell discuss how the influence of both traditional Buddhist education and the Anglo-Indian model, both highly teacher-centered, make it difficult for lecturers to change their teaching style. For many of the educators in this study, they may have never experienced student-centered education themselves (Gyamtso & Maxwell, 2012, p. 68). Modern education promotes inquiry and critical thinking, which contrasts with the traditional method of memorization and the absorption of ideas (Phuntsho, 2000, p. 103). This is particularly true in the sciences, which may contradict traditional mythologies. Childs and colleagues wrote,

The first issue is a possible tension between the maintenance of Bhutan’s cultural heritage, including its myths and traditions, and their relationship to the revised science curriculum.

Bhutanese and Westerners often give different reasons for changes, such as increase contextualization (Childs, et al., 2012, p. 394).

**Resources.** Perhaps the greatest challenge to education reform in Bhutan is the lack of resources. The cost of professional development alone may be prohibitive. In some cases, the required expenses for paying workshop leaders, purchasing supplies, and compensating teachers for their time in professional development may keep needed professional development from ever taking place (Childs, et al., 2012; Garet, et al., 2001). The 2003 National Educational Assessment identified a need for improved access to educational resources and libraries. VanBalkom and Sherman point out that the colleges of education presently face a lack of resources and infrastructure as well as training for how to use technology in the classroom effectively (2010, p. 50). Bhutan's mountainous terrain and scarcity of paved roads can lead to complications for students who are required to travel long distances to reach their schools (Maxwell, et al., 2004, p. 280).

### **Supports to Education Reform**

Much of the reviewed literature focuses on the needs for improvement in the Bhutanese education system. While there are a number of challenges hindering changes to education reforms in Bhutan, there is support for changes in education in Bhutan. A government-sponsored 2008 report on the quality of education in Bhutan noted,

There is also evidence that better outcomes, quality practices and innovative initiatives exist in small islands of success within Bhutan. Private schools in the study and some government schools demonstrate better student performance, greater instructional leadership by the principal and visibly better teaching practices in the classroom. Curriculum reforms in English and Mathematics demonstrate thoughtful design,

international standards and focus on quality learning. All stakeholders are beginning to demand better quality through raising student attainment, teacher's professional development and better support to schools. Analyzing the findings, we were able to derive some insights and implication of the findings that can form the basis of actions going forward. (Idiscoveri & Royal Education Counsel of Bhutan, 2008, p. 191)

VanBalkom and Sherman found that many lecturers, administrators, and students at the colleges of education were optimistic about changes which were already implemented in the curriculum. They specifically mentioned that the content experienced improvements prior to the time of the study (VanBalkom & Sherman, 2010, p. 55). In 2011, Childs, et al. found evidence of learner-centered pedagogies and a focus on contextualizing content within primary school curriculum (2012, p. 393).

### **The State of Education in Bhutan**

After just over 100 years, the Bhutanese education system continues to develop an identity, a curriculum, and a system that is capable of providing education that is truly place-based. The REC exists for the purpose of bringing Bhutan's schools into the 21<sup>st</sup> century. Gross National Happiness is a widespread government policy which aligns well with the principles of PBE and helps to create open doors for further educational reforms. There are still many challenges facing progress in reforming the education system in Bhutan, including a lack of resources, funding, and professional expertise. Both the government and society are constantly working to find the balance between a desire to keep pace with the modern world while also maintaining their rich and distinct Bhutanese heritage. My study exists within this interesting context of culture, policy, and challenge to discover what role the TSS professional development workshops play in Bhutan's educational development. In light of the nation's GNH policy,

monastic history, and recent development, this study will also explore the ways Bhutanese educators understand and practice conservation of the environment and PBE.

### **Summary of the Literature Review**

The literature shows the evolution of education in Bhutan from the original Buddhist monastic system to the Western-style education system of today. The REC is responsible for curriculum development and professional development, both of which are playing an important role in education reform. The REC has partnered with TSS to weave PBE into the national curriculum and the instructional strategies of teachers. PBE appeals to Bhutanese educators because they see connections to the moral framework of the government's GNH policy, which emphasizes the local culture and natural environment. The literature presents multiple perspectives of GNH, including its ability to promote a positive social change as well as its numerous shortcomings and inherent nationalism. The literature also describes four common attributes of effective professional development as well as four main challenges and several supports for education reform. My study was informed by the historical, governmental, and cultural factors discussed in the literature review.



## **Chapter 3**

### **Methodology**

#### **Introduction to the Methodology**

The methodology was designed to answer the primary research question, “What impacts, if any, do the TSS PBE professional development workshops have on Bhutanese teachers?” The methods of data collection in this study were semi-formal and informal interviews, written surveys, observations, and a brief review of extant documents. Extant documents included materials from past workshops and curriculum materials (Charmaz, 2014, p. 48). The interviews, surveys, and observations took place during the two workshops. The first workshop, from January 13<sup>th</sup>-17<sup>th</sup>, was attended by primary school teachers who were nominated to represent their district. This workshop took place at Punakha Higher Secondary School, located in the town of Punakha in the Western part of Bhutan (Figure 4). This first workshop was distinct because over half of the participants had attended past workshops with TSS between the years 2013-2015. The second workshop, January 20<sup>th</sup>-24<sup>th</sup>, was conducted for Royal University of Bhutan lecturers at the Samtse College of Education. These lecturers were selected to teach within the new Master’s of Education program, said to begin in 2016 (Interview 7, personal communication, January 23, 2016). Other informal interviews and observations took place outside of the two workshops during my two-week stay in Bhutan.

It is necessary to understand Bhutan’s mountainous topography and the unique challenges facing workshop participants who may live far from a workshop location. For example, while the capitol city of Thimpu is a relatively short distance from Punakha, travelers must drive along a bumpy, dusty, and winding road for about 5 hours before reaching their destination. When we traveled from Punakha to Samtse, we not only faced mountain passes,

narrow roads with blind corners, and unpaved sections of highway, we were required to cross over the border and travel through India as well. The construction of a bridge over a mountain river valley currently forbids expedited travel along an internal route to Samtse. In other parts of the country, teachers may walk for several days before they can reach a road. In some instances, others are required to make a journey to find a town with a reliable source of electricity.

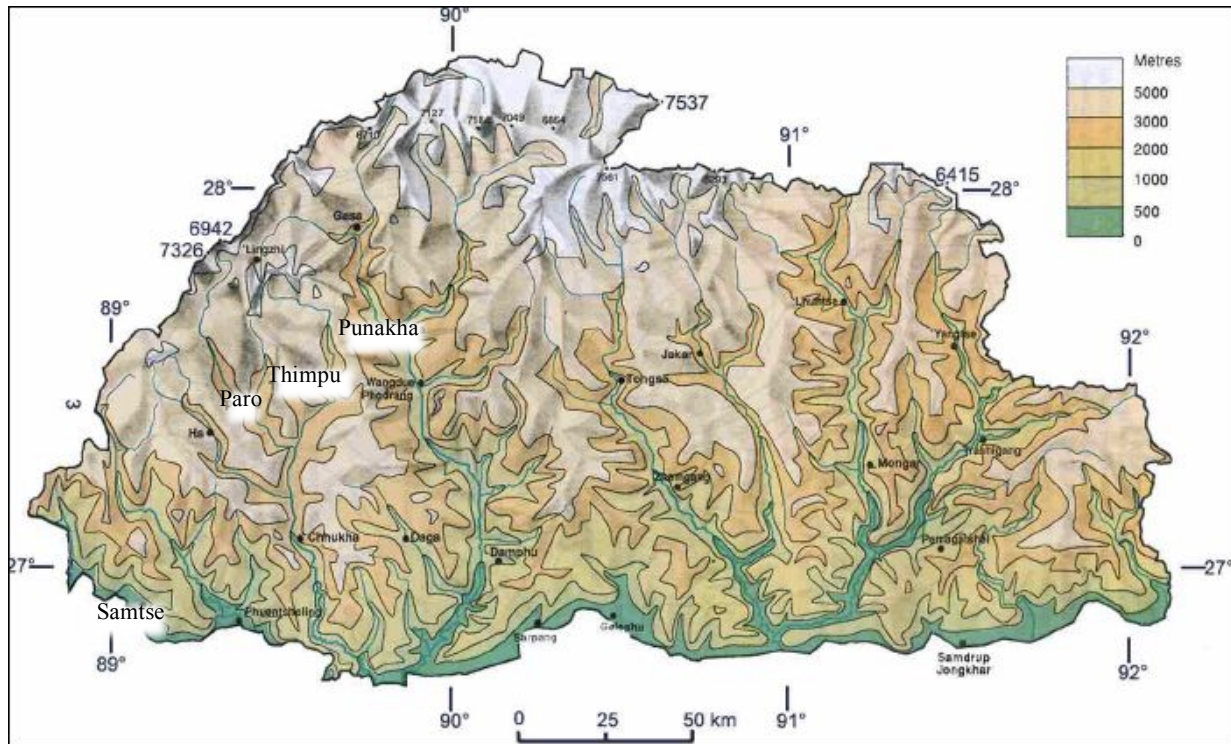


Figure 4. This map includes key locations for my study, including Samtse, Punakha, Paro, and Thimpu, the capital city (Maps of Bhutan, 2016).

