Intercultural education and sustainability

A local perspective of higher education students at the rural community of Huehuetla in Puebla, Mexico

Itzel Anahí López Laínez

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Abstract

The purpose of this dissertation is first to provide a historical overview and discuss the progress of the status of indigenous knowledge in Mexico. How has it advanced from being a repressed tradition to becoming part of an intercultural education today? And second is to provide insights into the intercultural education experience of the state-run Intercultural University of Puebla (UIEP) through a study of students’ perceptions of traditional knowledge. This higher education institution is located in the north highland region of Sierra Norte de Puebla in Mexico in the small rural municipality known as Huehuetla, which due to its outstanding natural and cultural wealth creates an interesting research framework. The rationale for this research focuses on the need to reconsider the relationship of science and indigenous knowledge and reevaluate the idea of replacement into an act of inclusion, where plurality of thought and diversity of culture complement formal education.

The theoretical framework of this research relies on the social constructivist learning theories of Lev Vygotsky and Kenneth Gergen respectively, and the social identity theory of Henri Tajfel and John Turner. In order to address the objectives and research questions and generate results, a historical-ethnographic approach represents the governing philosophy behind the methods employed in this study.

David W. Orr (1993) argues that education is a key to a society’s achievement and makes a difference in a society’s future, stating that ‘all previous peoples who had sustainable cultures wove education and research together within the vessel of community’. This is the case of the educational model promoted at UIEP which places high priority on students’ own research and on links to their rural communities. The institution’s main objective is to train professionals and researchers (indigenous and non-indigenous) through a model of education based on the principles of sustainability and framed within an intercultural approach. However, the students’ worldview reflects that even though respect is a value quite relevant for the educational model of UIEP, in practice, it is the prior knowledge learned at home that brings these students stronger values from which they can reclaim sustainable ways of development.
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# Table of contents

Abstract .......................................................................................................................... IV
Acknowledgements ......................................................................................................... V
Table of contents ............................................................................................................. VI
List of figures ..................................................................................................................... VIII
Preamble ........................................................................................................................... 1

1 Introduction ................................................................................................................... 4
  1.1 Constructing knowledge together .............................................................................. 9
  1.2 Indigenous knowledge and scientific knowledge. Two streams, one path towards sustainability .................................................................................................................. 11
  1.3 Sustainability and indigenous worldview ....................................................................... 15
    1.3.1 The institutionalization of Indigenous knowledge by UNESCO .......................... 19
  1.4 Intercultural education for sustainable development ................................................. 20
    1.4.1 Intercultural approach within the Mexican context ............................................. 22
  1.5 Presentation of the subsequent chapters ................................................................. 24

2 Theoretical framework ................................................................................................ 26
  2.1 Constructivist approach .............................................................................................. 26
    2.1.1 Social constructivism in educational practice .................................................... 28
  2.2 Determining identity .................................................................................................. 29
    2.2.1 Social Identity Theory ......................................................................................... 29
  2.3 Research methodology .............................................................................................. 31
    2.3.1 An overview of education for indigenous people in Mexico .............................. 31
    2.3.2 Fieldwork in Huehuetla ...................................................................................... 32

3 A brief journey into the history of Mexican indigenous consciousness ..................... 35
  3.1 Pre-Hispanic inherited wisdom ................................................................................... 37
  3.2 Five centuries of confrontations for knowledge and identity ..................................... 41
    3.2.1 Evangelize the “Indios” ....................................................................................... 43
    3.2.2 In between revolutionary ideals ........................................................................... 47
    3.2.3 The Indigenismo of the twentieth century ......................................................... 53
  3.3 On the way towards social inclusion ........................................................................... 57
  3.4 Indigenous knowledge under the current development plans ................................... 61
Multicultural society, Intercultural education ..................................................64

4.1 Bonds with the land .................................................................................71

4.1.1 Kakiwin Tutunaku: The hill with three hearts ....................................75

4.2 The Intercultural University of the State of Puebla .................................78

4.2.1 Students’ perspective .............................................................................84

5 Conclusions ..................................................................................................90

References .......................................................................................................95
List of figures

Figure 1. *Interculturalidad*. Huehuetlan artist Ludovico Nuñez (2013) Oil on canvas. Library of the Intercultural University of the State of Puebla ................................................. 3

Figure 2. Huehuetla within the *Totonacapan* region. Map adapted from (Rouy, 2005, p. 189); INEGI Geographic Information of Huehuetla (2009); CDI Atlas of Indigenous People (2015) ................................................................. 32

Figure 3. Mexican Pre-Hispanic cultures and their prominent ceremonial centers ...... 39

Figure 4. Diego Rivera (1950) El *Tajín* Mural painting in the National Palace of Mexico City. The central foreground event depicts an Aztec expedition to collect tribute (left) from Totonac people (right) .................................................................................. 41

