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Evidence of Place-based Education in Costa Rican High Schools

By

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Plan B Project

Submitted in partial fulfillment of the requirements
for the degree of Masters in Science in Natural Science Education
in the Science and Mathematics Teaching Center
at the
University of Wyoming
2019

Laramie, Wyoming

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Abstract

Place-based education (PBE) is a contemporary approach to education that aims to create meaningful connections between schools, communities and local resources. It brings value to students' learning because it is contextualized in the places that matter to their lives and creates a heightened sense of responsibility. The sense of place is the essence of PBE and it's a personal interpretation and affiliation to the stories that places carry. However, in our modern era, this sense of places is changing to address global development priorities, rather than local. Therefore, a disconnect exists between the student's lives, the local reality and the outside world, which subtracts meaning to education. Gruenewald (2003a) proposes a new engagement with the world through effective authentic critical place-pedagogy that uses education strategies to increase awareness, participation and change to local matters while looking at global issues. PBE is not included purposefully in educational contexts in many schools, although teachers make connections to place all the time. Different applications of this philosophy can be found in secondary schools, but without clear goals or outcomes.

This study provides evidence of PBE in secondary schools in Costa Rica, based on the teacher's personal perceptions. Gruenewald's five dimensions of place (perceptual, sociological, ideological, political and ecological) were used to interpret survey and interview data. Findings provided meaningful evidence of PBE principles in Costa Rica. Additionally, challenges, opportunities and recommendations were identified to improve the practice of PBE in the country.

Resumen

La educación basada en el lugar es un enfoque contemporáneo en la educación, que tiene como objetivo crear conexiones significativas entre los colegios, las comunidades y los recursos locales. Aporta valor al aprendizaje de los estudiantes porque se contextualiza en los lugares que son importantes para sus vidas y crea un mayor sentido de responsabilidad. El sentido del lugar es la esencia de la educación basada en el lugar, es una interpretación personal y afiliación con las historias que los lugares poseen. Sin embargo, en la era moderna, el sentido de lugar está cambiando para satisfacer las prioridades globales de desarrollo, en lugar de las locales. Por lo tanto, existe una desconexión entre la vida de los estudiantes, la realidad local y el mundo exterior, lo que resta significado a la educación. Gruenewald (2003a) propone una nueva conexión con el mundo a través de una pedagogía auténtica y crítica del lugar, que utilice estrategias educativas dirigidas a aumentar la conciencia, la participación y el cambio hacia los asuntos locales, mientras se analizan los problemas globales. La educación basada en el lugar no se incluye intencionalmente en contextos educativos en muchos colegios, aunque los maestros hacen conexiones con la comunidad y lo local todo el tiempo. Se pueden encontrar diferentes aplicaciones de esta filosofía en las escuelas secundarias, pero sin objetivos o resultados claros.

El presente trabajo proporciona evidencia de la educación basada en el lugar, en escuelas secundarias en Costa Rica, basado en las percepciones personales de profesores. Las cinco dimensiones de lugar de Gruenewald (perceptual, sociológica, ideológica, política y ecológica) se utilizaron para interpretar datos de encuestas y entrevistas. Los hallazgos proporcionaron evidencia significativa de los principios de esta filosofía en el país. Además, se identificaron desafíos, oportunidades y recomendaciones para mejorar la práctica de la educación basada en el lugar para Costa Rica.

Acknowledgments

I would like to express my immense gratitude to Dr. Kate Welsh for her guidance, understanding and patience through all this time. I would like to thank my committee members, as well as Sylvia Parker, Lindsay Serrell and Shaleas Harrison. Additionally, I also thank the staff and friends at the university who supported me in many ways. Finally, my immense gratitude goes to my loving wife and my family who were my biggest source of encouragement.

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Chapter 1

Introduction

Place-based education (PBE) is an educational philosophy that is gaining increasing presence in classrooms worldwide due to its potential to improve student's learning and simultaneously improve community life. It connects a school's curricula to a deep sense of belonging and care for their immediate environment, culture, people and community values. PBE is an apt approach for student's education in today's globalized world, where both communities and schools seem to be absent from the local issues that are relevant to student's lives.

In this study, secondary education schools in Costa Rica were examined to find evidence of PBE principles, through teacher's place perceptions. This is relevant as there are very few publications that discuss the context and practice of PBE in Costa Rica and how education can be improved by this educational philosophy. This evidence was obtained from the analysis of quantitative and qualitative data using Gruenewald's framework of place (Gruenewald, 2003a). The findings showed what PBE principles exist in the country and additionally, the challenges, opportunities and recommendations that can be considered for the improvement of PBE in Costa Rica.

A Theory of Place-Based Education

David Sobel defines place-based education in these words:

Place-based education is the process of using the local community and environment as a starting point to teach concepts in language, arts, mathematics, social studies, science, and other subjects across the curriculum. Emphasizing hands-on, real-world learning experiences, this approach to education increases academic achievement, helps students

develop stronger ties to their community, enhances student's appreciation for the natural world, and creates a heightened commitment to serving as active, contributing citizens. (Smith & Sobel, 2010, p.23).

The origins of PBE can be found in the history of the first civilizations. For centuries, indigenous tribes have cultivated a deep connection to their immediate surroundings and their people. Adults had to make sure that their young would be part of their community's traditions, knowledge, culture, for survival and to sustain themselves for many generations (Smith & Sobel, 2010, p.25).

Costa Rican indigenous tribes didn't have family groups as we know them (father, mother, siblings, etc.). They considered themselves descendants from the sun, the moon, animals, plants, seeds, rivers and other elements from their surroundings (Estrada Torres, 2012). Place was not only part of their ancestry, but it was an integral part of their beliefs, traditions, and daily activities. The bond between humans, nature, and the spiritual, is the most basic expression of how people develop a sense of place anywhere.

The conversation about the meaning and construct of place has been the subject of study in geography and other sciences for decades. Traditionally scholars devoted their energy to create definitions about the physical space and how it is organized. In the 1970s, a more humanistic and cultural theory of place initiated, recognizing that the most important element in explaining space is the human being. New theories defined place beyond physical spaces, to then support the notion that places are the products of historical events, stories, emotions, and meanings that people give to a particular location (Ramos de Robles & Feria Cuevas, 2016, p.85).

The specific connection between the concept of place, communities and pedagogy is slightly more recent and has been inspired since 1987 by authors like Bowers, Smith, and Orr (Smith & Sobel, 2010, p.22). Institutions such as the Foxfire Fund, the Orion Society, the Rural School and Community Trust, and the Place-Based Education Evaluation Collaborative (PEEC) have expanded the understanding of PBE (Powers, 2004, p.17). Their work has advanced research, training and curriculum development that integrates classroom learning, community involvement and capacity building in favor of community development and classroom practice.

Based on their successful work, PEEC summarizes the positive outcomes that PBE programs bring to their participant schools: 1) teacher's practice improvements; 2) use of local places for teaching; 3) student engagement in learning and excellence in academic performance; 4) student civic engagement; 5) student spending time outdoors; 6) student stewardship behavior; 7) community civic engagement; 8) and better community planning & decision making processes (Duffin, Powers, Tremblay & P. A., 2004, p.3).

Numerous examples of the benefits of PBE can be found worldwide. For instance, in Australia, aboriginal and agricultural rural schools struggle to adapt to mainstream globalized education. However, they have identified that learning about their indigenous stories and using school place-based projects (i.e. cultural heritage, aquaculture training, viticulture) supports their learning and can also yield economic prosperity over time (Bartholomaeus, 2006). In schools in Malawi, traditional ecological knowledge is essential to the preservation of nature and place. Protecting their environment is related to their tribal cosmology and it's passed on to students through place-conscious pedagogies, thus stimulating environmental stewardship (Glasson, Frykholm, Mhango, & Phiri, 2006). In Ecuador, PBE allows for a multicultural approach by complementing current indigenous knowledge in rural schools with westernized science concepts

to achieve higher learning results (Schroder, 2006). In Costa Rica, the connection to place is manifested in the school's curricula through environmental education, civic education, and social studies, particularly providing students with a strong sense of ecojustice and citizen's agency (Cruz, Selby, & Durham, 2018; Jiménez, Monroe, Zamora, & Benayas, 2017; Locke, 2009; Suárez, 2008).

Modern education systems limit the ability of teachers to include PBE in their practice. These systems use generalized, standardized and decontextualized curricula that serve the political and economic purposes of governments (Jennings, Swidler, & Koliba, 2005). In the early 20th century, authors such as John Dewey and William Kilpatrick reported signs of a disruption between schools and community matters. This was driven by the school's centralization and standardization processes which ended in marginalization and absence of meaning to students (Greenwood & Smith, 2008). Barry Lopez stated in the 1990s that local communities were showing signs of disconnection to place, driven from colonization forces. He called it “an absence of *Querencia*” (term in Spanish) or lack of “abiding love for a place that leads into its care and stewardship...” (Smith & Sobel, 2010, p.37). Without *Querencia*, locals lose interest in community matters, disengage social and culturally and might even migrate in search of new unfamiliar experiences.

When PBE is included in education systems, school and community life goes through a distinct process of positive transformation. Evaluations from PBE programs evidence a progression: 1) schools and local members collaborate to design curricular and educational goals and strategies; 2) student academic achievement improves; 3) students develop more interest in their community; 4) teachers are inspired by their efforts; 5) and community members are more connected to school matters (Powers, 2004). There is also evidence about how this PBE

transformation process can also bring long term results to the community's economic development, as well as increased prosperity, employment, and environmental protection (Howley, Howley, Camper, & Perko, 2011).

Problem Statement

Costa Rica's education system is modern, inclusive, geographically comprehensive, and well-funded. A constitutional reform from 2011, designated 8% of the gross domestic product to the national education budget (Programa Estado de la Nación, 2019, p.119). The goal was to promote that all secondary education was mandatory and accessible to increase the graduation rates in high school and therefore, increase employment and professional careers (Programa Estado de la Nación, 2019, p.122). As a follow-up to this change, in 2016, the Ministry of Education approved a national education reform, under the banner of "education for a new citizenship." This includes new approaches to study programs, content, teacher training and evaluation with the most explicit connections to place in the country's history. It promotes a diversity of ways to learn, live, relate with others and integrate with the world. The reform preaches that students need to acquire a global citizenship with local identity as a means to fortify and rescue our historical memories; to be conscious of who they are, where they come from and where they need to go (Ministerio de Educación Pública, 2015, p. 12, 24). It also encourages active citizenship that improves democracy from the individuality of everyone, as well as collaborating collectively in communities.

However, according to the most current State of Costa Rican Education Report, we see a different reality (Programa Estado de la Nación, 2019). The Ministry of Education has not been very effective in meeting the goals of the new reform due to lack of teacher training, pedagogical tools, qualified educators, and effective supervision (Programa Estado de la Nación, 2019,

p.117). The report also indicates that the education regional branches don't have the operational capacity to support and supervise the new changes inside schools. Considering these limitations, it's unlikely that the reform's connections to place are happening in the classroom.

In addition, the education reform or the allocation of budget has not improved the student's academic performance in the country. In 2018, only 54.6% of Costa Rican students were able to graduate from high school; 23.3% were not studying or enrolled in any school; and 10.5% didn't complete their studies and couldn't find a job either (Programa Estado de la Nación, 2019, p.123, 147). To graduate from high school, students need to do one final exam at a national level (called "Examen de Bachillerato"). In 2017, the average national score was 71/100 and has been the same for almost a decade (Programa Estado de la Nación, 2019, p.147).

Costa Rica's education system is moving towards this new holistic vision; however, essential issues of implementation, academic performance, teacher's capacity and even socioeconomic realities do not allow the process to go further. It is not enough to know that science, civic education, math or social studies programs integrate notions of place, if the education system does not have the resources to implement it successfully in schools.

In Costa Rica, there aren't any associations between formal PBE theory and its national curricula and reform. Costa Rica's education system and community's livelihood can improve dramatically if PBE was to permeate into teacher place perceptions, school management and as a companion to the implementation plans of the Ministry of Education. Chances are that there is evidence of PBE in Costa Rican schools, that it may not be articulated, contextualized or purposefully imparted by teachers in the classroom. If evidence was to be found, recommendations can be given to guide teachers about including PBE principles, enhance learning and increase advocacy where students live.