### Participant Selection

My IRB approved study considers any person who contributed through completing a survey, semi-formal interview, or informal interview to be a participant. There were 43 participants included in this study. At the start of each of the two workshops, I provided a risk waver (Appendix A) which informed the participants of any possible risks and their freedom to

not participate in all or any part of the study. The following paragraphs define the four types of participant groups in this study.

**Returning participants.** The most relevant participant group and the primary focus of this study was the 15 out of the total 20 primary school teachers who were returning workshop participants. As primary school teachers, they teach class pre-primary (PP, equivalent to preschool) through class eight (VIII). These individuals all attended at least one TSS professional development workshop in Bhutan prior to the 2016 workshop. I used the written survey (Appendix B) as the method of identifying which individuals were returning participants and confirmed this information with the TSS facilitators. I chose to interview all returning primary school teachers either individually or in focus group interviews. I conducted all of these interviews by myself during the workshops. For the sake of transparency, I was careful to choose locations that were in view of other workshop participants and facilitators. I decided to wait until the third day of the workshop to begin interviews in order to establish a rapport with the participants. As a male, I was made aware of the possibility for female participants to be reserved during interviews with me due to conservative cultural dynamics between men and women. I therefore made note of the female participants' level of openness during the interviews. As I conducted the interviews, I found that men and women were responding with very similar levels of openness. Although other participant groups in this study provided valuable contextual information, the returning participants were the primary focus of this study and data collected from their surveys and interviews was most closely analyzed.

**First-time participating teachers.** The second group of participants includes the 5 out of the 20 total teachers at Punakha Higher Secondary School who were attending a TSS workshop for the first time in 2016. These teachers provided insight as people who may be learning about

PBE for the first time. I interviewed 1 male first-time participant and 1 female first-time participant using the same method that was used with the returning participant teachers.

**Samtse College of Education Lecturers.** The third participant group includes the 16 lecturers at the second workshop at the Samtse College of Education. 14 of these lecturers were first-time TSS participants. Similar to the first-time participating teachers, their survey and interview responses give insight into the educational atmosphere out of which primary school teachers emerge. Two of these lecturers have had considerable experience with TSS. Both have traveled to the TSS campus in Wyoming as well as participated in past workshops in Bhutan. Their specific experience will be detailed in the analysis as is relevant.

**Curriculum developers and Royal Education Counsel employees.** The final group of participants includes two curriculum developers and four employees of the REC. We encountered these individuals on different occasions during our time in Bhutan. These participants all have past TSS experience, including traveling to the TSS campus in Wyoming, attending workshops, and corresponding with TSS faculty at various times since the beginning of the TSS-Bhutan relationship in 2008.

The focus of this study is the group of 15 returning participant teachers. All four groups are important and contribute to the study in meaningful ways. However, the quantified data presented in the analyses section will only include the responses of the 15 returning participant teachers from the first workshop.

### **Survey Design**

I distributed the survey to all workshop participants in both locations. The survey was aimed at gaining an understanding of the educators' impressions of PBE, the TSS workshops, and how they were able to implement what they learned at past workshops. The survey (See

Appendix B) included 12 questions. Questions 1 through 4 collected demographic and background information related to the participant's experiences as a teacher and as a participant in the TSS programming. Question 5 and 6 were designed to collect the participants understanding of PBE and the impacts of the TSS workshops. Questions 7 through 11 collected information about the participant's personal experiences implementing PBE and ideas learned from past TSS workshops. Question 12 collects any additional comments from the participants related to the workshops and PBE. All 12 questions were designed with past TSS workshop participants in mind. All first-time participants were asked to complete questions 1 through 6 and to respond to questions 7 through 12 to the best of their ability. For first-time participants, I used this survey to gather educators' impressions of the workshops and PBE after encountering these ideas for the first time.

**Survey analyses.** I analyzed the surveys of the returning participants using two methods. First, I performed a word count for each question using an online word counting program. I identified the most commonly used words in the survey responses and recognized patterns between the participants (Word Frequency Counter, 2016). Second, I consolidated the survey responses into identifiable terms and phrases. I counted the frequency of each phrase or term and summarized into a bar graph. The survey responses from the returning primary school teachers were most critical to my study and received more thorough attention than first-time participants. The two returning college lecturers' responses were also given attention.

### **Interviews**

I used an interview guide (Appendix C) to conduct semi-formal interviews with 21 participants. While I referred closely to the interviews, I also followed relevant topics in the conversation beyond the protocol (Charmaz, 2014, p. 59). The semi-formal guided interviews were video recorded and I took notes during the interview as well. The interviews lasted an

average of 40 minutes. At Punakha Higher Secondary School, I interviewed three male and three female returning workshop participants and one male and one female first-time participant. I conducted 1 focus group interview with four returning males and another focus group interview with four returning females. During this workshop, I also interviewed one curriculum officer from the REC who attended the workshop and acted as our primary host for that week. At the Samtse College of Education, I interviewed three male lecturers, including a senior faculty member, and three female lecturers. I also conducted one joint interview with one male and one female lecturer. My selection of interviewees during this workshop differed from my selection at Punakha Higher Secondary School because only two of the lecturers were returning TSS participants. I transcribed all interviews and to protect anonymity assigned a numerical code to each interviewee.

**Informal interviews.** Outside of the two workshops, I also conducted informal interviews, which lasted no longer than 15 minutes, based on one or two questions, and recorded by hand in my journal. The questions most often asked were:

1. What impacts, if any, do the TSS workshops have on Bhutanese educators?
2. Can you share with me your thoughts regarding the effectiveness of place-based education?

These people included the director and two program chiefs for the REC, one curriculum officer and one teacher who were attending a curriculum writing meeting at the time of our visit, and one ex-curriculum officer now working in another organization. Summary notes were written after these informal interviews and were recorded in my journal.

**Interview analysis.** I used a method of grounded theory from Charmaz's method of constructivist grounded theory for the analyses of the data (2014, p. 525). I read through each of

the transcripts line by line and identified key concepts, themes, and evidence of the participants' values and perspectives as they emerged. I paid special attention to the returning participants' responses and I developed key concepts as I read through the interviews. As themes were identified, I combined them into thematic paragraphs. In this way, the analysis was a dynamic process which allowed for new discoveries to emerge and evolve continuously as each transcript was reviewed. After all interview transcripts were reviewed, the notes from observations and informal interviews were reviewed in a similar manner and integrated with the interview findings. Likewise, information gathered from the surveys was reviewed and combined into the findings. In the end, a synthesis of the data was formed, resulting in an overall synthesis.

### **Observations**

During the workshops, I used a hand-held camera to video record the two workshops. I also took observational notes during the two workshops. These observations were used to inform my analyses of the interviews and surveys. Observational notes and video clips were reviewed and used to support the data analyses process.

### **Extant Documents**

The extant documents were analyzed according to the following methods. Materials from past workshops, including workshop agendas and participant hand-outs were briefly considered specifically for the purpose of identifying differences in the objectives and desired participant outcomes between the years 2013, 2014, and 2015. Bhutanese curriculum materials, specifically Class IV, V, and VI textbooks and teacher manuals, were also briefly examined for evidence of existing place-based concepts and practices (Charmaz, 2014, p. 48). In this case, I considered curriculum material to be place-based if it encouraged teachers or students to make connections between the place and the curriculum content.

## **Summary of the Methodology**

Together, the interviews, survey, observations, and review of extant documents produced more data than my study was designed to analyze. Throughout the data collection process, I focused on answering the primary research question and the three guiding questions.