Figure 5. Friar Bernardino de Sahagún. Ethnobotanic plants used for medicine by the Aztecs. Florentine Codex (1540 y 1585) .................................................................................. 46

Figure 6. “There will be no development without education, no progress without culture”. Mural painting: Public library of Huehuetla, Puebla. ................................................. 64

Figure 7. The collective efforts to erect the trunk for the *voladores* performance. Huehuetla, Puebla. June 3, 2015. Source: facebook page *Huehuetla cuna del Totonacapan* ........................................................................................................... 69

Figure 8. Landscape of Huehuetla ................................................................................. 72

Figure 9. Route from the city of Puebla to Huehuetla. Source Google maps ............ 78

Figure 10. Facilities of the Intercultural University of the State of Puebla in Huehuetla, Puebla. ........................................................................................................... 80
In ancient India, four pious Brahmans walked along the road to the royal city. The first Brahman said, “We have studied long and hard. Surely with our great knowledge, we can make our fortune at the palace of the king.

As friends since childhood, we should share our money equally.” “I disagree,” said another. “We should not share equally since only three of us are accomplished scholars. One of us has only common sense.”

Three Brahmans turned together and smirked at the fourth, who shyly eyed the ground. He defended himself quietly, saying, “My common sense can be a valuable asset. It is true that you have learned much from books, but I have learned much from life.”

One of the first three quickly retorted, “Your common sense will be useless when we have complicated tasks to perform at the palace. It is our great academic knowledge that will earn a fine wage from the king. You should have studied more!”

“Perhaps you are right,” sighed the fourth Brahman, who hung his head in shame as they all continued towards the city.

Before long they came upon the dry skeleton of an animal lying beside the road. “Now,” said one Brahman, “let us see how powerful our academic knowledge can be. I know how to assemble the bones of this animal in perfect order.” “I know how to accurately put flesh and skin on this creature,” said the second. “My knowledge is greater than either of yours,” boasted the third, “for my studies have taught me how to bring this creature back to life.”

The fourth Brahman humbly said, “I do not have extraordinary powers like yours, but I do know that this creature is a lion. My common sense tells me that bringing him to life is dangerous.” “Fool!” cried the three in unison. “You do not know much at all!”

“I know this much,” said the fourth nervously. “If you are going to bring this lion to life, I am going to climb a tree.” With that, the fourth Brahman scampered up a trunk and sat watching from high up on a branch. The other Brahmans laughed and jeered.
Confidently, the first Brahman stepped forward and assembled the lion’s bones. “There!” he boasted. “I have done an excellent job!”

The second Brahman scoffed, “Wait until you see what I can do!” He crouched over the skeleton and covered the bones expertly with flesh.

The third Brahman said, “Silence!” I must concentrate as I accomplish the next truly difficult task.” The third Brahman bent over the dead creature and breathed life into its body.

The lion roared loudly and stretched his limbs. Eyeing the three scholars, he hungrily licked his lips and pounced. The fourth Brahman watched with horror from the safety of the tree as the lion proceeded to eat all three.

That is why they say,

Highly trained intelligence is useless without common sense.

Vain scholars in their pride made a lion and they died.

The ancient story from the *Panchatantra*¹, ‘one of India's most influential contributions to world literature’ (Forest, 1996, pp. 19-23), illustrates the general view about the underestimation of common sense, which represents the philosophy behind the subject of this research. The metaphor of this tale which emphasizes the importance of life experience to complement scientific knowledge comprises the main issue addressed in this study and sets the starting point for the following introductory chapter.

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¹ The *Panchatantra* consists of five books of animal fables and magic tales that were compiled, in their current form, between the third and fifth centuries AD’ (Ashliman, 2002)
Figure 1. *Interculturalidad*. Huehuetlan artist Ludovico Nuñez (2013) Oil on canvas. Library of the Intercultural University of the State of Puebla
1 Introduction

Religion rests its case on revelations, science on method, ideology on moral passion; but common sense rests its case on the assertion that it is not a case at all, just life in a nutshell. The world is its authority.

Clifford Geertz

This study has two objectives. The first is to provide a historical overview and discuss the progress of the status of indigenous knowledge in Mexico. How has it advanced from being a repressed tradition to becoming part of an intercultural education today? And the second is to provide insights into the intercultural education experience of the state-run Intercultural University of Puebla (UIEP) through a study of students’ perceptions of traditional knowledge. What are the main components of their identity and what role does indigenous knowledge play in it? What is the students’ relation to indigenous culture and what are the implications of intercultural education for reclaiming sustainability in Mexico?

The particular objectives of this research include the following: a) to identify the potential sustainable practices of the Totonac and Nahuatl worldview; b) to find out if this indigenous ecological knowledge remains active in spite of the historical influence of western education and development models in Mexico.