Purpose of the Study

This mixed methods study intends to provide evidence of PBE principles in Costa Rican rural high schools. Although there are a few examples in the literature about this evidence in the country (Cruz et al, 2018; Jiménez et al, 2017; Locke, 2009; Suárez,2008; Sutherland & Swayze, 2012), little is known about how teachers perceive principles of PBE personally and in their classrooms practice. Providing this type of evidence can generate interest, reforms and lines of research to schools, community stakeholders, and government education agencies.

A convergent mixed methods design was used, and qualitative and quantitative data were collected in parallel. During the study, online surveys were used to gather and test evidence of PBE principles in different forms through the lens of Gruenewald's dimensions of place framework (Gruenewald, 2003a). Additionally, semi-structured interviews explored subjectively the teacher's notions with the same framework using content analysis. Online survey respondents and interviewees came from Costa Rican high school teachers in different rural public institutions across the country. The intention behind collecting both quantitative and qualitative data is to maximize information from two different designs, compare the evidence, and contribute to the country's body of knowledge.

Research questions

1. What PBE evidence exists from the educational perceptions of teachers in Costa Rican rural high schools using mixed methods?
2. What PBE challenges and opportunities can be identified based on the educational perceptions of rural high school teachers in Costa Rica?

Chapter 2

Literature Review

In this chapter, fundamental notions of place-based education are presented, starting with a definition of place. This definition changes as historical events happen in different parts of the world. Costa Rica received the influence of the historical events in Central America and a brief account of this past is shown, to understand the history of colonization and change of identity in the land. It is the role of education to acknowledge the history of a place and develop a sense of care for the community. Therefore, the role of education is explained, as well as the vision of how pedagogies of place help address social justice issues brought by modern colonizing economies. Moreover, a brief look into Costa Rica's education system reveals the existence of a reform that addresses place notions to solve global issues, but it might be far from effective. Finally, Gruenewald's PBE framework is suggested as a methodological lens to observe evidence of PBE in Costa Rica. An interpretation of the five dimensions of place is presented by the author, to guide the methodological work of this study.

Definition of Place

PBE departs from the discussion of what "place" means for each of us and it's a complex endeavor. The conceptualization of place has been extensively studied in geography, philosophy, anthropology, psychology, poetry, among others (Smaldone, Harris, & Sanyal, 2005). Places are intimate constructions that people create throughout their lifetime. In our interaction with places, we give meaning to them and they also provide us with our sense of place (Lim, 2010, p.901). Places can be created by the interaction of social (e.g. culture, traditions, human interactions), physiographic (e.g. landscapes, buildings, houses) and psychological (e.g. body, and mind) components (Lim, 2010, p.901). Van Eijck & Roth (2010) believe that these constructions of

place come from the combined experiences of each person, through time and space, community and the environment; and therefore, places become “living entities” where stories, culture, and personalities are formed.

As a result of these interactions in the world, places acquire meaning; we establish roots in them, we create historical events and individual experiences (Nogué, 2015). Lim (2010) refers to this idea as “place identity”, where memories, ideas, feelings, attitudes, values, meanings, and conceptions of behavior reside through time in the past and our present (p.901). From the classroom perspective, teachers need to explore student’s place identities, so that curricula can be contextualized and therefore, learning becomes real and attractive, causing students to feel more interested in improving their communities.

A Brief History of Place in Central America

A study of PBE in Costa Rica requires a look into the history of place in Central America. The events of the past might explain the place identity of individuals in the present. Agnew and Duncan (1989) examined the significance of place in the region through historical stages: pre-Hispanic, colonial, republican and modern. Between 250 AD and 900 AD, Mayan, Aztec, and related ethnic groups were the predominant groups in Mesoamerica. These groups had “place units,” called “calpullis,” kin-territories, where geographical spaces identified family identity, division of labor, natural resources and ancestry (Agnew & Duncan, 1989, p.161). In this era, place represented a physical space used for food, medicine and survival, but also, place had deep meanings to their traditions and idiosyncrasies.

A dramatic place-changing process happened during the European conquest (14th to 16th century). Aborigines were subjugated, exterminated and forced into adopting new social regulations, cultural artifacts, religious beliefs, political agendas, geographical urbanization, and

even segregation and diseases (Agnew & Duncan, 1989, p.165). During the 16th and 17th century places were contested through a process of “civilization by settlement.” Aboriginals were enslaved and manipulated within a colonial system where Spaniards, Portuguese, and British settlers battled heavily to dominate territories and impose their political agendas (Agnew & Duncan, 1989, p.166). The land was divided into colonial towns where Europeans lived comfortably; criollos (mixed natives) worked the land in agriculture and cattle ranching; and the few remaining indigenous tribes were enslaved or lived hidden in the jungle (Perez-Brignoli, 1989).

History continued in the 17th and 18th century into a long process of place-identity consolidation called by Agnew and Duncan (1989) as creolization. Eventually, after many generations, the few remaining aboriginals, the large population of criollos and European descendants, acquired a new cultural identity and strong patriotic identities towards well-established hegemonies. It was a point of transition between leaving old traditions and appraising new ones. Through emancipation, they were eager to find their place and individuality. Then, in the 18th century, heightened patriotism and hate for colonialism, triggered civil wars and different proclamation of independence across the Americas; and led to the creation of new republics (Mexico and Central American countries) (Agnew & Duncan, 1989; Perez-Brignoli, 1989).

Nowadays, each Central American country has their sovereignty and established geopolitical identity of place. However, the colonization story is not over yet. Costa Rica and other Central American countries struggle to keep up with domination from global economic powers and interests. The regional economies have seen how, through globalization, corporations and governments are satisfying the needs of larger economies, at the expense of local

development and progress (Roldán, 2004). Since the 1980s, Central America has suffered sustained effects of intensive monocultures, natural resources extraction and depletion, pollution and corporation's takeover (Roldán, 2004). As a result, governments have lost their ability to provide local employment schemes; local economies are collapsing; and poverty and immigration rates are increasing.

It is noteworthy to wonder if this historical account of place is present in the identity of Costa Ricans and whether it continues to tell a story of marginalization and abuse of places in the classrooms.

The Relationship between Place and Education

As history demonstrates, places haven't always portrayed positive memories. Places are complex crossroads of historical, geographical, sociological, ecological, and economic trajectories that intersect in the places where we live (Ault, 2008). Places can change from a long-standing, community-centered environment, to places that become fragmented by the influence of powerful economic forces, such as agriculture and industries. These forces can alter the land, bring outsiders, enforce foreign political agendas and completely change the traditional identity of towns. Therefore, with this fragmentation, places can be filled with fear, anguish, impotence, bewilderment, and loss of our natural surroundings (Nogué, 2015, p.159-160).

However, places also carry the memories of who we are and our most meaningful moments in our lives. Therefore, having a keen place identity brings a necessity to protect and care about communities. In this sense, McInerney, Smyth and Down (2011) propose that "place is a lens through which young people begin to make sense of themselves and their surroundings. That is where they form relationships and social networks, develop a sense of community and learn to live with others" (p.5). Furthermore, the authors expand:

[PBE] should be regarded as one of a number of pedagogies that have the potential to promote civic engagement, democratic practices, an ethics of care for others and the environment, and the fostering of values that are largely absent from individualistic and utilitarian approaches to schooling (p.13).

Such a utilitarian approach and the standardization of schooling is a common trend worldwide. It seeks to create students who are more aligned with the colonialist needs of governments, than the genuine needs of small local communities. Ault (2008) suggests that “through curriculum, a society seeks to re-create and reform itself. The curriculum needs to be made. And the making of curriculum must respond to the social aims of schooling” (p.606).

Towards a Pedagogy of Place

In the presence of communities that are losing their sense of place due to fragmentation, globalization and capitalism, what educational approaches are appropriate to create agents of change? Russell-Ciardi (2006) confirms that place-based education includes any educational approach that uses the local environment as the context for teaching and learning. The primary goal of place-based education is to inspire students about their local community and galvanize students to build a better future for that community (p.71).

Gruenewald proposes a “critical pedagogy of place” that goes beyond using school’s mandated curricula and that transcends by connecting students to their local issues (Gruenewald, 2003b). Gruenewald (2003a) states that, “Place-conscious education aims to reframe the discourse of democracy and accountability so that the character and quality of places, and our relationship to them, figure significantly in the purpose, process, and assessment of education” (p.11).

In a critical pedagogy of place, schools become democratic communities where student's voices are heard; students can participate in local decisions; and students learn how to become informed future leaders (Luna & Carreño, 2005, p.234).

Schools with a deep attachment to place, display a horizontal environment of dialog, collaboration, participation, respect and empowerment between students, teachers, parents, administrators, local leaders and other stakeholders (Jiménez & Murillo, 2011). With this critical vision of pedagogy, Central America might be able to break the pattern lived in its tumultuous past.

Education in Costa Rica

In Costa Rica, public education is divided into four blocks or cycles. First and second cycle corresponds to primary education (up to 13 years of age, and a total of 6 grades) and secondary education includes the third and fourth cycle (13 until 17-18 years of age). In secondary education, the 3rd cycle is composed of 7th through 9th grade, and 4th cycle is 10th and 11th grade. Students take basic subjects (e.g. science, mathematics, Spanish grammar, social studies, religion, civic education, etc.). During the last two years of secondary education, schools are either academic, (with a focus on science and humanities) or technical (Blum, 2008, p.7). In the technical emphasis, students take a 12th grade to complete their specialization certificate, which can be in arts, business, information technologies, commerce, engineering, tourism, agroecology, or others.

In the 1980s, the Costa Rican government acknowledged the negative consequences of an accelerated agricultural and natural resources-based industry, aimed to meet the economic growth policies. By then, a government effort initiated to mitigate the negative effects through conservation, ecotourism and environmental education. As a result, the Ministry of Education

revised the national curricula to include topics of environmental education, human rights, social justice, democracy and citizenship (Blum, 2008; Jiménez et al, 2017; Locke, 2009; Suárez, 2008).

By the year 2000, restructuring of the national curricula and specific content related to civic education and social justice became cross-cutting concepts in all subjects (Suárez, 2008) At this time, attention was also dedicated to environmental education and sustainability. Textbooks were infused with:

The promotion of values such as happiness, tolerance, hope, dialogue, love, and peace; requiring students to be taught about their interdependence on their biophysical, social, economic, political and cultural environments; and to participate actively in the detection and solution of environmental problems in their local communities and the rest of the planet. (Blum, 2008, p.5)

The most recent reform of the national curricula (approved in 2016) acknowledges the global state of education in the 21st century and the lack of including local matters in the classroom (Ministerio de Educación Pública, 2015). This reform outlines three keystone points of reference: citizenship for sustainable development; global citizenship with national identity; and virtual citizenship with social equity (Ministerio de Educación Pública, 2015, p.14). It suggests the use of transformative pedagogy that promotes critical thinking and reflection about world issues of power. In terms of “acquiring global citizenship with national identity”, the document expects students to acquire, as a cross-cutting concept, the ability to assume an active, reflective and constructive role in the local, national and global community, through human and ethical values social identities (Ministerio de Educación Pública, 2015, p.34).

Despite the comprehensive connections to place, apparent in Costa Rica's national curricula and education reform, clear deficiencies have been detected in teachers' practice (Programa Estado de la Nación, 2019). Teachers seem to lack training, vision and resources to implement a curriculum that addresses complex ideological topics such as notions of place, globalization, social justice, peace, democracy, and empowerment. These topics are within the context of PBE and require some training on how to incorporate them in teacher's instruction. These deficiencies are not new in the education world and have also been detected in PBE (Linnemanstons & Jordan, 2017, p.4-5). Teachers are invested in the content and benefits of PBE for their students, but struggle with finding specific place pedagogies.