Interviewees often seemed reluctant to end the interview, and I had little difficulty in observing the workshops and having informal communication with participants outside of the planned interviews. In the following chapter, I analyze the data and answer the primary research question and three guiding research questions.



## Chapter 4

### Analyses

#### Introduction to the Analyses

This chapter presents the analysis of the research. Unless otherwise specified, findings in this section are in reference to the group of 15 returning participant primary school teachers at the first workshop in Punakha. The analysis will be organized according to the emergent themes. All information in this section is derived from the results of the survey, interviews, observational notes, and extant documents.

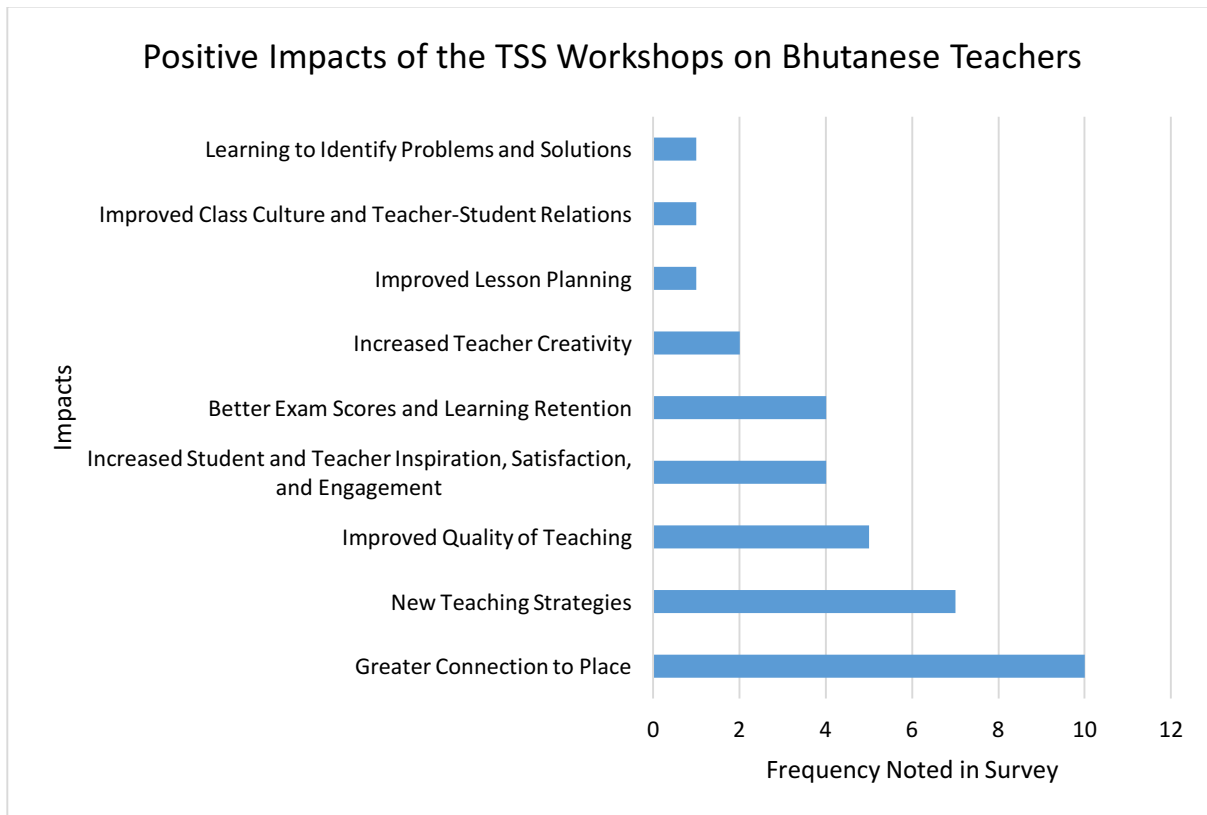
**Impacts on pedagogy.** I asked the teachers their impressions of the impacts of the PBE workshops on their teaching. Teachers prefer PBE because it lends itself well to interdisciplinary learning. Multiple teachers described shifting away from traditional lecture-based and teacher-centered models to more student-centered approaches, where they act as a facilitator for their students. The student-centered approaches included think-pair-share, the 5-E model, exploration stations, project-based lessons, and field trips. Many teachers agreed that the concept of connecting learning with the local context was not a new idea for them, but TSS provided them with helpful strategies and ways to identify opportunities that connect lessons to place. Many of the teachers gave examples of how they were able to make connections to place in their teaching as a result of what they learned from TSS. Two teachers referred to learning how to use the naturally and culturally available resources. One woman successfully took her English class outside to write poems about nature. She also connected lessons in math and science to place by investigating the geometry of plants and studying local birds and flowers during a natural science lesson. Two teachers in different districts, unable to take their students to nearby national parks, successfully hosted park rangers in their classes. In both cases, the park rangers gave informative

slideshows and were able to answer students' questions about endangered species in Bhutan such as the red panda and the takin, Bhutan's national animal.

**Survey data analyses.** The survey responses made it possible to quantify some of the data. The word frequency counter (Word Frequency Counter, 2016) illustrated how the Bhutanese teachers answered survey question number 5 "Please define place-based education" (Appendix A). Thirteen out of 15 teachers used a form of the the word "experience" in their answer. Nine teachers used a form of the word "connect." The words "local" and "community" were both used seven times. Finally, the word "nature" was used 5 times and the word "environment" was used 4 times. Together, the presence of these words can be used to construct a vision of PBE that is experiential and connects students to the local community and natural environment.

Nine primary themes were noted from the responses to question number six, "What impacts, if any, do the TSS place-based education workshops have on Bhutanese educators?" (Appendix B). The three most frequent responses were an improved quality of teaching ( $n = 5$ ), new teaching strategies ( $n = 7$ ), and improved connection to place ( $n = 10$ ). These responses resonate with interview responses as well. When asked to clarify how they knew that their quality of teaching improved, teacher's responses included positive student feedback, higher test scores, greater levels of student engagement, and feedback from principals and peers. Greater connection to place was the most frequent response to question number six, with a frequency value of 10. This value arose from responses which also resonated with teachers' interview responses and include taking students outside, inviting guest speakers to visit the classroom, class research projects studying cultural or ecological factors in the local community and environment, and the use of special spots. The increase of student and teacher inspiration,

satisfaction, and engagement was also noteworthy, particularly because teachers not only experienced changes in their students, but also in themselves. Several teachers mentioned feeling more confident and many commented on how much more lively and engaged their students acted when approaches learned from TSS were utilized. The following graph illustrates the positive impacts of the TSS workshops on Bhutanese teachers (Figure 5).



*Figure 5.* Positive impacts of the TSS workshops on Bhutanese teachers. This graph illustrates the frequency of positive impacts noted in the survey.

### **Strategies Adopted from the TSS Workshops**

The following strategies were attributed to the TSS workshops. These strategies included the 5E model of lesson planning, inquiry and the science circle, the use of games as engaging activities, exploration stations, observation, the creation of a science scrapbook, and the use of a special outdoor spot (BSCS, 2006, p. 31).

**Inquiry.** Inquiry was one of the most prominent themes, referred to as either inquiry, research, or the science circle (Figure 6). All of the examples of inquiry included an element of connection to the natural or cultural components of their place. All of the examples given in the interviews and survey described a form of guided inquiry, in which the research question was chosen by the teacher. In some cases, the teachers also directed some or all of the steps in the inquiry process. Some teachers gave examples of inquiry projects in social science classes. One teacher, who attended the workshop in 2015, lead an inquiry project with his students where they investigated the effects of doma (a local low-level drug functionally similar to chewing tobacco, consisting of a betel nut, betel nut leaf, and lime paste) on the local community members. Another young teacher shared a similar story of a structured inquiry project in which the students learned how extract oil from native lemongrass plants. They gathered the plants and then processed them using the local method for extracting the oil:

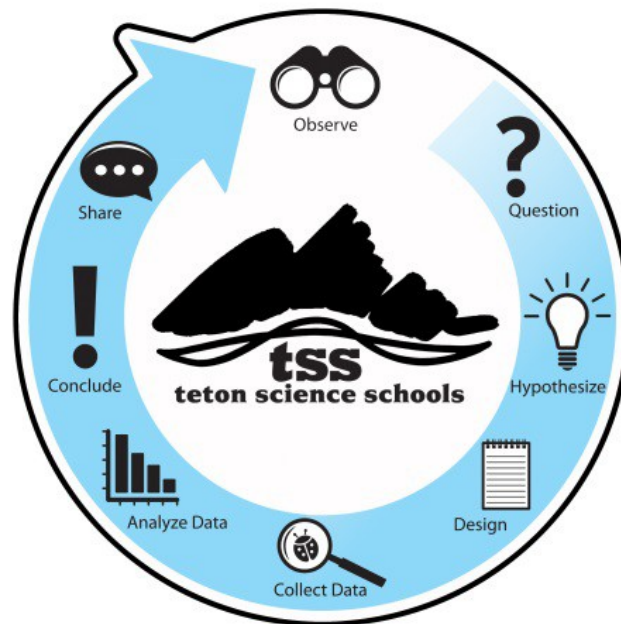
And I thought, I'll use that lemon grass oil; extract the oil. So I borrowed the apparatus from the nearby lower secondary school, since we didn't have any. And then I went with my children to collect that lemon grass, and then with that bottle round cap, and then the sprint lighter, and then the whole thing was magic. We produced the local lemon grass to a very small droplets of oil. And that was one teachable moment I think they will remember throughout their life. (Interview 2, personal communication, 2016)

He went on to describe his students' reaction to this lesson:

I could get into teaching the curriculum in the most effective way. And they said, these children, they remember the smell. Because I made them to smell, I made them to feel, I made them to touch, and they said, "Sir, this smell, I think it will never go from our nose, throughout our life." I think that's very true, even for us

educators, we teach and then we never forget what we teach when we have the hands-on learning. And we learn double by teaching. We teach and then we in-turn learn ourselves. So that was one magic teachable moment that I could share with you. (Interview 2, personal communication, 2016)

This example is illustrative of how teachers described their students' experiences with place-based lessons. Their students were engaged in their place and verbally expressing their pleasure during or after the lesson.



*Figure 6.* The science circle. This image guides a linear inquiry process commonly taught by the Teton Science Schools. (Teton Science Schools, 2015b)

**Exploration stations.** The teachers gave examples of several other strategies as well. Many of them mentioned the use of exploration stations, which involves setting up stations around the classroom. Each station presents a different set of items to interact with, information

to review and synthesize, or tasks to complete. By engaging in the content at each station, students are able to conduct their own learning of the material. Teachers were impressed by this strategy because it allowed the students to engage in self-directed learning and it allowed the teachers to present multiple concepts in a relatively short period of time. Exploration stations also provide teachers with a way to make connections to place without exiting the classroom.

**5E model.** Many of the teachers mentioned the 5E model in the survey or in the interviews (BSCS, 2006, p. 31). The 5E model provides a structure for lesson planning. The 5E's are engage, explain, explore, extend, and evaluate. This model is helpful in making sure teachers are instructing in ways that are effective and lead to meaningful learning experiences for students. One female teacher, who participated in three different TSS workshops and traveled to the TSS campus in 2010, gave an example of a 5E place-based lesson:

I was teaching class 6 science in the previous years, and the topic where I used 5E was separating mixtures... And that is really a good topic to be place-based because we have to use the local methods of separation. For example, there is local method of separating the grains from the stalks, in farming, and we have to teach them to use the local methods of separation. So, we send them for interviews, and they learn the local names. For example, we have a way of taking the rice stalk and beating it on the stones, that is called threshing, and we send the students out to interview the farmers. And in that way we engage the students, and then after the lesson, in the extended activity, we ask them to design other methods of separating the same object and use the different methods of separation. So in this lesson, I used 5E's. (Interview 1, personal communication, 2016)

**Special spots.** Many of the teachers employ the use of special spots to encourage connection to their place. One male teacher, who lives in a remote part of the country, told me

about “Home PBE,” (Figure 7) a treehouse just off the school grounds where he often takes his students for various lessons:

And she said, “Sir, wow. We got to see the all the trees, the flowers, the animals, we could see from there. And how in harmony they existed. Like, there is a beautiful butterfly, they are flying, and the insects, the animals that have been going under.” And they are just taken away by the beauty, and they wanted to be there for a longer time [sic]. (Interview 2, personal communication, 2016).



*Figure 7. Home PBE. This is an example of a teacher’s special spot. Unpublished Photograph, 2016.*

Another teacher told me about frequently holding her class sessions underneath a large tree on the school grounds. Other teachers require students find their own individual special spot for times of personal reflection and observation of nature. Through the utilization of these special

spots, they were able to develop close relationships with their students and positive learning environments.

### **Preservation of the Natural Environment.**

Several of the teachers provided examples of how they used PBE to promote preservation of the natural environment. The frequent use of a special outdoor spot was included as an important element in all of these examples. The prescribed national curriculum includes lessons about environmental science. There are also initiatives in Bhutan promoting conservation of nature. Several teachers in this study said that TSS taught them how to teach environmental lessons in the outdoors. The teachers often included examples related to agricultural practices, collecting litter, and creating art or other projects out of recycled materials.

**Evidence.** The teachers gave several pieces of evidence for the effectiveness of PBE with their students. First, most of the teachers found that their students were able to remember more from their lessons and they claimed that their students' test scores rose after implementing strategies from the TSS workshops. Others noticed distinct increases in their students' level of engagement after applying strategies from TSS, particularly when connecting lessons to place and conducting class outside. They made comparisons, explaining that in the lecture-based model, their students would simply sit and listen, often appearing bored and even falling asleep in class. When more student-centered, place-based strategies were used, these same students became more curious and more actively engaged in the learning process. Their students became more outgoing, willing to contribute to class discussion. Several of the teachers made remarks about students asking to spend more time outside. Several of the teachers also mentioned requesting feedback from the students about changes in the teaching methods. These teachers all claimed to have received positive feedback about the changes in their teaching methods. Students



even verbally expressed their enjoyment in the lessons. One teacher received positive marks from all of his students in an end of the year evaluation. At times, the teachers described that the students were initially confused by the use of new and unfamiliar strategies. But after several lessons, they caught on to the new strategies their teachers were using.

**Teacher sentiments toward PBE.** Several of the teachers noted that what they learned at the TSS workshops was not altogether new to them. The basic premise of connecting students to their place is present in some of the curriculum and in the colleges of education. However, the way in which the TSS facilitators framed the concepts and strategies for PBE was new to them. Two of the teachers explained how attending the workshops led to changes in the way they approach teaching. One explained how for him, the memory of the workshop acts as a constant challenge and reminder to him to continually refine his teaching methods. Another teacher told me how he continues to draw inspiration from the 2015 workshop's facilitators to bring energy, enthusiasm, and intention into his classroom.

**Teacher's view of self.** Most of the teachers expressed a love of teaching and a passion for working with children. Some of the teachers selected teaching as their first career choice. Others were directed to teaching because they did not qualify for their preferred college. All of the teachers saw themselves not only as responsible for teaching the curriculum content, but also for imparting values and shaping their students into responsible citizens. These values include generosity, kindness, loyalty, and intelligence.

**Personal changes.** In addition to changing the way they plan, teach, and assess, several of the teachers mentioned that the TSS workshops led to more personal changes. Two teachers expressed feeling more confident and proud of their profession. Teachers also said that outside of their professional life, they started to connect in more meaningful ways to their own place. Most

of the teachers had specific examples of how PBE changed their personal lives. One teacher shared how attending a TSS workshop led to changes in how he controlled his emotions and interacted with people in his community. Another man implemented ideas from TSS in his school's disaster risk management exercises, in which they prepare faculty and students for potential natural disasters such as fires and earthquakes. Others improved in their ability to plan ahead and make decisions as a result of the TSS workshops. Many of the teachers are parents and took what they learned from the workshop home to their families. One woman taught her children to use the science circle and make connections to their local ecology and community outside of school. Several of the teachers noted that they gained confidence by attending the TSS workshop, specifically in their ability to teach and to share what they learned with their peers.

**Impacts of TSS on curriculum development.** I had the opportunity to speak with several individuals involved in curriculum development. In speaking with these people, the consensus is that the training Bhutanese teachers received from TSS directly impacted the way new curriculum is being written in Bhutan. I spoke with one male teacher who completed the Teton Science Schools graduate program and was in the middle of a curriculum writing session at the time of our meeting. His impression was that PBE is present in most of the new curriculum. He said, "I can assure you, at this time, PBE can be found in every nook and corner of Bhutan" (Interview 12, personal communication, 2016).