The research questions addressed are as follow: 1) What has been the history of a gradual inclusion of indigenous knowledge and culture in Mexican education 2) What is the dominant worldview among the students of UIEP and how sustainable is it? 3) How is intercultural education perceived and experienced by the students from UIEP and are there any variations in these perceptions? 4) Given the intercultural approach, are these students committed to their communities in order to maintain their social identity and achieve sustainable development?
In the Anthropocene\(^2\) era, the many negative ecological impacts of economic growth have made some social groups reevaluate their relationship to the earth. Based on scientific evidence, it is known that humans have radically endangered the environment and their own survival. That realization has contributed to the development of new understanding to change the way humans seek development and a vast number of studies which have improved technology\(^3\) in order to reduce those effects. But are these new technologies relevant for every context? What if the concepts, technology and scientific methods known are not enough to solve the current social-environmental problems? How much can development promoters trust the ‘implicit’ knowledge that relies on common sense\(^4\)? The background of this study reflects an increasing concern about the limitations of technocratic thinking as the main source of solutions to the world’s social-environmental problems.

The Irish philosopher John O’Donohue said that “the greatest philosophers admit that to a large degree all knowledge comes through the senses\(^5\)”. Additionally, in his book *Local knowledge*, Clifford Geertz, regarding common sense, explains that “when we say someone shows common sense we mean to suggest more than that he is just using his eyes and ears, but is, as we say, keeping them open, using them judiciously, intelligently, perceptively, reflectively or trying to, and that he is capable of coping with everyday problems in an everyday way with some effectiveness” (Geertz C., 1983, p. 76).

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\(^2\) The term *Anthropocene* was first advocated by biologist Eugene Stoermer in the 1980’s but not popularized and put into print until he co-published an article with Nobel Prize winning atmospheric chemist Paul Crutzen in a Global Change Newsletter in 2000’ (Gray & Colucci-Gray, 2014, p. 17). It is a new word that comes from its Greek roots: *anthropos*, meaning humankind, and *cene*, meaning epoch or period of Earth’s history (Sachs, 2014, p. 1). Defined by the Geological Society of London, this term denotes the current geological age, viewed as a period during which human activity has become the dominant influence on climate and the environment.

\(^3\) Studies from interdisciplinary fields, both social and natural sciences and environmental technology like water treatment plans, renewable energy, bio-fuels, agro-ecological techniques, etc.

\(^4\) Common-sense knowledge is the knowledge shared with others in the normal, self-evident routines of everyday life (Berger & Luckmann, 1966, p. 36). Another reference given by the philosopher Alfred Schutz establishes that the concept of common sense thinking is a system of constructs or meanings for organizing the world and acting in it\(^5\). “These social constructions of common sense rest not so much on the reality of a shared worldview – given the uniqueness of each individual’s biography, one person’s stock of knowledge can never be fully congruent with another’s – as on the presumption of a reciprocity of perspectives among those with whom one associates” (Furniss, 1999, p. 118).

\(^5\) O’Donohue, J. Retrieved June 21, 2015 quote from Instagram @indigeneproject#quotes#johnodonohue#theothers
The general idea that the knowledge needed to shift human development in a prosperous, fair and sustainable direction requires “genuine methods” that only scientific thought and modern technology can bring, therefore rendering unnecessary the consideration of other approaches using common sense or practical knowledge. According to Richard B. Norgaard⁶ (1994) “The belief in the ultimate and final victory of Western science has been accompanied by the idea that all cultures would merge into one “correct” way of thinking about the world, human development and well-being” (as cited in Berkes, 1999, p. 267). For instance, development economists have typically projected social and economic change in a way that leads all cultures to implement one correct Western worldview. However, there are many different ways of thinking about the world and how to live sustainably in contrast to the development and progress proposed by the Western model, which although helpful in many fields, does not provide answers to all environmental issues⁷. “This recognition of the fallibility of science” (Shava, 2013, p. 387) has revitalized the search for alternative solutions to social and environmental problems in other earlier marginalized knowledge.

To track down the possible reason behind the confidence in Western science, one should go back in time to the Age of Reason⁸ when “the dream of intellectual unity first came to full flower. . . A vision of secular knowledge in the service of human rights and human progress, it was the West’s greatest contribution to civilization. It launched the modern era for the whole world; we are all its legatees” (Wilson, 1998, p. 15). Scientist and philosophers like René Descartes in France, Immanuel Kant in Germany, Isaac Newton in England and Galileo Galilei in Italy, just to name a few, “shared a passion to demystify the world and free the mind from the impersonal forces that imprison it”⁹ (Ibid, 1998, p. 23). For instance, Descartes, who is commonly known as the father of

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⁷ According to Vandana Shiva at times, western science has given wrong answers, and some western scientific solutions contribute to environmental crisis (e.g. agrochemicals threatening species biodiversity and synthetic drugs having fatal side effects on the very same humans they are supposed to heal) (Shiva, 2002, p. viii)