A Framework to Study PBE

Many authors endorse the inclusion of a critical pedagogy of place in the classroom inspired by Gruenewald's theoretical framework (McInerney et al., 2011; Somerville, 2010; Sutherland & Swayze, 2012; Webber & Miller, 2016). Gruenewald advocates for a more inclusive PBE that criticizes oppressive forces in our society, decolonizes students and seeks the reinhabitation of their communities by looking into reestablishing local identity and citizens' agency (Gruenewald, 2003b, p.4).

The history of colonization in Central America and the effect of today's global economic and political domination in Costa Rica, requires this critical approach in the new education reform. Schools should be the driving force that provoke change in the local communities, as McInerney et al, (2011) suggests:

A critical perspective in PBE encourages young people to connect local issues to global environmental, financial and social concerns, such as climate change, water scarcity, poverty and trade. It invites teachers and students to question the established order, to

view how things are from the position of the most disadvantaged, and to work for the common good rather than self-interest (p.11).

Gruenewald suggests a new perspective on the world through effective place-pedagogy in the classroom and the identification of PBE evidence according to five domains: perceptual, sociological, ideological, political and ecological. These five domains also represent pedagogical dimensions where schools need to spend resources and include content, practice, reflection and advocacy, specific to place. This framework is fed from different schools of thinking (phenomenology, critical geography, bioregionalism, ecofeminism, education theory, etc.), as well as scholars' studies and research in general (Gruenewald, 2003a).

Gruenewald's focus is: 1) to bring place as a unit of analysis; 2) show that places are highly pedagogical; and 3) increase the inclusion of PBE in educational systems (Gruenewald, 2003a). Below is the author's interpretation and application of Gruenewald's five dimensions of place to be used in the methodological design:

1. Perceptual: this refers to each person's individual acquisition of the meaning of place. This represents an intellectual and emotional exercise into reflecting what a personal definition of place might be. Gruenewald acknowledges that places are "the ground for direct human experience"; and nowadays schools and governments, in the words of Thomas Berry, are making us "autistic" from the world (Gruenewald, 2003a, p. 3). A pedagogy of place reduces isolation and nurtures our personal sensory discovery of our surrounding assets to create self-meaning and belonging.

2. Sociological: this is the creation process where individuals shape places through social interactions and culture. To understand this sociological dimension, we need to understand

how people are connected to places; what traditions exist and how culture is manifested. It is also the “abiding love” or “Querencia” to place, that Barry Lopez describes (Smith & Sobel, 2010, p.37). People are place-makers and through our coexistence we give places their history and customs. We live in a globalized world where these interconnections are being lost and people are becoming placeless. Place-making and cultural interactions are highly pedagogical to students, as they unite the processes that shaped our history, to a current sense of democracy and advocacy.

3. Ideological: this is how a person defines their role or function in their place. It is parallel to the concept of citizenship, that is, our membership to a community and desire to live by its codes. It is the realization that as a community member, we depend on others (neighbors, institutions, services, natural resources) and therefore place is important to all of us. It also includes when issues and conflict arise, and we are in discontent. As Gruenewald (2003a) explains, places are “spaces where culture is reproduced” (p.5) and therefore social norms and power struggles exist. However, generally throughout history, power meant an occupation of the land by force and exploiting it for control and survival. A critical pedagogy of place recognizes what oppression forces might be changing our spaces and make students reflect about what just conditions they need for living. An ideological dimension of place related to all topics of social injustice.

4. Political: this refers to an individual’s ability to actively participate and advocate for their places. As students appraise the sociological and ideological dimension, a place also needs the active participation of its members, so it’s essential to develop an authentic sense of advocacy for our place and its relevant issues. It is also pertinent to remember that in our globalized world, dominating and marginalizing economies are prevalent. Mainstream education

serves these oppressive interests in most cases. A pedagogy of place should break the conventional, recognize our multicultural identity and use it to surface topics of unfairness and boost student empowerment.

5. Ecological: this is the connection between our appreciation of nature and the awareness of how actions as individuals impact our natural environment. An ecological dimension of place recognizes that our places have natural resources that we depend on, and citizens have a responsibility to protect them. Global economies continue down a path of unlimited consumption of natural resources and destruction of our planet. A critical pedagogy of place promotes respect for nature; take students outdoors; recognizes the protection of biodiversity; prefers local ways of production; and rescues the traditional ways in which our ancestors have lived with the land in sustainable ways.

Chapter 3

Methods

In this section, the research methods are described, starting with the rationale for the use of mixed methods. Then, a description of the sampling criteria follows for both the quantitative and qualitative data (online surveys and semi-structured interviews). Validation of the instruments happened with the support of an external Costa Rican education expert. Data was recorded in digital and analyzed through computer software. A brief description of the study's methodological place framework is explained. Written responses (excerpts) from surveys and interview transcripts were extracted for content analysis.

From this point forward, all participant quotes presented in the study were translated from the original Spanish sources by the author in combination with an online translator and spellchecker.

Study Design

Mixed methods are becoming frequent investigation approaches in education research to capture unique educational insights that sometimes are not represented by conventional methods (Check & Schutt, 2012). Mixed methods can explore different levels of the study problem, using the best of both quantitative and qualitative techniques and adds “interpretative richness” (Hernández Sampieri, Fernández Collado, & Baptista Lucio, 2014, p.550). Since evidence of PBE in high schools in Costa Rica is poorly understood, a mixed methods study can provide more clarity and depth to current knowledge. Other studies have been successful in incorporating mixed methods as a research approach to study underlying phenomena in PBE (Bertling, 2015; Buxton, 2010; Duffin & Perry, 2018; Powers, 2004)

Mixed methods are usually part of a pragmatic worldview where the researcher looks for the truth of the phenomena, based on a creative methodological scheme. Creswell (2014) believes that the pragmatic researcher “looks at what and how to research,” based on the study intentions (Creswell, 2014, p.11). A phenomenological approach was used to specifically look at the information subtracted from the teacher's experiences that couldn't be portrayed by quantitative means.

A convergent parallel mixed method (Creswell, 2014; Hernández Sampieri et al., 2014) was used in the design of the study, and quantitative and qualitative data were collected in parallel. Both types of data were processed separately, then meta-inferences were drawn simultaneously to look for surfacing patterns.

Sampling

Participating teachers were from rural secondary schools, of different grades and student ages (7th to 12th grades). For the purpose of this study, the term “high school” is used to refer to all the secondary education students and grades that are indirectly included in this research. The selected high schools are from different regions of Costa Rica, but mostly from the Caribbean slope. The condition “rural” and “secondary education” was chosen for the study. Statistics from Costa Rica's state of education report (Programa Estado de la Nación, 2019) indicate that these schools are the ones with some of the deepest difficulties in education (poor academic performance; social hardship; absenteeism; lack of employment; access to drugs and crime). The study produced information that can be used to indicate challenges and provide recommendations about implementing PBE purposefully for these students at risk.

For the quantitative part of this study, online surveys were conducted. The customized online survey included an introductory text; demographic multiple-choice questions; and a final

section that contained seven PBE-evidence questions (questions 11 through 17) (See survey in Appendix A, p. 60). These questions were also multiple-choice and denoted different options of affinity to Gruenewald's five dimensions of place (perceptual, sociological, ideological, political and ecological). Question 16 was a question of opinion about the teacher's perspective on the importance of place and more than one answer could be chosen. Question 17 was an optional open-ended question to ask teachers to provide examples of previous PBE experiences (See question 16 and 17 in Appendix A, p.64). For the qualitative part, semi-structured interviews were conducted with seven open-ended questions (See Appendix B for interview protocol, p. 65).

In both the surveys and interviews, an invitation to participate was sent by email and messaging apps to 20 different high schools. The online surveys and interviews were available for a period of three weeks and teachers were self-selected. There wasn't a limit on the number of survey respondents, but a maximum of 15 interview opportunities were available to teachers. To increase participation, reminders were sent every week. The surveys included teachers of any academic subject; the interviews included teachers of science, tourism specialties, and social studies.

Surveys and interview questions were validated with the help of an external Costa Rican Education expert, who provided input about the creation of the question items and the scope of the study. Instruments were tested with similar respondents in 3 schools with identical conditions to those in the study (rural high school teachers in schools along the Caribbean slope).

Adjustments were made in the online surveys to make sure the wording in the questions and answers were simple enough to understand the underlying meanings of place, since teachers in Costa Rica are not familiar with PBE. The optional open-ended question of examples of PBE

was added for richness in the qualitative analysis. A question about familiarity with the school where teachers work was added, since teachers can work for more than one school and they don't necessarily live in the town where the school is. This helps get a sense of how familiar they are with the towns where they teach and understand their connections to "place".

From a methodological point of view, the online surveys allow for larger frequency, amplitude and magnitude of data (Hernández Sampieri et al., 2014), thus capturing general trends from a small sample of teachers in Costa Rica. In contrast, interviews allow to capture data in minutiae about the depth and sensitivity of teacher perspectives. Interviews also revealed the influence of additional factors such as the use of classroom pedagogies of place; limitations to PBE learning; strengths and weaknesses; teacher's lack of training and resources, etc.

Survey responses were automatically recorded in the online tool and then transferred to a computer-assisted qualitative data analysis software (CAQDAS). Interviews were recorded in both audio and written notes; and eventually digitally transcribed with speech transcription software.

Gruenewald's PBE Framework

The five dimensions of place act as methodological lens from which teachers' responses, in surveys and interviews, were analyzed and thus, verifying if principles of PBE are present. Other PBE frameworks correlate to these dimensions, for instance, PEEC is a respected collective of 4 different organizations, with many years running PBE programs. Altogether they have common goals that also align closely to Gruenewald's five dimensions of place, for instance: enhancement of community connections; increasing understanding of connections to place; increased civic participation; enhanced stewardship; improvement of the local environment (Duffin et al, 2004).

Since these five dimensions of place are the core methodological lens for the responses, scores were added to the survey's questions 11 through 15 (Appendix A, p. 62). Based on the literature review and the interpretation of Gruenewald's PBE framework (Gruenewald, 2003a), a scale of points was given to each answer in order to rate how close respondents were to an accurate interpretation of each place dimension (See the column labeled "scores" in Appendix A, p.62)

Data Analysis

Survey and interview responses were synthesized using spreadsheets software and CAQDAS software. Quantitative data were analyzed to look for common patterns among respondents in relation to their demographics. Each question item related to a dimension of place produced several excerpts (written opinions) to support the evidence of teacher's perceptions of PBE principles. Qualitative data from teacher interviews were sorted out for a two-level content analysis to also determine emergent patterns of perceptions and dimensions of place from responses. While analyzing the narrative, responses particularly related to challenges and opportunities to PBE in Costa Rica were also noted for analysis and discussion.

Respondents were given a subject code to maintain their anonymity and to refer to their written opinions in the study. The first letter in the code refers to either an interview or a survey (I or S); second letter identifies gender (F or M); and the following number refers to their participant sequence (e.g. SM4 is the number 4 survey excerpt of a male respondent).

Chapter 4

Quantitative results

A total of 21 responses were recorded in the online survey. Three respondents declined to complete the survey and two accepted but did not record any answers. The results and analysis were centered on the 16 completed surveys. A slightly higher rate of females composed this sample, and respondents were mostly in two distinct age groups (21 to 30 and 41 to 50 years) (Figure 1). Most of the teachers in this sample have reached a mid-level degree of academic studies, a graduate certificate (called “licenciatura” in Spanish) (Figure 1). More than half of the teachers have less than 10 years of teaching and are temporary/intern teachers (Figure 1). Survey respondents come from six different teaching subjects with the majority being from the sciences (specifically biology and chemistry) and tourism specialties (Figure 1). Although the survey was sent to 20 different schools in different locations in Costa Rica, the completed 16 surveys corresponded to exactly 16 different schools (approximately 5.4% of all rural, diurnal, secondary schools in Costa Rica).

In terms of understanding their geographic distribution, the survey indicated that these teachers don't necessarily live where they teach. The 16 schools recorded are in dispersed locations, and the teachers working in them are clustered in 12 towns near these schools (see list of school and teacher's home locations, Appendix C, p.66). The average distance traveled between their homes and the schools was 13 kilometers. One of the questions in the survey asked about their degree of familiarity to the location where they teach. In a scale from zero (non-native) to five (fully native and completely familiar with the location), 56% of the teachers reported to be highly familiar. Figure 2 shows that although most of the teachers need to travel short distances to their schools, this might not affect the familiarity of the schools where they

work. Most of them travel several kilometers and remain very familiar with the school's locations.