**Sharing with other teachers.** When teachers attend a professional development workshop of any kind, they are required to lead a School Based In-service Program (SBIP) to share what they learned with the other teachers in their school. Many of the teachers have support from their principals, who encouraged them to connect to place and use new strategies learned from TSS. Two teachers who live in the same district were able to collaborate and co-

present at SBIP's in each others' schools. One teacher was asked by the principals of two nearby schools to present about PBE to their teachers. Through these SBIP's, some of the ideas from the TSS workshops are being disseminated by the TSS workshop participants to other teachers. Most of the SBIP participants are receptive to PBE from workshop participants, although misconceptions may be formed about what PBE entails. As with TSS workshop participants, SBIP's may lead teachers to believe PBE is as simple as going outside or using one strategy. In spite of the nature the possible shortcomings of the SBIP's, ideas from the TSS workshops are being multiplied beyond the individual workshop participants.

Workshop participants discussed how they responded to the concerns of their peers. Several participants said they explain that connection to place can be made inside the classroom. They can improvise their own materials, using what they have rather than buying expensive school supplies. Some of the teachers and administrators explained that the curriculum, while important, should be seen as a guide that allows for creativity.

### **Challenges Identified by the Study**

There were distinct commonalities in the perceived challenges to adopting PBE. Challenges to educational reform are manifested in different ways, dependent on available resources, location, and systemic factors. Similar themes were noted among teachers, college lecturers, and administrative staff (Figure 8).

**Time constraints.** Time constraints were by far the largest perceived challenge to implementing strategies and ideas learned from TSS. Schools usually have fifty minute blocks and large class sizes, so teachers do not have enough time to take students out of the classroom. Their SBIP participants foresaw time constraints as standing in the way of exiting the classroom or adopting new strategies. Several teachers responded by stating that although time may be

short, they can still make meaningful connections to place through the use of strategies which bring the place into the classroom.

**Lack of support.** The second-greatest documented challenge in the survey was lack of support or resistance from their peers or principals (Figure 8). Some of these responses involved teachers feeling outnumbered due to peers demonstrating general disinterest in changing their practices. Others were told not to diverge from the curriculum in any way. Teachers suggested that one answer to this challenge is increased external support from either TSS or the REC, through observational visits to the schools by faculty.

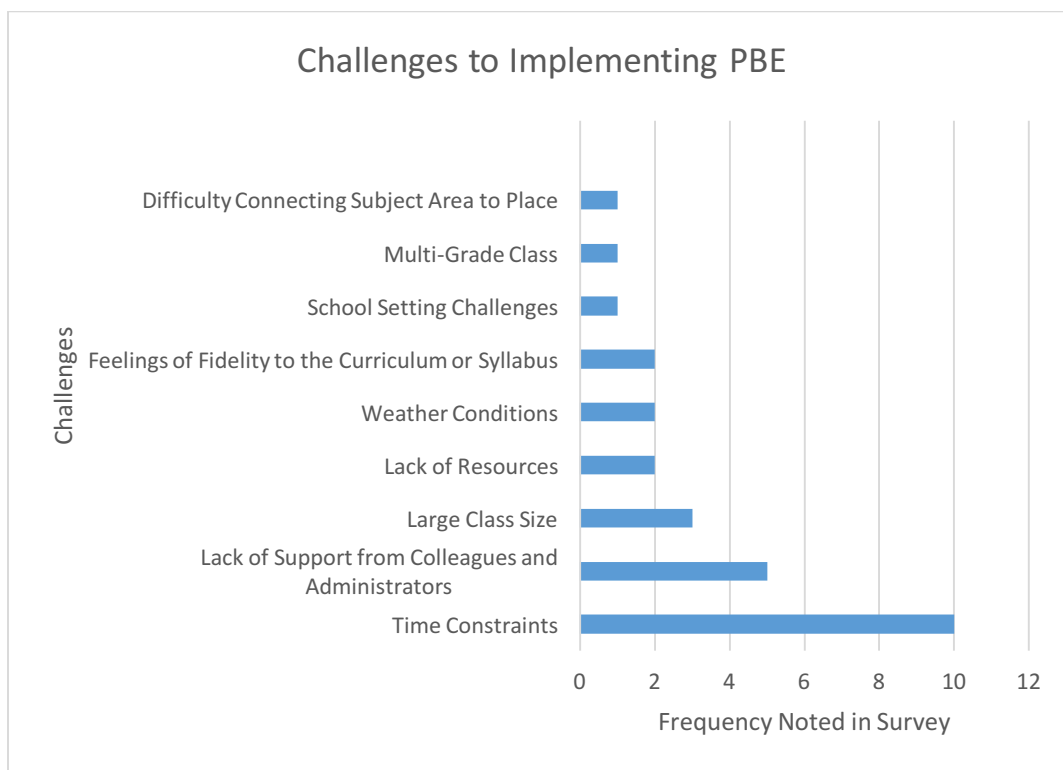
**Fidelity to the National Curriculum.** This challenge is related to the issue of strong fidelity to the national curriculum. Although this response received a low frequency value of 2 in the survey (Figure 8), the interviews revealed that many of the teachers feel as though they are not allowed to divert from the curriculum. One teacher was particularly adamant about this point when he said during a group interview, “We have no right to go against the curriculum. But if they change the curriculum, with these strategies, we are going to focus on content more than these activities, we have only right to take the curriculum, we have no right to change” (Interview 8, personal communication, 2016). The other three participants nodded in agreement. This theme emerged among other teachers and college lecturers. However, when curriculum developers from the REC were asked about this trend of fidelity to the curriculum, their response was that the curriculum is meant to act a guide for teachers, not a strict law. According the REC, flexibility and creativity should be encouraged. In this case, there is a clear divergence between the perceptions of teachers and those of curriculum developers.

**Lack of resources.** A lack of resources and teaching materials is another commonly mentioned challenge. Participating teachers, college lecturers, and members of the REC noted

that limited resources limited their ability to change their educational practices. At times, teachers may not have easy access to supplies like pencils or computer paper. However, other teachers have countered this argument, claiming that it is possible to improvise and use recycled materials.

**Challenges with location.** There are challenges associated with location as well. Some of the teachers live in very remote villages, miles from the nearest road. In such remote places, internet access and electricity are not always present. One teacher commented that her school strongly discourages taking students outside because of the risk of venomous snakes and insects. Others commented that they tried to keep their students indoors to avoid hot temperatures.

**Other challenges.** Other challenges emerged with lower frequency. One teacher mentioned that her students found it difficult to adjust to changes in educational methods, such as working together on group projects, developing research questions, and understanding that class can take place outside. A math teacher commented that he was unsure how he could connect algebra or calculus to his place. Large class sizes and multi-grade classes were other concerns which inhibited teachers due to the logistical challenges associated with one teacher managing many students (possibly over 45 in one classroom). Several of the teachers demonstrated misconceptions about PBE. The most prominent misconception was an understanding of PBE as a set of certain strategies, not necessarily connected to place.



*Figure 8.* Challenges to implementing PBE. This graph shows the frequency different challenges were noted in the survey.

**Feedback from the Teachers.** The workshop participants generally expressed their contentment with the TSS workshops. A few, however, were willing to share their own concerns or requests. One female teacher suggested that the REC should conduct follow-up observations to ensure that workshop participants are implementing what they learn,

I should say, that it is a very good workshop and it is very beneficial for the educators in Bhutan. And then, the only thing bad is, we need a follow-up. We want the resource person to know how we are implementing in the school. So if you could do that, then everyone would implement. It's like this, because we attend the workshop and then after we go to the school, we just leave it like this, so if you can do a follow up and check if they are implementing or not, and go for observation, then it would be very good.

(Interview 1, personal communication, 2016)

Other teachers said that five days was too short and that longer workshops would allow them to become more familiar with the content. One teacher said that she would like to see more demonstration from the facilitators. Another individual questioned whether or not it was necessary for teachers to participate in TSS workshops more than once.

### **Supports for change in the system**

There is evidence to suggest support for positive change within the Bhutanese education system. For example, in my review of primary school curriculum, I found multiple examples of place-based strategies in textbooks. These examples often included the introduction to a text or summary questions at the end of a chapter encouraging teachers and students to engage their place. All of the teachers involved in this study were interested in finding new ways to teach and improve. Administrative personnel in the REC and the Samtse College of Education were enthusiastic about the need to incorporate new ideas into their education system. A desire for positive change is present in both the educational community and the Bhutanese culture at large.