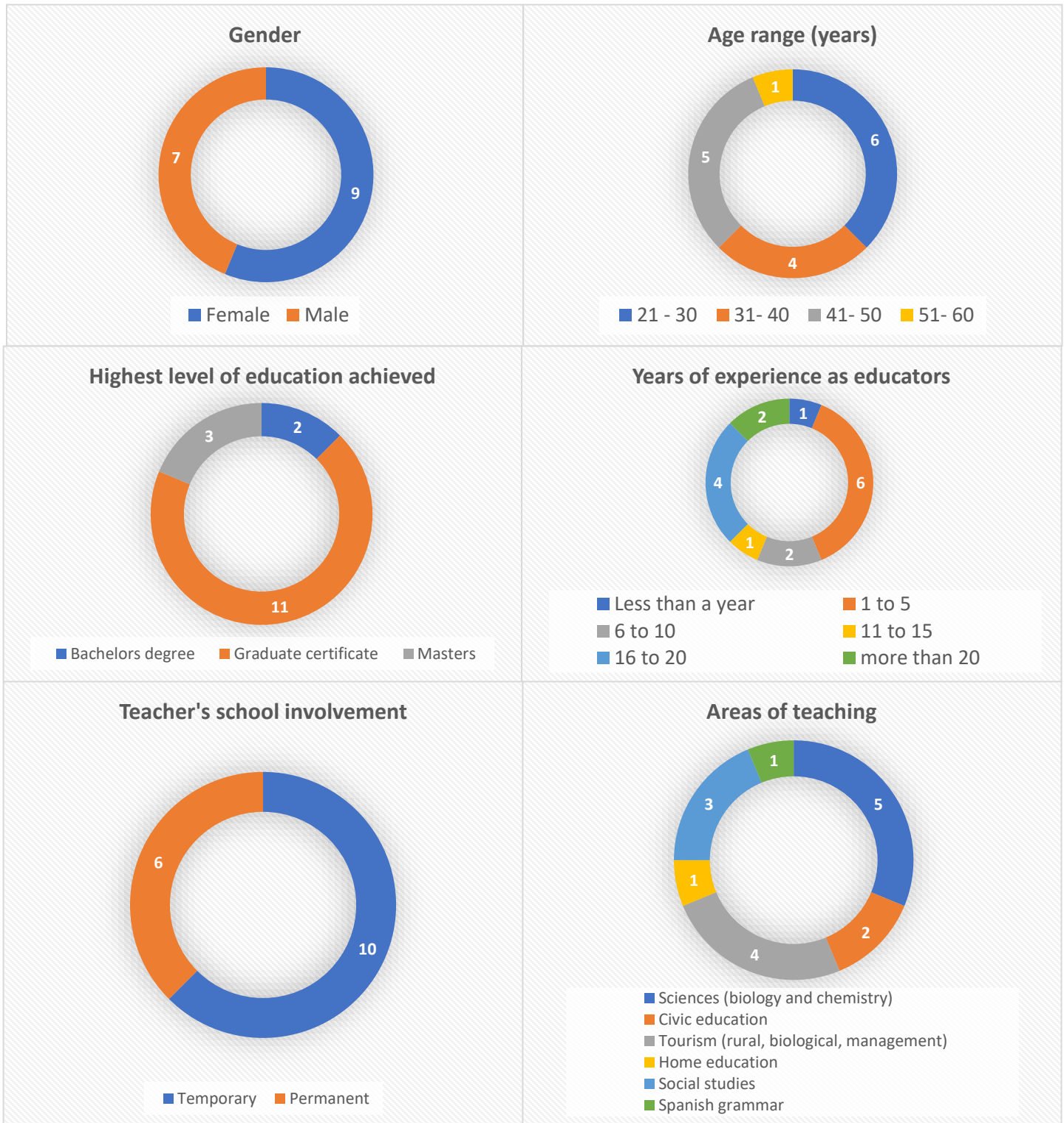


Figure 1. Demographic profile of the survey respondents in the study: gender; age; highest level of education; years of education experience; school involvement; and teaching areas (n=16).

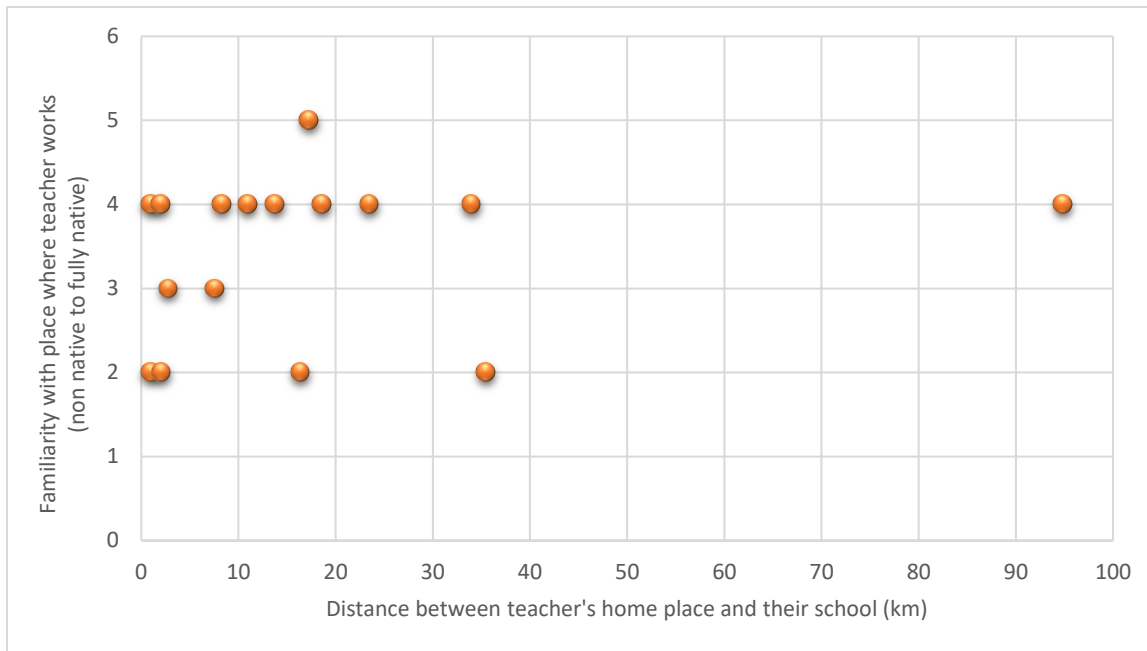


Figure 2. Relationship between distance from home to school where teachers work (km); and the degree of familiarity with the school’s community (n=16). Familiarity ranges from 0 (non-native) to 5 (fully native to the place).

When asked about the perceptual dimension of place, most respondents feel that “place” is where they found the necessary conditions to live, and where they recall meaningful experiences of their lives (Figure 3). All “dimensions of place” questions had scores to rank the importance of the answers (See the column labeled “scores” in Appendix A, p. 62). For the perceptual dimension of place, respondents indicated a high level of understanding of their sense of place based on the average scores for this question.

For the sociological dimension of place, most respondents feel that developing their connection to place and their community happens when students are exposed and attached to the local stories and culture (Figure 4). This answer had the highest score value in comparison with the other response items.

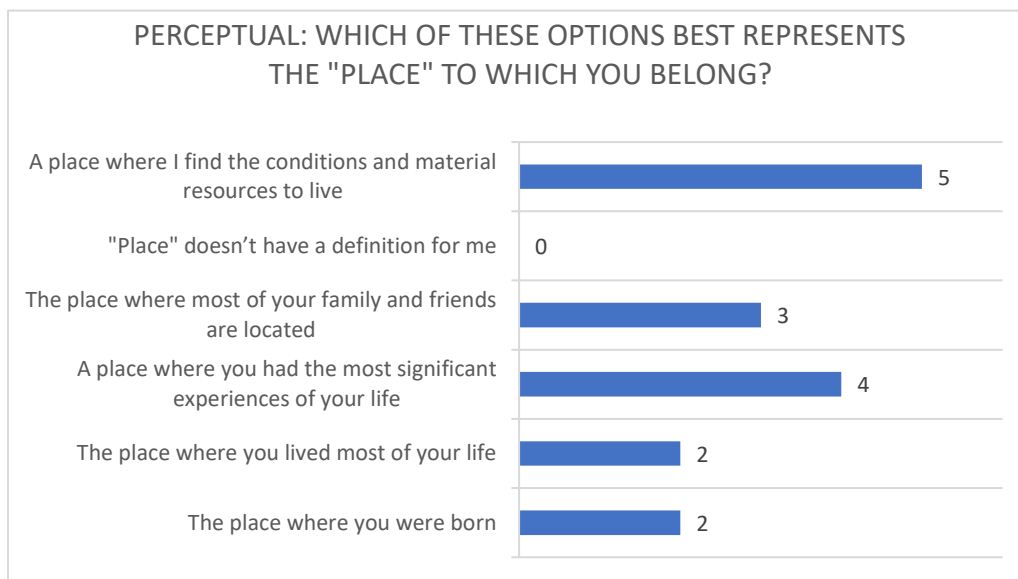


Figure 3. Survey responses to the question item related to Gruenewald's perceptual dimension of place (n=16). Question and responses were translated from Spanish by the author.

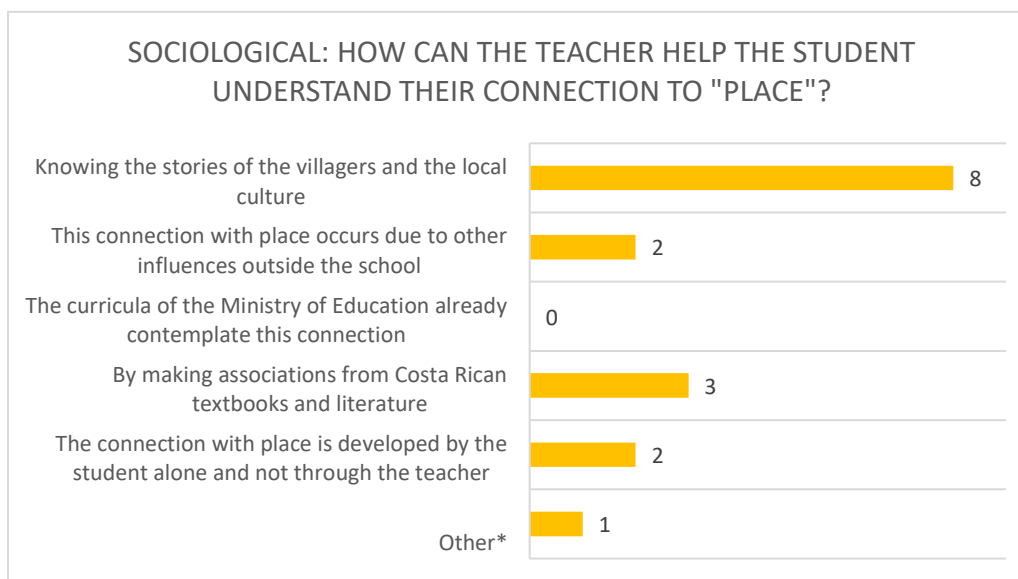


Figure 4. Survey responses to the question item related to Gruenewald's sociological dimension of place (n=16). Question and responses were translated from Spanish by the author. Other*: Facilitating experiences that build on the student connections to the place they belong.

In terms of the ideological dimension of place, respondents chose the answers with the highest scores. Therefore, this indicated that respondents have a high understanding that, for students to develop their sense of responsibility and citizenship to a place, they need to be influenced by many stakeholders in the community and make specific connections across the different subjects in the classroom (Figure 5).

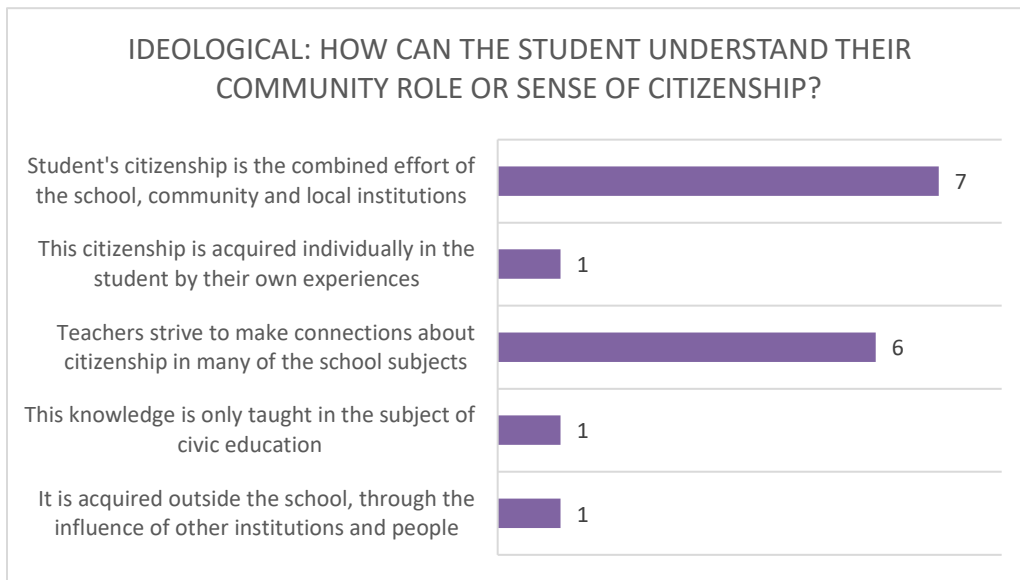


Figure 5. Survey responses to the question item related to Gruenewald’s ideological dimension of place (n=16). Question and responses were translated from Spanish by the author.

For the political dimension of place question, the responses were more diverse and don’t necessarily reflect a strong teacher opinion about how they think is the best situation to get students to participate in their communities (Figure 6).

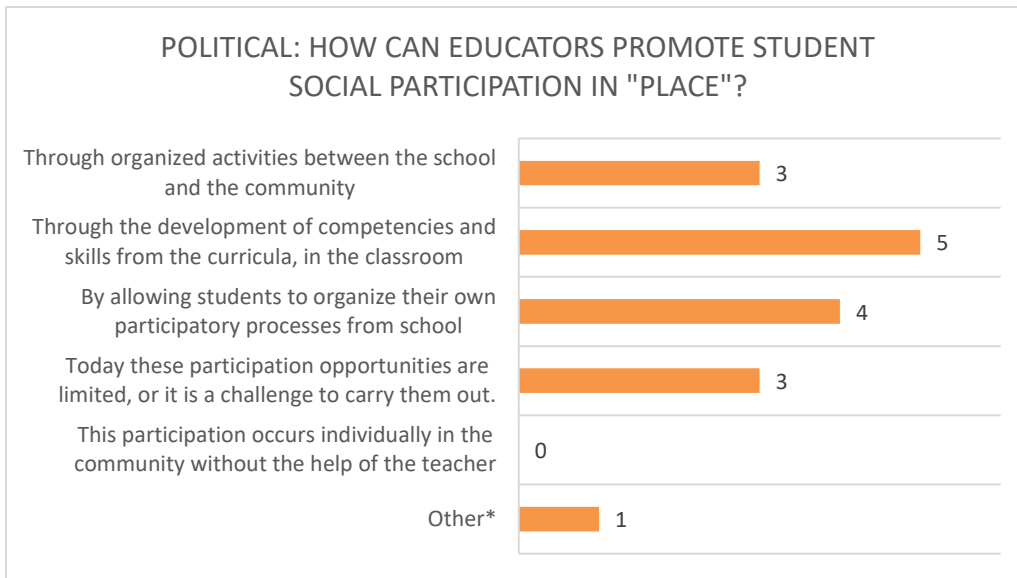


Figure 6. Survey responses to the question item related to Gruenewald’s political dimension of place (n=16). Question and responses were translated from Spanish by the author. Other*: Opening spaces from all fronts, student, school, teacher and community, allowing recognition, appropriation, support and awareness from everyone.

When asked about the ecological dimension of place, most respondents agree that, in order to develop a natural connection to place, students need to do activities outside the classroom and additionally, facilitate the connections about protecting the environment in the context of all school’s curricula (Figure 7). These two responses also hit the highest scores in this question item.

When looking at the overall scores obtained in all the questions related to the five dimensions of place, the political and ecological dimensions had the highest average scores, 81 and 84 points respectively, and the perceptual dimension was the lowest with 64 points (Figure 8).

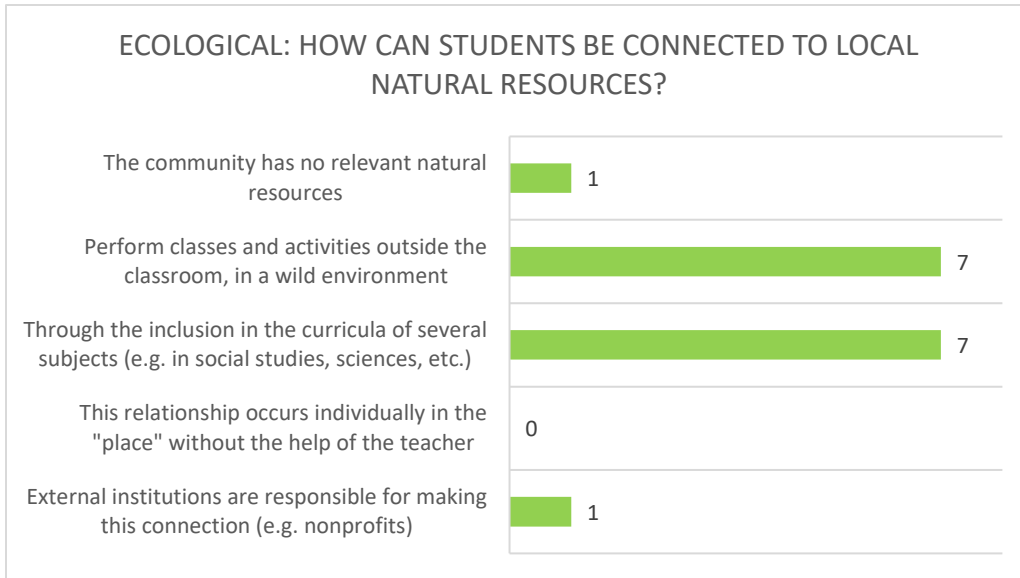


Figure 7. Survey responses to the question item related to Gruenewald’s ecological dimension of place (n=16). Question and responses were translated from Spanish by the author.

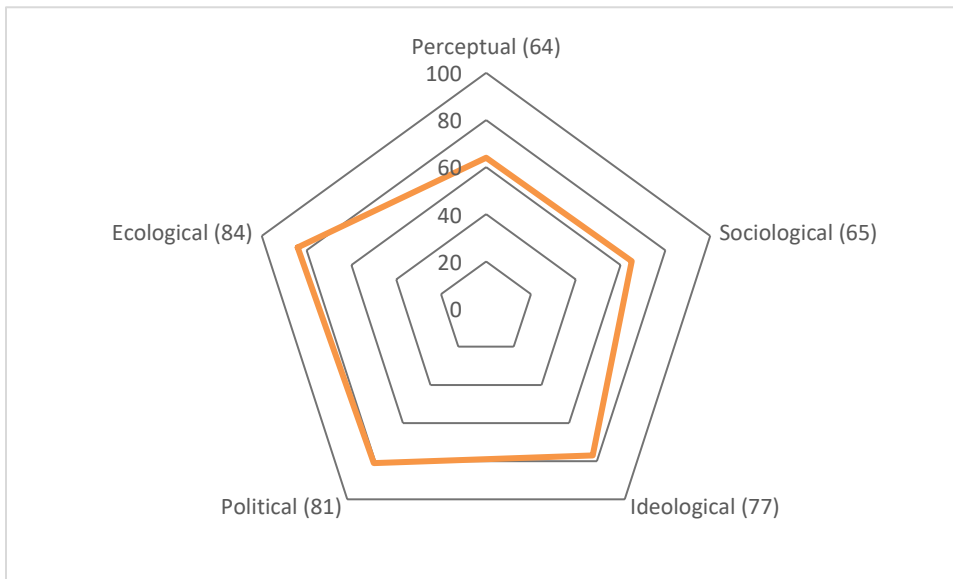


Figure 8. Survey average scores reached in each dimension of place. Scale is 1 to 100 points.

Finally, a multiple response question was included about what the respondents thought were the most important reasons why a connection to place is relevant to students. This question did not have scores. The largest number of responses support the fact that this connection brings

well-being and progress to place (Figure 9). Fewer responses support that the connection to place is important to raise the affiliation of the student to place.

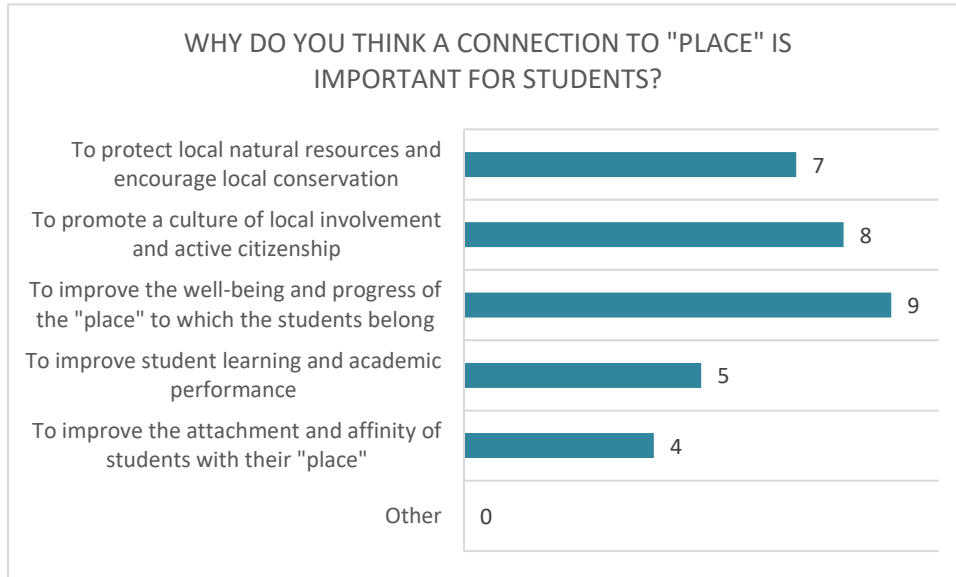


Figure 9. Survey opinions about the importance that place has for students (multiple answer questions). Question and responses were translated from Spanish by the author.

Qualitative results

Qualitative results and analysis were obtained from two sources. First, information gathered from the eight semi-structured interviews (Appendix B, p. 65). Second, an optional open-ended question (question # 17, Appendix A, page 64) asked the respondents in the online survey about their opinion and experience with PBE. Eight responses were recorded from these surveys. The teachers in the interviews are not the same as in the surveys, so all qualitative data sources come from separate teachers.

Both interviews and survey comments were identified by gender and teaching subject (Table 1) for analysis. These data sources came from eight male and eight females, represented in five different teaching subjects

Table 1.

Gender and teaching subjects of qualitative data sources

	Female	Male	Total
Social Studies	0	3	3
Agroecology	0	1	1
Biology	3	1	4
Civic education	0	2	2
Tourism	5	1	6
Total	8	8	

All data sources were analyzed together for content and coding. Five prevalent codes were already considered for the analysis and corresponded to the five dimensions of place. As content was read, two other main categories arose, “limitations to place-based education” and “examples of PBE pedagogy in practice.” Table 2 shows a description of the codes created and the key ideas that helped align the comments to the codes.

Table 2

Codes in the study from key ideas and excerpts. Respondents codes are indicated in parenthesis. Excerpts were translated from Spanish by the author.