### **Workshop facilitators**

A number of participants noted the influence of the workshop facilitators. One young teacher was especially impressed with the facilitators in 2015. After attending his first TSS workshop, he was inspired to bring energy and intention to his teaching. Several teachers shared the results of their own end of the year assessments, from which they gathered significant feedback on the quality of their teaching from their principals and their students. When explaining these assessments, the teachers tended to preface by promising that they were not trying to make themselves look good. The teachers who referred to these assessments said that their students and principals had very good things to say about their teaching style.

### **Insight from members of the Royal Education Counsel**

The four members of the REC had similar things to say about the impacts of the TSS workshops on the Bhutanese teachers. These people receive feedback from TSS participants as well as other teachers and administrators about the impacts of the workshops on the education system. In their perception, TSS has been able to equip teachers to teach in a way that is appropriate for their circumstances. Bhutanese teachers are often located in remote areas with limited resources. TSS' workshops have helped teachers learn how to use the locally available resources. One of the program chiefs from the REC believed that action research and inquiry were two of the most valuable contributions of TSS to the Bhutanese education system. This same man was able to apply the science circle to problem solving in his own life.

**Optimism in the REC.** Within the REC, there is a sentiment that the Bhutanese education system is slowly moving away from teacher-centered educational frameworks toward more student-centered frameworks. The work of TSS is helping REC participants make these desired shifts that they hope will make learning more meaningful for teachers and students. At the same time, one respondent from the REC stated that TSS' work could be more effective if they were able to train more people at once. While they are satisfied with the training that is taking place, they believe more wide-spread implementation of PBE trainings for teachers would result in a greater impact. PBE may be gaining greater popularity. A principal recently called this program chief asking for more information about PBE to implement in his school.

### **Samtse College of Education**

The two lecturers from the Samtse College of Education (SCE) with past TSS experience had their own perspective on the impacts of the TSS workshops on themselves and Bhutanese educators. These two men were involved in writing the new environmental science curriculum and incorporated ideas they learned from TSS into the work. As they look forward, they hope to



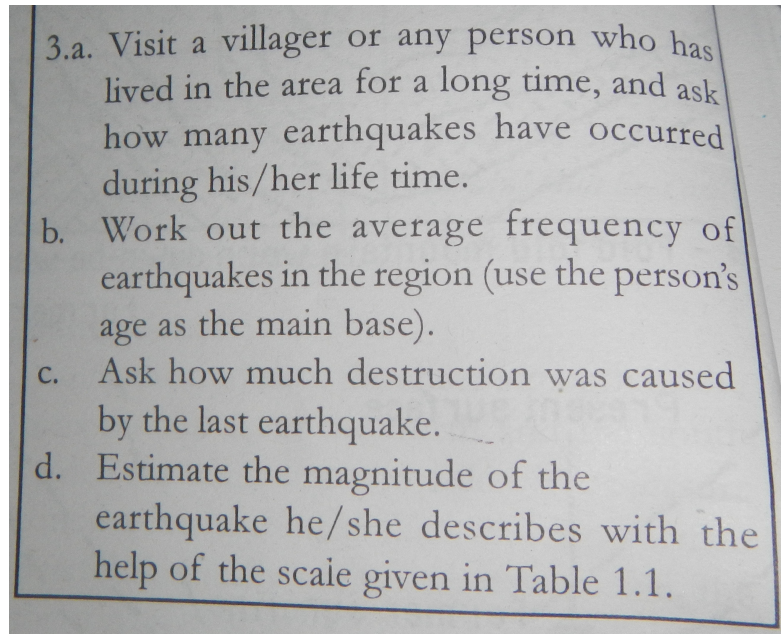
include place-based educational frameworks into all subjects in the curriculum. The lecturer said that inquiry was the most significant strategy he learned from TSS. He also noticed that the TSS facilitators rarely say no to a wrong answer from a student. Rather, they will listen to the student and try to understand what the student is saying.

**Challenges to Lecturers.** There are challenges facing the SCE lecturers. One challenge is the modular system they use, in which lecturers may get to teach the same course only once every three years. This system makes it difficult for lecturers to perfect their lessons through repetition. Similar to the primary school teachers, time is also a limiting factor to the lecturers. He felt that working with the colleges of education was a step in the right direction. In the past, his perception is that individual Bhutanese who were educated at TSS in Wyoming were lost in the system when they returned to Bhutan. By training a whole group of lecturers in the new Master's of Education program they may be able to produce a significant number of place-based educators. The fact that these lecturers are part of the same team, working together on a daily basis, he felt that they may be more successful in adopting PBE together than if they were trying to do it on their own. He also commented that many Bhutanese travel to the United States, Australia, and Europe for their education and returned with knowledge of educational philosophies such as PBE, experiential education, and environmental education. These ideas have been actively incorporated into new additions to the curriculum by people who understand them. However, there are few people in the colleges of education who are capable of training new teachers to understand new educational frameworks. Furthermore, when teachers in the schools receive new materials, there is often no one to teach them how to execute more progressive models of education in their classrooms.

### **Review of Extant Documents**

When reviewing the agendas of the workshops in 2013, 2014, and 2015, all three included leadership training and preparation to train other teachers in PBE. All three included transmitting what they call, “Best practices” of certain skill sets to the teachers. These skill sets were, “Teacher professional development, place-based education, science education and curriculum design” (TSS, 2015a). Finally, all three included contributing towards curriculum development as an objective. There is a noticeable difference in the participant outcomes between 2015 and 2016. In 2015, the first participant outcome is, “[Participants will] understand and apply best practices in place-based education, science education, curriculum design, and teacher professional development” (TSS, 2015a). In the updated agenda for 2016, the first participant outcome was modified, “[Participants will] understand and apply best practices in place-based education, inquiry, design thinking, curriculum design, action research, intentional culture, community leadership, and instructional excellence, and teacher professional development” (TSS, 2016).

Place-based examples were also seen in some of the curriculum materials. Figure 9 is an excerpt from a class 9 and 10 geography textbook. Following a lesson on earthquakes, the student is instructed to engage with other people in their place to develop an understanding of how earthquakes may have impacted their own home. Other examples from the curriculum were similar and found at the end of the chapter as part of a review or summative assessment. While activities such as the one shown in figure 9 are found in the curriculum, the question remains whether or not teachers are prepared or willing to help their students carry them out.

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- 3.a. Visit a villager or any person who has lived in the area for a long time, and ask how many earthquakes have occurred during his/her life time.
  - b. Work out the average frequency of earthquakes in the region (use the person's age as the main base).
  - c. Ask how much destruction was caused by the last earthquake.
  - d. Estimate the magnitude of the earthquake he/she describes with the help of the scale given in Table 1.1.

*Figure 9.* Example of place-based lessons in the curriculum. This page is found in a class IX and X geography textbook.

### **Summary of the Analyses**

The analysis draws from the interviews, survey, observations, and extant documents. Together, the data revealed several positive impacts on teachers. There is evidence to suggest that preservation of the natural environment has received higher priority with teachers implementing PBE. Teachers' attitudes have changed towards themselves and to PBE. The analysis shows a connection between the work of TSS in Bhutan and changes to the national curriculum. Many teachers who have not participated in TSS programming are being taught by TSS participants during school based inservice programs. Challenges to educational reform also emerged, as did some suggested solutions from the participants and existing supports currently in place in Bhutan. Data from the REC, the Samtse College of Education, and the extant documents were also considered in the analysis. The implications of these findings will be discussed in the final chapter.

## Chapter 5

### Discussion

My study aimed to answer the primary research question, “What impacts, if any, do the TSS PBE professional development workshops have on Bhutanese teachers?” The data analysis showed that TSS has influenced the personal and professional lives of individual teachers. The literature and data from the study reveal a cultural foundation for PBE as well as a need for further teacher professional development and other forms of educational support. My study also identifies a number of ways the TSS workshops benefitted teachers and identified a few potential growth points.

It became clear from the literature that current educational reforms in Bhutan naturally follow the trend of the nation’s history. Educational reform in Bhutan can be seen as an experiment in balancing preservation of traditional culture with acceptance of modern innovation, such as medicine, technology, and education. In roughly 100 years, Bhutan was unified, adopted Western-style educational practices, embraced modern technological advances, and democratized. Bhutan is attempting modernize its education system through curriculum reform, university programs, and professional development for teachers emphasizing progressive educational frameworks. TSS’ greatest impact in Bhutan has been helping in the area of teacher professional development.