Code name	Key ideas found	Example of excerpts
Perceptual	<ul style="list-style-type: none"> ● Teacher's own definition of place ● Definition of community and its components 	<ul style="list-style-type: none"> ● It's the place where I grew up, it's where my roots are (IF4) ● Place is everything that surrounds us, what and where we live in. So, as part of the community, there is the river, the forest, the neighborhood, the neighbors, everything we have. Even the school is part of the community (IF1)
Sociological	<ul style="list-style-type: none"> ● The history of the place and the community, as well as its culture, traditions, local resources, people, hobbies ● Students need to identify what makes their community unique and relevant 	<ul style="list-style-type: none"> ● The concept of place is important, because nobody starts from scratch and we all bring a background of our parents and society. By living in one place we all have preconceived notions of our same society, we all live under the same rules (IM3) ● It is important to know the place and local culture where you work, in this way you can direct education towards the social context in which the student develops, allowing meaningful and permanent learning (SF2)
Ideological	<ul style="list-style-type: none"> ● Discussion of local issues and social justice, such as poverty, monocultures, pollution and how this matter to place ● Showing students the reality so they can see a different view 	<ul style="list-style-type: none"> ● There are students who do not have a permanent home, they do not have comforts or facilities, they live in poverty. Some kids want to run away and have stories of abuse. In the definition of place, they have to look for a place where they can find home and get attached to the community (IF4) ● I talk a lot about being able to see the strengths of their community, the weaknesses, threats and opportunities that exist (IM2) ● It is important to bring out their concept of place so that students can feel happy where they live (IF5)
Political	<ul style="list-style-type: none"> ● Examples of participation and advocacy in the community ● Collaboration between students and local stakeholders 	<ul style="list-style-type: none"> ● The projects are not just from the school, but there is also openness from the community to us, so that everyone is involved in what happens locally. At the end of the year we are invited to show in the school what we do, the programs we have... on Independence Day, we held patriotic displays from recycled materials and exhibits were made within the school for the community (IF6) ● There is a recycling campaign and every Thursday the community leaves their recyclables in the school (IM3) ● In senior year, students do community work, such as painting schools, painting desks, working with homeless people, nursing homes, offering them company and beautifying community parks (IF1)

Ecological	<ul style="list-style-type: none"> ● Getting students outside to local farms, gardens, trails, reserves ● Connect biodiversity topics with local resources ● Work on environmental projects such as waste management, reforestation 	<ul style="list-style-type: none"> ● I try to take advantage of what's in the area. If we see plants, for example, I try to take them to a neighbor's garden so they can see that there is a project of native plants (IM8) ● On the subject of biodiversity, I like to take students to the forest of the school, and we walk along the trails, identifying birds (IF4) ● With the students we will visit the creeks and talk about the impact that people have on the environment. Teachers even simulate the process of how to make a legal complaint. We also do reforestation campaigns (IM3)
Limitations to PBE	<ul style="list-style-type: none"> ● Limitations of the country's school system ● Limitations of the local schools ● Limitations that teachers have pedagogically ● Limitations that students have for learning PBE 	<ul style="list-style-type: none"> ● Sometimes we would like to innovate, but you can't because everything has to be strictly like the curriculum. The same educational system makes you limit yourself and there is no time, because you have to comply with the calendar and the program. To my concept you learn more by doing, than when you have to swallow the content by memory (IF6) ● Of 100% of students graduated from school, 25% do not go to college, 25% go to the capital city and stay working there, another 25% return to work in the community (IM3) ● In my school there is equipment and there is a forest. Teachers hardly use it. Sometimes teachers do not have the pedagogy for it, or the will to use these resources (IF4) ● The student is very influenced by media, they don't like to write, or think, or even wonder how difficult reality is (IM2)
Pedagogies of place	<ul style="list-style-type: none"> ● Examples of teacher and school pedagogies and activities that are aligned with PBE 	<ul style="list-style-type: none"> ● We made alliances with farm owners and the students developed projects, made trails and opened roads where there were none. They did the trail markings; others designed a coffee tour. The owners lent the materials and offered the farm for the project (IF6)

Based on this coding process, a total of 134 text excerpts were extracted and separated into the seven codes (Figure 10). The code for “sociological dimension” and “limitations to PBE” were the codes with the most excerpts.

	Gruenewald's dimensions of place codes					Additional codes	
	Perceptual	Ideological	Sociological	Political	Ecological	Limitations to PBE	Pedagogies of place
Interviewee 8	1	0	3	0	1	1	1
Interviewee 7	1	0	2	3	5	10	1
Interviewee 6	2	1	2	0	2	1	1
Interviewee 5	1	4	1	5	1	1	3
Interviewee 4	1	3	1	1	1	5	0
Interviewee 3	1	1	2	0	3	1	4
Interviewee 2	1	2	5	2	3	0	1
Interviewee 1	3	3	6	1	3	9	3
Survey comment 8	0	1	0	0	0	0	0
Survey comment 7	0	1	1	0	0	0	0
Survey comment 6	0	1	1	0	0	0	0
Survey comment 5	0	1	0	0	0	1	0
Survey comment 4	0	0	0	0	0	0	1
Survey comment 3	0	1	1	0	0	0	0
Survey comment 2	0	0	1	0	0	0	0
Survey comment 1	0	0	1	1	1	0	0
Totals	11	19	27	13	20	29	15

Figure 10. Number of text excerpts by code and data source (interviews and online survey open responses).

The two main variables separating the data sources were gender and school subject.

When looking at the number of excerpts, there was a higher number from males and teachers that were in social studies, biology and tourism subjects (Figure 11). This could be explained by a larger number of teachers coming from these three subjects as data sources (Table 1).

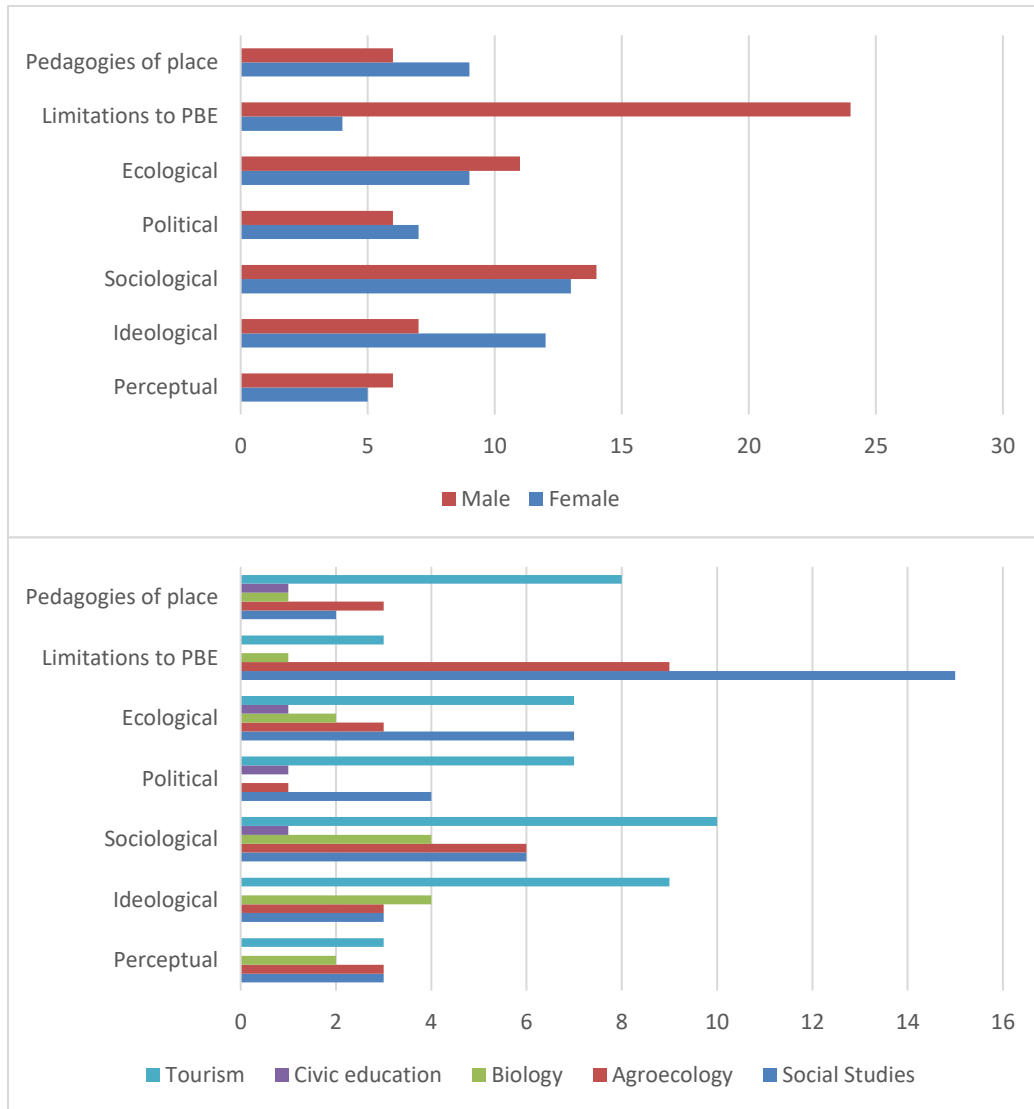


Figure 11. Number of text excerpts divided by codes, gender and school subject.

Chapter 5

Discussion

In this chapter, findings from quantitative and qualitative data are presented and how it converges to answer the research questions. When looking at the results, it can be concluded that satisfactory evidence of PBE was found in Costa Rican schools. Answer scores were high, and teachers' narrative data indicate a high degree of affiliation to Gruenewald's PBE framework. Additional information from the surveys and interviews provided a view into some of the challenges and opportunities of including PBE in Costa Rican classrooms. Finally, remarks about the limitations of the study and PBE recommendations for Costa Rica were presented.

Quantitative Data Analysis

Quantitative data provided a concrete look about the profile of the participating teachers in the study. The sample provided a similar proportion of female and male teachers, with a good representation from all school subject that were considered in the methods; moreover the sample, was somewhat uniform, as a majority were young teachers, in temporary work situation and, with a similar academic degree (Figure 1).

Although the study included only teachers from rural areas, it was interesting to observe whether this was the case and what was their connection to the places where they teach (Figure 2). Data showed that there was significant transit between their homes and the schools where they work. The average travel distance to the schools (13 km) would be considered normal for rural areas in Costa Rica. This separation might pose a concern to whether they might be familiar with the reality of place where schools are located. However, the results show that the teachers in the sample were more than familiar with the places where they teach (Figure 2). Educators need

to be connected to these places so that their pedagogy is grounded in local matters and can draw students towards them.

The survey close-ended questions, related to the dimensions of place, had good scoring in general (Figure 8). The lowest score was 64 (perceptual dimension) and the highest 84 (ecological dimension). It can be stated that, for a country where PBE principles are not directly referenced in the national curricula or educators have not heard of, these scores were high. Therefore, PBE principles might already exist indirectly in the place perceptions of Costa Rican teachers.

The multiple-choice responses from question 16 (Appendix A, p.64) gives an idea of how relevant teachers think that PBE is, even though they might be unfamiliar with it. Most of their responses centered around the belief that a connection to place brings improvement to a community, student involvement and protection of natural resources. To support this idea, one teacher wrote in the survey:

Even though I ignored the conceptualization of place-based education, I have incorporated into my teaching practice some aspects that I have observed in the survey questions and that I believe allows the student to perceive themselves as individuals who are part of a place and that their contribution can be taken into account. When there is this interaction, local people become aware that young people also promote development, learn about social problems and can contribute from ideas to possibilities of solutions.

(SF7)

The final and optional section of the survey was an open-ended question which yielded eight responses, that support the claim that some teachers already use PBE principles in their practice. One teacher wrote:

It is necessary that students know their roots, the place where they come from and where they are currently growing up, so that they understand what their mission or their role in society is and how they can become agents of change with simple actions. (SF6)

The richness in these eight surveys was worth adding and turning them into units of analysis for the qualitative portion of the study.

Qualitative Data Analysis

The sample of eight teachers provided a good representation of male vs female (four of each); and five different subject areas (biology, agroecology, tourism, civic education and social studies). Since the essence of the interviews were the teacher's narratives, eight responses from the surveys were added to the qualitative analysis.