**Pedagogy.** My study was able to answer the supporting research question, “In what specific ways have teachers altered their planning process, instructional methods, and assessments by implementing content, skills, or experiences gained at a TSS workshop?” All 15 of the participating teachers reported adopting specific strategies from TSS workshops. While some of these strategies were not place-based in nature, the teachers reported positive results,

including better classroom management, better student performance overall, and improved relationships with their students. Most teachers were able to provide examples of place-based lessons and it is clear that many of the teachers have an understanding of PBE and how to create and implement place-based lessons. These examples included anecdotes about time spent in special spots, inquiry-based lessons in the local community, and the use of specific strategies to connect to place in the classroom. However, survey and interview responses indicated that misconceptions about PBE may be present among the participating teachers. For example, when discussing PBE in an interview, one teacher referred to the use of engagers and movers as place-based. Several other teachers referred to hands-on and student-centered learning as place-based.

**Preservation of Nature.** When asked interview question 9, “In what ways, if at all, are you using place to achieve promotion and conservation of the natural environment in your teaching practice? (Environmental component of GNH)” teachers shared their examples. Teachers are promoting preservation in Bhutanese schools. This is often done in essentially place-based ways, such as cleaning up litter around the school, teaching students how to grow plants, or creating artwork out of recycled objects. A majority of these examples were not clearly connected to what teachers learned from TSS. Rather, much of this behavior was done as part of a school club or an existing curriculum element. The strongest instances of place-based activity promoting preservation of nature were found in teachers’ descriptions of their special spots. These special spots were either a single place where class was held, or individual spots chosen by students in the school yard. In both types, teachers described their students having meaningful encounters with the natural environment. Deep connection to place also happens in these special spots.

**Teacher assessments of learning.** While the participating teachers are all using strategies from the TSS workshops, their assessments have not changed much overall. A few of the teachers commented on assessing student engagement by observing behavior. However, the primary method of assessment is still summative testing. This raises the question of whether or not significant changes in instructional methods can be made without equally significant changes in assessment.

**Teacher sentiments.** The overall sentiment towards TSS and PBE is very positive. Most of the teachers expressed gratitude to TSS during the workshop. Teachers were generally enthusiastic about the importance of connecting students to place and often pointed out the need for improvement in the traditional teaching style in Bhutan. The most common suggestion was that TSS should try to work with larger numbers of teachers. Interestingly, the workshops have benefitted the teachers in personal ways as well. Teachers reported feeling more confident to share ideas with their peers, improved relationships with their students, and increased pride in their work. These positive sentiments are important because they may lead to increased receptivity to TSS and PBE and increase the likelihood of teachers using what they learn in their classrooms.

**Curriculum development.** TSS has influenced curriculum development in Bhutan. From the interviews, small discussions with individuals, and exploration of the curriculum materials, two themes emerged. First, TSS has had a direct effect, through interactions with individual curriculum developers and teachers who are involved in the curriculum writing process. On the other hand, as one Samtse College of Education lecturer commented, PBE is not the only progressive educational framework known in Bhutan. People have traveled to other countries to study education and returned with ideas such as student-centered learning, outdoor education,

adventure education, and environmental education. These philosophies can have significant similarities with place-based educational philosophy and are likewise being incorporated into new curriculum. The degree to which these various educational philosophies are blended in the minds of Bhutanese educators is not within the scope of this study. Due to the fact that the term PBE was not being used explicitly in the colleges of education or within the national curriculum prior to this study, a clear vision of TSS' influence on Bhutanese curriculum is yet to be determined.

**Impacts on non-participating teachers.** All workshop participants are required to conduct a School Based In-service Program (SBIP). From this study it can be safely stated that content from the TSS workshops is being spread by proxy of the participants to many more teachers across Bhutan. However, the scope of this secondary influence is not within the scope of this study. There may be many more unidentified misconceptions about PBE and TSS workshop content among the participating teachers. After spending a relatively short period of time in the workshops, it is likely that the positive influence of the SBIP's on participating teachers is limited. However, the simple benefit of encountering new ideas and possibly adopting helpful new strategies should not be discounted.

**Challenges and Supports.** There are many significant challenges facing educational progress in Bhutan. The greatest of these is the absence of a cohesive educational framework for the nation. Bhutan currently has a national curriculum which is applied across the country. While the curriculum itself is not within the scope of this study, it is possible to comment on whether or not teachers are prepared to teach the curriculum in effective ways. Administrators from the REC in Thimpu, lecturers at the Samtse College of Education, and individual school teachers from across Bhutan have different conceptions about the proper way to approach and teach the

national curriculum. Yet, individuals from all three of these groups voiced the need for improved teacher professional development on the national scale.

Bhutan is not without hope. When the history of education in Bhutan is reviewed, a theme of relatively rapid progress emerges. The fact that Bhutan has entered the 21<sup>st</sup> century in so many ways, including democratic elections, the internet, and an entirely Bhutanese educational curriculum is noteworthy. A determination to advance their education system while maintaining their Bhutanese culture is evident across the system. Bhutan is ready to adopt PBE because many people are experiencing changes in the way they relate to their communities. Older generations watched their communities change quickly and see significant differences in the ways some people live now compared to years past. For this reason, PBE, with its emphasis on connection to the local environment and community, resonates with many Bhutanese.

### **Limitations**

As I consider the limits facing progress in Bhutan, I am conscious of my own limitations as a researcher. My interpretation of the data was limited by my personal experience. First, I encountered Bhutanese culture for the first time during my data collection. My lack of experience with the culture and education system inhibited my ability to perceive cultural cues and fully grasp the context in which the TSS workshops took place. As I perceive these shortcomings, I conclude that it will be advantageous for Bhutan to increase its “research capacity,” defined as the ability of a country to carry out its own educational research (Crossley & Holmes, 2001, p. 401). In this way, Bhutan can encourage local teachers to be their own evaluators, and to therefore help to shape their education system in a way that will be more tailored to the needs of their country.



My affiliation with TSS may have led to misconceptions or ingenuous responses from the participants. If participants felt as though I was assessing them, they may have highlighted their successes over their shortcomings in their responses. I am also aware that some participants may have chosen to provide more positive responses in an effort to maintain good feelings between TSS and themselves. Although I attempted to make it clear that my study was evaluating TSS and that I was operating as a University of Wyoming student, misconceptions may have developed due to cultural and linguistic barriers.

Another limitation of this study is its short duration and small sample size. A clearer picture of the impacts of TSS workshops can be gained by taking a closer look at past data collected by TSS and by conducting similar studies in the future. In order to draw stronger conclusions, future studies should observe and assess teachers in their classrooms with their students before and after attending a TSS workshop.

There are ethical questions that arise from this study as well. First, although some areas of Bhutan's education system are adopting place-based strategies, national assessments are entirely based on exams. National academic assessments are high-stakes for Bhutanese students with specific professional goals. If a student receives a low score, they may not go on to study to be a doctor or engineer. While participating teachers at TSS workshops are encouraged to use place-based strategies, they may feel caught between the use of new strategies and preparing students for assessments that are largely focused on memorization of content. Second, the fact that PBE is introduced by white, affluent, foreigners who are endorsed by the Bhutanese government is another area which requires further consideration. It is possible that participating teachers and supportive Bhutanese officials feel drawn to PBE or express their satisfaction with the workshop content more so out of a desire to affiliate themselves with people of a higher

social class (white and affluent) than out of genuine interest or desire to change their teaching practices.

### **Further Considerations**

On one hand, it makes sense for TSS to invest time in the SCE lecturers. In doing so, they will be able to multiply place-based educators in the new instructor pool. On the other hand, the benefits of investing in the professional development of experienced teachers may outweigh the prospect of training new teachers in a university system which at this time lacks in crucial resources and funding. TSS has limited access to time, resources, and funding and therefore must make strategic decisions as they move forward in their work in Bhutan. As some of the Bhutanese have suggested, TSS may be wiser to invest in opportunities that develop the capacity for Bhutanese trainers to conduct PBE professional development workshops of their own.

### **Recommendations**

Informed by the data analyses, there are four recommendations for the Teton Science Schools.

- 1) The literature supports professional development that is recurrent and on-going over many years. Bhutanese teachers have also asked for more support after the workshops. While some Bhutanese teachers have had the opportunity to attend TSS programming three or more times, many attend only one 5-day workshop with a single opportunity to submit a report of how they are implementing what they have learned. Possible solutions include online discussion forums where workshop participants from Bhutan and the United States could share lesson plans, challenges, and strategies. Selecting two or more teachers from one school could also potentially provide more on-going support and prevent individual teachers from feeling isolated in their attempts to change their teaching methods.

- 2) TSS will benefit from further exploring the ethical nature of promoting their educational style with teachers who are held accountable by an education system that does not yet fully take PBE into account. While Bhutanese teachers, curriculum developers, administrators at the Colleges of Education, and the REC may be supportive of adopting more place-based and student-centered methods, the national academic assessments have not yet seen similar changes.
- 3) The TSS workshop facilitators intentionally model their strategies as they lead the workshops. However, working with 15 engaged adult teachers is a different teaching experience from what the participants described. For example, a Bhutanese teacher may work with up to 50 class V students at a time in a small room with limited access to electricity. While timing and resources may limit the possibilities, modeling PBE within the context of a Bhutanese classroom with Bhutanese students will provide a more realistic example of how TSS wants teachers to implement specific strategies. Likewise, giving the participants the opportunity to teach within a context similar to their own classroom while receiving immediate feedback from peers and facilitators may also help participants to make meaningful connections between the workshop content and their own teaching practice.
- 4) Some curriculum developers and members of the REC see PBE as integrated within the national curriculum and they view the curriculum a flexible guide for teachers. On the other hand, many teachers have conflicting views, seeing PBE as a completely new idea and viewing the national curriculum as a rigid structure that teachers must not deviate from. TSS PBE workshops with curriculum developers may help to create more unity between curriculum developers and teachers. Inviting curriculum developers to participate in TSS

workshops alongside teachers may also help to correct misconceptions about PBE and the national curriculum among participants.

## **Conclusion**

The process of completing my study was challenging and produced growth in me as a researcher and educator. As a graduate of the Teton Science Schools Graduate Program, I was surprised to hear Bhutanese workshop participants use similar expressions as my peers to describe the impacts of TSS and PBE. My impression is that there are many more similarities than differences between teachers in Bhutan and in the U.S.A. This study also showed me the importance of school leadership, national educational policy, and infrastructure. While an individual teacher may wholeheartedly adopt a new educational philosophy and set of strategies, their ability to put their vision into action will be influenced by their cultural and physical circumstances. Finally, this study inspired me to continue pursuing a career as an educator.

**TSS Future Strategy.** TSS has impacted the participating teachers in multiple positive ways. Teachers benefitted from new educational strategies, philosophies, and frameworks which have led to teacher reported changes in their students' engagement, performance, and class culture. Other non-participating teachers and principals have also benefitted by learning from participating teachers. Teachers have benefitted in much more personal ways as well, making changes to the way they view the world or raise their own children. Beyond the impacts on individual teachers, it is apparent that TSS has influenced curriculum development in ways that were not measured by this study. TSS has also encouraged leadership in the Samtse College of Education and the REC to consider more place-based educational frameworks.

While TSS has benefitted individuals and some parts of the education system in profound ways, this study was not designed to ascertain the affects of TSS programming on the national

level. Further research will need to be done to understand the full scope of TSS' reach in Bhutan. Likewise, more concrete recommendations as to the most appropriate next steps for TSS and Bhutan may be determined by more comprehensive studies. It is clear that present endeavors by TSS and the REC are improving education in Bhutan. With continued collaboration and investment of time, resources, and personnel, transformative results are possible.

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## Appendix

### Appendix A: Survey Questions

1. Name: \_\_\_\_\_ Age: \_\_\_\_\_  
Gender: \_\_\_\_\_
2. What class level(s) and subject(s) do you teach?
3. How many years have you been a teacher?
4. What (if any) other TSS programming have you participated in the past?
5. Please define place-based education:
6. What impacts (if any) do the TSS place-based education workshops have on Bhutanese educators?
7. What (if any) difficulties have you encountered in using place-based education? Please provide examples.
8. What (if any) successes have you experienced in using place-based education? Please provide examples.
9. As a result of participating in TSS workshops:
  - a. Have you made any changes in the way you teach?
  - b. If so, what place-based strategies do you implement in your teaching?
  - c. Please provide any examples:
10. As a result of participating in TSS workshops:
  - a. Have you made any changes in the way you plan your lessons?
  - b. If so, what place-based strategies do you implement in your planning?
  - c. Please provide any examples:
11. As a result of participating in TSS workshops:
  - a. Have you made any changes in the way you assess your students?
  - b. If so, what place-based strategies do you implement in your assessment?
  - c. Please list any examples:
12. Please share any other thoughts or opinions about the TSS workshops and place-based education:

## **Appendix B: Interview Questions**

1. Why did you become a teacher?
2. What are your goals as a teacher?
3. What impacts, if any, do the TSS place-based education workshops have on Bhutanese educators?
4. What are some things a “bad” teacher would do?
  - a. What about a “good” teacher?
  - b. Have you witnessed any good teachers in your school?
  - c. Where do you think you compare in this regard?
5. Please share with me your thoughts regarding the effectiveness of place-based education with your students. Please provide an example.
6. Please share with me your thoughts regarding the effectiveness of place-based education with your students. Please provide an example.
7. What (if any) impact have the TSS workshops had on you?
  - a. In your work as a teacher?
  - b. Outside of your profession?
8. What place-based education strategies, if any, do you feel most confident implementing?
9. In what ways, if at all, are you using place to achieve promotion and conservation of the environment in your teaching practice? (Environmental component of GNH)

## **Appendix C:**

### **University of Wyoming Informed Consent Form**

#### **I. General purpose of the study:**

The guiding question of my research is, “How have the Teton Science Schools place- based workshops in Bhutan impacted the practice of participating Bhutanese K-12 teachers and university lecturers?” My Master’s research will provide a formal assessment of the Teton Science Schools’ (TSS) place-based education workshops in Bhutan. Place-based education is a broad term which includes educational strategies focused on teaching students within the context of their local natural and cultural surroundings. These workshops are conducted with the support of the Bhutanese government for the professional development of teachers in the Bhutanese school system. The current relationship between TSS centers around these workshops. My hope is that by conducting this research, I will be able to provide valuable insight into the effectiveness of the TSS workshops to support teachers’ ability to achieve their goals. My work will focus entirely on Bhutanese teachers’ perceptions of how implementation of place-based education principles have altered their teaching practice.

#### **II. Procedure:**

This study involves research. The study will be conducted within the framework of the TSS workshop by Mr. Nicholas Koinis. The purpose of this research is to increase understanding of how Bhutanese teachers apply place-based education strategies to their teaching practice. Participation in this research will equal up to 50 minutes, devoted to one-on-one interviews (to be video-recorded) and completion of the research questionnaire. The researcher will also conduct observations of the workshop activities.

#### **III. Disclosure of risks**

The risks involved in this study are minimal. Some participants may feel uncomfortable providing critical feedback regarding the Teton Science Schools place-based workshops. However, all data will be secured in either a locked cabinet or on a password-protected computer. The final report from this study will not include the names of any participants.

#### **IV. Description of benefits:**

Participants will receive a small token of appreciation from the researcher in thanks for their appreciation. Participants may also receive the benefit of adjustments made to future workshops and professional development training in response to the findings of this study.

#### **V. Confidentiality:**

All paperwork from this study will be kept in a folder in a locked filing cabinet in the researcher advisor’s office for 1 year. All electronic and recorded data will be kept on the researcher’s personal password-protected computer. All names and identifying information of participants will be removed in the final report of this research.

#### **VI. Freedom of consent:**

Participation in this study is voluntary. Refusal to participate will involve no penalty or loss of benefits. Participants may discontinue participation at any time without penalty or loss of benefits.

**VII. Questions about the research:**

If you have questions about your rights as a research subject, please contact the University of Wyoming IRB Administrator at 1-307-766-5320. If you have pertinent questions about the research, please contact Dr. Kate Muir Welsh at 1-307-766-2013, [kmuir@uwyo.edu](mailto:kmuir@uwyo.edu).

**VIII. Interview Type Preference:**

Please circle which type of interview in which you would prefer to participate:

One-on-one

Focus Group