Responses from both the surveys and the interviews, provided a mixed methods layer of analysis, for validity, comparability, and depth of analysis. All the data were organized according to three main variables: codes (for instance, the five dimensions of place), gender and teaching subject.

Regarding the eight semi structured interviews, the first aspect that stood out was the fact that when asked, none of the interviewees had heard the term "place-based education" before. It was through the following questions that they had an opportunity to indirectly develop their own understanding of PBE.

The first five questions in the interviews, explored Gruenewald's dimensions of place and produced insightful notions aligned to PBE. Here are example comments of each dimension:

1. Perceptual: For me, place is where my house is; my family; my town; it is a place where I have everything I need (IF5).
2. Sociological: In my class we talk about all the things that happen in the community. We talk about topics that are good, cheerful, difficult and complicated. We talk about local and global issues too... The goal is that they can integrate current issues into the things they are learning in the classroom (IF4).
3. Ideological: The main benefit of making the connection with place is to develop a love for the community. I feel that Siquirres town has no cohesion, people are not supportive of each other... it is necessary to be conscious that it is a rural community and that there isn't just pineapple and banana plantations, many other things can be done. There are communities where a river, the forest, and other things are not being appreciated (IF1).
4. Political: We have a school project, called cooperative business management, where we map the services and facilities of the community, and based on this, students develop business projects that help with the environmental and social problems that exist (IF6).
5. Ecological: I try to get the students out and change the scenery. Even just sitting under a tree. Just by allowing the student to go out and see the trees and plantations, this changes their perspective and we can talk about environmental conservation problems, pollution, climate change, and how to protect the environment (IM7).

In addition to this evidence of PBE notions in the narrative, teachers also provided plentiful insight on PBE examples of pedagogy (Table 2), which will be discussed further. A total of 120 excerpts were collected directly from the interviews, related to dimensions of place,

limitations to PBE, and pedagogies of place (Figure 10). This is an indication that a significant amount of information regarding PBE principles can be extracted from teacher opinions in Costa Rica, without having direct knowledge of this philosophy in the country. The open comments from surveys, provided an additional layer of information (14 excerpts) to support the evidence to be used in combination with the interview data.

Mixed Methods Analysis on the Evidence of PBE in Costa Rica

To answer the first research question in this study, the essential approach was to filter the data through Gruenewald's PBE framework. Here, the analysis tried to combine the quantitative results with patterns from the qualitative narrative simultaneously, to see the connection of teachers to the five dimensions of place. Ample evidence was found and also a high degree of affiliation to all Gruenewald's dimensions of place.

Perceptual Dimension

Perceptual evidence in Costa Rica should show whether teachers understand the concept of place, or if they develop a sense of place in the classroom. Looking at both quantitative and qualitative data, the perceptual dimension in Costa Rican teachers focuses on the physical components and memories gathered in their communities (Figure 3) rather than describing the emotions or feelings that places can evoke. During interviews, clear images came to teacher minds about parents, family, community, school, and local nature. They seem to describe place as a system, where all these components shape their notion of place. This dimension had the lowest average score (Figure 8) and the absence of written comments for the perceptual dimension in the surveys, indicates that perhaps, their perception of place might need more definition. Gruenewald (2003a), calls for pedagogies that allow us to increase our sensory attachment to place and culture, leaving aside the non-local influences that might distract us from

a clearer acquisition of individual sense of place. One teacher stated: “We must understand that we are part of a global community but also, we must face everyday life from the local, from the community” (IM2).

Sociological dimension

This dimension is where surveys and interviews contributed with the most excerpts (figure 10). Looking at the responses, words such as: roots, culture, town, identity, caring, history, traditions, rural, and indigenous, were mentioned many times. Their sociological notion of place could be described as an appraisal that place is connected to the cultural heritage, its people, traditions and a sense of care to protect it. In the surveys, most respondents agreed that the teachers can help students understand their connection to place by knowing the stories from villagers and the local culture (Figure 4). This indicates a high level of understanding of this dimension according to Gruenewald (2003a) who proposes that place is what people make of it. He states that people are place-makers and therefore history is created by them and thus, it needs to be protected. Teachers described activities where they take students to see local assets; talk to villagers about their jobs; celebrate cultural events; learn about and work with indigenous people; and bring the community to collaborate with the school.

Ideological dimension

This is the dimension where issues of social justice and local issues surface. And this was the case, as the teachers were describing the reality in which students are immersed in. They described the limitations of students coming from low income families; or the social and environmental impact of being surrounded by monocultures like pineapple and banana; and how local reality affects future career choices on the students. Gruenewald (2003a) suggests that

places have structures of power and social forms that sometimes oppress people. In contrast, teachers didn't seem to conform with the negative, and they showed initiative to contextualize the curriculum: exposing local issues, realities and strengths; promoting a sense of strong citizenship; and applying sustainability locally. One teacher suggested that even the neighbor's milk farm can be an opportunity for rural tourism to show tourists how dairy is produced in an artisanal and sustainable way, while students learn about this job and think of new sources of income for the community (IF1). Most teachers show in the survey (Figure 5) that the best way to understand their role in the community is to not only develop this notion across the curricula, but it is also the combined communion of the schools, stakeholders and community members.

Political dimension

Gruenewald (2003a) believes that mainstream school policies and society puts students in a situation of oppression and injustice. He states that teachers "have political roles as mediators in the construction of culture, identity, and the places where they emerge" (Gruenewald, 2003a, p.18). He claims that schools must make students realize if there is marginalization, so that it becomes an opportunity for hope, or inspiration, to induce "radical openness" (Gruenewald, 2003a, p.6). In other words, a political dimension of place should move past the local social justice issues and teachers should promote strategies of authentic education through empowerment, advocacy and local action (Delia & Krasny, 2018)

One teacher explains:

[Students]... need to analyze the surroundings. And when they design projects, they must choose the ones that will benefit the community. It's not just for the sake of it, it is

because the place where they live. If they want to see how their communities develop, hopefully they can develop great projects (IF6).

The interviews and surveys seem to align well in the political dimension. Excerpts show a trend of teachers coordinating projects between schools, communities and even municipalities. Teachers show how these projects favor just-minded causes, such as citizen's well-being; solving local needs; promoting local traditions; recycling and reforestation. Survey responses (Figure 6) are also supportive of this trend.

Ecological dimension

Costa Rica is a country where environmental education is prevalent, especially in rural schools (Blum, 2008, Locke, 2009). This condition influenced the outcome of responses for this dimension of place. Interviews produced a significant amount of information and it was the dimension question item with the highest average score (Figure 8). In this sense, survey responses clearly portrayed teachers taking students outside the classroom and infusing the ecological dimension across school subjects (Figure 7).

When looking at the interview excerpts on this topic, teachers are taking students outside on hikes to local gardens, farms, butterfly nurseries, rivers, reserves, and they connect these places to the curricula. Teachers apply critical pedagogy and authentic learning by not only showing local resources, but they discuss critical environmental issues such as the loss of biodiversity or the influence of monoculture and pollution.

Gruenewald suggests looking at the ecological limits of our environment and analyzing how global economies are exploiting and degrading our local natural resources (Gruenewald, 2003a). In this sense, one teacher comments: "We have the ability to manage everything. But in

a different way, not trying to transform everything into merchandise in an exploitative way, but using resources in a sustainable way, while we try to be part of this local community” (IM2).

An additional qualitative exercise was made. All excerpts (interviews and surveys) were included into an online word count application and the top three most frequently used words were “community”, “students”, and “place” (62, 40 and 34 times, respectively). Not only does the term “place” become highly frequent in the information obtained, but the term “community” as well. Place is already part of the language of rural teachers. A point can be made about considering whether the notion of place and community become synonyms or complementary terms in the conversations. It can be said that the term “place” (used in the surveys and interviews as “lugar” in Spanish) was referred to as a central concept in the study and community came up as a support concept to indicate the local geographical and social space where students, teachers and schools are located.

Challenges and Opportunities of PBE in Costa Rica

While discussing the importance of the connections of place during the interviews, teachers were engaged in sharing what they thought about the topic. Consequently, some of the challenges and opportunities surfaced during the interview narratives, thus helping to synthesize their answers and respond the second research question in this study. A summary of their views is presented here.

One of the first challenges has to do with the areas where students live. Teachers reported in general, that the students in rural areas might be pressured for space. Students are surrounded by large plantations of pineapple and banana. They are directly witnessing the effects of pollution of water sources, deforestation, poverty, and low income. Teachers have a hard time developing an enriching place identity. Some of these agricultural communities are generally

poor and students don't have many opportunities for employment or studies. Students are then forced to study or work in the larger cities, abandoning their place. One teacher mentioned that only 25% of the students come back to their communities with a degree (IM3). This is an indication of how rural areas in Costa Rica continue to suffer from the same historical colonization processes that shaped the land since before the creolization era. These rural communities are quickly losing their identities due to the effect of international companies fragmenting and destroying the land, forcing the locals to live and work under inhumane conditions.

Teachers also reported that there is a lack of interest in local matters. Even teachers themselves might diminish the core connections to place. As one teacher points out: "Sometimes teachers don't know the community. Not all teachers know very well what the town is like. Sometimes teachers predispose students to the fact that, outside the community there are better things" (IM3). Other comments indicate that although teachers are living and working near the school, they were raised somewhere else or are not fully aware of local topics (IM8, IF4, IM3). The social issues witnessed in these communities is hindering the possibility to develop PBE in these rural areas. Nogué (2015) warns that these problems can provoke a traumatic loss of the student's sense of place and identity, which results in reduction of "socialization" and community bonds, to finally end up with places completely stripped of hope for a better future (p. 157-158)

Teachers are also limited in their ability to instill a pedagogy of place in the classroom. One of their main limitations is time, as one teacher expressed: "There is a lot of content, objectives and curricula to teach. There are many assessments, exams and assignments to be done" (IM2). In many of the conversations, teachers feel like they already have an intense

workload and extracurricular activities. Interviews also reveal a lack of supporting staff; restraining budgets; scarce teaching equipment; cumbersome permits and liability policies; and insufficient support from the regional education offices and the Ministry of Education. This is consistent with the findings of the Costa Rica state of education report (Programa Estado de la Nación, 2019, p.117).

The most recent education reform from 2016, mandated teachers to include in their practice the idea of creating global citizenship through strong connections to local matters. However, when casually asked, most teachers didn't know about this directive, or those who knew, mentioned that they didn't receive the information directly; or were never trained on how to connect this to their planning. A couple of teachers also mentioned that the curricula itself is general and shallow, and without proper training teachers have a hard time to figure out how to draw place connections with the extensive disarticulated content they teach (IM3, IM7).

Despite these limitations, there are several examples on how teachers go past these hurdles and exemplify pedagogies of place. Some of the interviews demonstrate an interest in taking students to see their immediate resources, connect it with the schoolwork and discuss the relevance for the community. Some of the places they visit are highly pedagogical to place: forests, rivers, farms, plantations, businesses, municipalities, indigenous reserves, nursing homes. Other teachers commented on place-compatible pedagogies such as: meeting local villagers and collecting their stories through cultural journalism; design-thinking projects customized to solve specific communities issues; hiking around the community, to brainstorm ideas about local business and income opportunities; building school recycling centers in communities where they don't have waste management. Additionally, these activities transformed into critical and authentic pedagogies when their ingenuity was attached to a deep

sense of urgency to solve global issues from a local perspective, such as poverty, sustainability, or climate change. These fosters a much needed “place-knowledge of awareness, resistance, advocacy and care” (Chang, 2017, p728) and it is the correct PBE vision to implement Costa Rica’s new education reform of “global citizenship with national identity” (Ministerio de Educación Pública, 2015).

The kind of autochthonous PBE that we see in Costa Rica seems to be driven from the limitations and brought into impulsive desires to expose students to different realities in their communities, so that they can reflect about ways to overcome the challenges and be better. One teacher explains: “It is a commitment from the educator to contextualize the curriculum with the place where they are developing it. In this way the learning becomes meaningful for the student and therefore we care about seeking solutions to local problems” (SM8). This teacher’s thinking is a good representation of authentic education; and when community issues are confronted together with the students, in combination with the curricula and schoolwork, then students become critical thinkers, informed citizens and eventually competent decision makers (Saye et al., 2018). These opportunities need to be valued and shared with other teachers and schools, as a fundamental starting point to foster the implementation of PBE in Costa Rica.

Limitations of the study

In this first of its kind study for Costa Rica, evidence was found about PBE that fulfills Gruenewald’s framework with specific examples. However, to fully complement the findings, this study should be expanded to other areas of the country and sample a larger number of individuals. It should also include private, urban and nocturnal schools; as well as primary education and college education institutions. It would be noteworthy to compare the effect between different categories of schools, since some of them have different professional

orientations (e.g. academic, technical, experimental, bilingual, scientific, and artistic focused schools). Interviewing students and community members should also be included in future studies, since they are both benefactors from PBE.

Triangulation with other sources is also suggested. The evidence from teachers could also be enriched from knowing in depth what their curricular plans are; how teachers design their class; and what pedagogical approaches and resources they use.

A simple convergent mixed methods approach was used in this study. To increase rigorousness and validity, the quantitative portion should try to collect a larger sample or a specific population size, so that inferential statistics can be used. Based on the nature of PBE, a deeper ethnographical design could also be beneficial to understand the underlying stories of the communities where students are living.

The methods in this study also recurred to self-selecting participants and response items with only one choice. To increase richness, a more randomized sample can be included; as well as allowing for multiple choice responses, and more room to elaborate on personal opinions.

Recommendations

There is consensus that teachers don't feel completely prepared to implement PBE, although they showed intuitive and compelling ways to connect to place in the classroom. However, as one teacher called it, there is a lack of "social cohesion" and students and communities don't seem to prosper beyond that (IF1). The solution is to use this found educational impetus in Costa Rican teachers and articulate it with a critical pedagogy of place and authentic learning. In other words, teachers need to continue to surface the tensional issues found in their communities, while at the same time, provide the conditions for students to feel

that the learning is real, valuable and enticing to rescue their places. In authentic learning, this looks like a classroom model that articulates belonging, care, high expectations, reality, service-learning, responsibility, mentoring and leadership; this is a formula for students to “re-story” themselves in their places (Delia & Krasny, 2018), in the realities where Costa Rican students live.

PBE also does not just require the interaction between teachers and students. Places are sociological entities composed of all their members, including parents, neighbors, community partners, businesses and every local institution. To overcome the harsh realities and sense of local disinterest in community matters, the solution can be found in “place sensemaking” by connecting the place-conversations happening in schools, to collaboration circles with other local entities, to then create “community knowledge” and see what needs to change (Zuckerman, 2019). Through this model of school-community partnerships, everyone is invested in the conditions to improve student’s education, create jobs and career paths to maintain local social capital.

Most teachers already feel pressured in their jobs, a lot is required from them, so PBE might feel like an additional weight (Linnemanstons & Jordan, 2017). It is a misconception that PBE cannot be combined with their regular school plans; that it becomes a whole new unit; or that it takes much time and energy (Smith & Sobel, 2010, p. ix). The focus is on how to shape pre-service education careers or professional development programs to be compatible with PBE implementation.

Training programs need to break the paradigm of standardized content delivery and show teachers alternative pedagogy of integrated, interdisciplinary, and inquiry-based approaches to education that is critical, creative, innovative, and engaging (Webber & Miller, 2016). These

pedagogies are by default inquisitive and immersive of relevant educational content, so it encourages teachers in exciting ways to improve their self-efficacy, educational worth, and yield better results and engagement in student's learning (Gross & Hochberg, 2016).

Teachers can continue to use their traditional curricula but tying specific connections to the area, using community resources, grounding local issues, and involving students in relevant local enterprises. At the same time, it's imperative for teachers to diversify and use alternative progressive pedagogies in the classroom while they develop proficiency. As supported by current literature (Howley et al., 2011), the positive changes will be perceived gradually in student's performance, teacher's confidence and school projection towards the community

The holistic view for PBE in Costa Rica can be summarized from McInerney et al (2011) point of view, by:

Giving students a say in what and how they learn; encouraging young people to engage with the big questions confronting the global community; building relational trust within schools and communities; developing a sense of student ownership, identity and belongingness; creating spaces for dialogue, reflection and political action; and, establishing an ethical commitment to justice and a 'fair go' (p.13).

Conclusion

In addressing the research questions of this study, rich evidence of PBE was obtained for rural schools in Costa Rica using mixed methods. The information from the participants in the study, show a great deal of affiliation with the proposed PBE framework in all five dimensions of place. Numerous stories confirm this and exemplify how, despite local limitations, teachers seem to find inspiration, impulse and creativity to use the local resources to foster an

appreciation of place and develop activities of reflection and community advocacy. Teachers agree to not only draw the connections in the classroom, they externalize the concepts and take students to develop projects to find solutions to local issues.

As the threat of globalization of education happens, and harsh local realities exist, PBE becomes more prevalent now than ever. Therefore, more attention should be paid to guide the implementation of PBE through place-sense making, community connections, authentic learning, teacher training, education reform and the use of alternative critical pedagogies to empower students to change the global from the local perspective of place.

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Appendix A

Online survey for the study of the evidence of place-based education in rural high schools in Costa Rica. For the question items in page 4 of the survey, a column was added to show the response scores, however these were not present on the actual survey of participants. The survey below is a translation by the author, from Spanish to English of the original survey.

Page 1. General information about the survey

Page 2. Consent to participate in research.

Question 1. Mark answer:

- Accept
- Don't accept

Page 3. Demographic information

Question 2. What is your age range?
<input type="radio"/> 18-20
<input type="radio"/> 21-30
<input type="radio"/> 31-40
<input type="radio"/> 41-50
<input type="radio"/> 51-60
<input type="radio"/> More than 60
Question 3. What is your gender?
<input type="radio"/> Female
<input type="radio"/> Male
<input type="radio"/> Other
Question 4. Where do you currently live? (city, county, province):
Question 5. What is the highest level of education that you have completed (choose one)?
<input type="radio"/> High school diploma
<input type="radio"/> Technical certificate
<input type="radio"/> Bachelors
<input type="radio"/> Graduate degree

<input type="radio"/> Masters
<input type="radio"/> Doctorate
<input type="radio"/> Other (please specify):
Question 6. How many years of experience do you have as an educator?
<input type="radio"/> Less than a year
<input type="radio"/> 1 to 5
<input type="radio"/> 6 to 10
<input type="radio"/> 11 to 15
<input type="radio"/> 16 to 20
<input type="radio"/> More than 20
Question 7. What subject do you currently teach in your school (if you teach more than one subject, please write the subject that you dedicate more hours):
Question 8. In which city do you work as an educator? City, county and province (if it is more than one, choose the city that you dedicate more hours to the school):
Question 9. What is your category of educator?
<input type="radio"/> Temporary/Intern
<input type="radio"/> Full time
<input type="radio"/> Administrative staff
<input type="radio"/> External teacher or non-affiliated to the school
<input type="radio"/> Other (please specify):
Question 10. What familiarity do you have with the city where you teach?
<input type="radio"/> I'm native
<input type="radio"/> Very familiar
<input type="radio"/> Fairly familiar
<input type="radio"/> Not very familiar
<input type="radio"/> I'm not familiar with the city

Page 4. Evidence of Place-based education in rural high schools in Costa Rica.

Please read the questions carefully and mark ONLY THE ANSWER THAT BETTER REPRESENT YOUR OPINION

This survey is based on the definition of "place-based education", according to David Sobel (2004). Please read below:

"Place-based education is the process of using the local community and environment as a starting point to teach concepts in language, arts, mathematics, social studies, science, and other subjects across the curriculum. Emphasizing hands-on, real-world learning experiences, this approach to education increases academic achievement, helps students develop stronger ties to their community, enhances student's appreciation for the natural world, and creates a heightened commitment to serving as active, contributing citizens"

*Sobel, D. (2004). *Place-based education: connecting classrooms & communities*. Great Barrington, MA: The Orion Society

Question 11. Which of these options best represents the "place" to which you belong?	Scores (not shown in online survey, highest value=5)
<input type="radio"/> The place where you were born	4
<input type="radio"/> The place where you lived most of your life	5
<input type="radio"/> A place where you had the most significant experiences of your life	6
<input type="radio"/> The place where most of your family and friends are located	3
<input type="radio"/> "Place" doesn't have a definition for me	1
<input type="radio"/> A place where I find the conditions and material resources to live	2
<input type="radio"/> Other (please specify)	0
Question 12. How can the teacher help the student understand his connection to "place"?	
<input type="radio"/> The connection with place is developed by the student alone and not through the teacher	1
<input type="radio"/> By making associations from Costa Rican textbooks and literature	4
<input type="radio"/> It is not necessary, the curricula of the Ministry of Education already contemplate this connection	3
<input type="radio"/> This connection with place occurs due to other influences outside the school	2
<input type="radio"/> Knowing the stories of the villagers and the local culture	5
<input type="radio"/> Other (please specify)	0

Question 13. How can the student understand their role in the community or sense of citizenship?	
○ It is acquired outside the school, through the influence of other institutions and people	3
○ This knowledge is only taught in the subject of civic education	2
○ Teachers strive to make connections about citizenship in many of the school subjects	4
○ This citizenship is acquired individually in the student by their own experiences	1
○ The citizenship acquired by the student is the combined effort of the school, community and other local institutions	5
○ Other (please specify)	0
Question 14. What is the best way in which educators can promote student social participation in the "place" or community?	
○ This participation occurs individually in the community without the help of the teacher	2
○ Today these participation opportunities are limited, or it is a challenge to carry them out.	1
○ By allowing students to organize their own participatory processes from school	4
○ Through the development of competencies and skills from the curricula, in the classroom	3
○ Through organized activities between the school and the community	5
○ Other (please specify)	0
Question 15. How can students be connected to local natural resources?	
○ Other external institutions are responsible for making this connection (e.g. ministry of environment, environmental organizations or nonprofits)	3
○ This relationship occurs individually in the "place" without the help of the teacher	2
○ Through the inclusion in the curricula of several subjects (e.g. in social studies, sciences, geography, biology, civic education, etc.)	4
○ Perform classes and activities outside the classroom, in a wild environment	5
○ The community has no relevant natural resources	1
○ Other (please specify)	0

Question 16. Why do you think the relationship with your "place" is important for students? (you can choose several options)	
○ To improve the attachment and affinity of students with their "place"	No score
○ To improve student learning and academic performance	No score
○ To improve the well-being and progress of the "place" to which the students belong	No score
○ To promote a culture of local involvement and active citizenship	No score
○ To protect local natural resources and encourage local conservation	No score
○ Other (please specify)	No score
Question 17. (Optional) Based on the above questions, briefly mention your own opinion and experience as a teacher in relation to Place-based education:	No score

Appendix B

Interview questions for the study of the evidence of place-based education in rural high schools in Costa Rica. Interview content was translated from Spanish to English by the author.

Title: Evidence of Place-based education in rural high schools in Costa Rica

Teacher interview questions:

This interview refers to the concept of place-based education, according to David Sobel (2004)

"Place-based education is the process of using the local community and environment as a starting point to teach concepts in language, arts, mathematics, social studies, science, and other subjects across the curriculum. Emphasizing hands-on, real-world learning experiences, this approach to education increases academic achievement, helps students develop stronger ties to their community, enhances student's appreciation for the natural world, and creates a heightened commitment to serving as active, contributing citizens"

***Sobel, D. (2004). Place-based education: connecting classrooms & communities. Great Barrington, MA: The Orion Society**

Based on your experience as a teacher, please share your opinion to the following questions:

1. What is your definition of "place"?
2. Why is the concept of place relevant in the classroom?
3. How and through which activities is "place" taught in the classroom?
4. How can teachers and schools integrate students more into their "places"?
5. How can students connect better to local nature?
6. What benefits you think place-based education brings to the local communities?

Appendix C

County map of Costa Rica with the town names of the schools where survey respondents work and where they currently live.