⁸ European politics, philosophy, science and communications were radically reoriented during the course of the “long 18th century” (1685-1815) as part of a movement referred to by its participants as the Age of Reason, or simply the Enlightenment. Enlightenment thinkers in Britain, in France and throughout Europe questioned traditional authority and embraced the notion that humanity could be improved through rational change. The Enlightenment produced numerous books, essays, inventions, scientific discoveries, laws, wars and revolutions. From: History (2009) *Enlightenment*. Retrieved April 27, 2015, from History.com: http://www.history.com/topics/enlightenment

⁹ Those forces of imprisonment refer especially the traditional lines of authority given the Catholic Church.
modern philosophy, insisted upon methodical doubt as the first source of learning. His belief that the world is essentially rational and comprehensible also resulted in a pervasive optimism regarding the progress of science. “The universe is thought to conform to scientific laws. Through understanding of these laws, nature can be subjected to the control of man” (Cress, 1998, p. 1).

The ideal of explaining natural phenomena implied a separation of man from nature. Undoubtedly, the benefits of the Enlightenment have brought humanity uncountable progress based on reason and education. The problem with its unified standpoint of viewing the world just as the object of study and science as the ultimate truth, has limited people’s perspectives on the way to gain knowledge. In Horkheimer and Adorno’s seminal work, *The Dialectic of the Enlightenment* (1978[1974]), which involved a sustained critique of the cultural ideology of modernity, the authors argued that science has been reduced to a tool of technology, the purpose of which is to manipulate and control both nature and society.

The English biologist Thomas Huxley once defined science as organized common sense (Berkes, 1999, p. 49). Likewise, alternative philosophies suggest that common sense and scientific knowledge are not necessarily opposed. For instance, in *The Crisis of the European Sciences and Transcendental Phenomenology*, Edmund Husserl states a different approach about the two types of knowledge that man can obtain, experiential and theoretical. He argues, “What is actually first is the merely subjective-relative intuition of pre-scientific12 world-life” (Husserl, 1970, p.125). In this sense, before anyone starts any scientific methodology, the knowledge that he or she has gained from previous life experience enables them to be objective and true. Because a scientist’s previous knowledge comes prior to any theoretical analysis13.

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10 There are different theories that place the rupture of the unity between human and nature many years before the Enlightenment, around 10,000 years ago when humans developed symbolic language. Source: Burr, C. (2008, December 6). *Culture Change*. Retrieved April 28, 2015, from Language Separates Us From Nature: http://www.culturechange.org/cms/content/view/258/63/


12 Prescientific: of, relating to, or having the characteristics of a period before the rise of modern science or a state prior to the application of the scientific method.

Furthermore, in his book *Consilience*, Edward O. Wilson explains that: “Today the greatest divide within humanity is not between races, or religions, or even, as widely believed, between the literate and illiterate. It is the chasm that separates scientific from pre-scientific cultures” (Wilson, 1998, p. 49). However, there is an increasing recognition that cultural differences frame valuable and diverse ways to respond to common problems. The challenges of our modern world require creative and inclusive thought to broaden our capacity to enhance human survival, especially considering those contemporary societies which have had long processes of cultural, social and environmental change imposed upon them, and which are in most cases cultures that have become less separated from nature than societies that are legatees of the Enlightenment. Hence, due to an implicit sensitive connection with nature, it is important to identify within these societies or pre-scientific cultures and, to better understand the values regarding sustainable practices that can be learned from.\(^\text{14}\)

According to Murray Bookchin, modern societies should consider that “we cannot allow ourselves to be imprisoned within a mechanistic outlook and a dehumanizing technology – with its shackles of alienation, competition, and a brute denial of humanity’s potentialities” (Bookchin, 1982, p. 20). Particularly, this research concerns indigenous ecological knowledge\(^\text{15}\) as one paradigm that sustainable promoters could approach in order to enhance the ability to act collectively. It is considered in this study that practical common sense held by indigenous people and techniques learned from Western science are both valid forms of knowledge, although “the scale at which they can be applied may differ” (Pierotti, 2011, p. 67).

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\(^{15}\) Indigenous Ecological Knowledge: is a cumulative body of information, beliefs and practices evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment. Source: Voices of biodiversity. (2012, April 5). *National Geographic*. Retrieved July 26, 2015, from Traditional Ecological Knowledge, Anthropology and Climate Change: http://voices.nationalgeographic.com/2012/04/05/traditional-ecological-knowledge-anthropology-and-climate-change/
1.1 Constructing knowledge together

What types of actions raise awareness of the different perspectives among the bearers of dominant cultures as well as among holders of indigenous worldviews? In recent years the role of indigenous ecological knowledge in sustainable development has increased as a significant strategy mentioned at international forums like the Planet under Pressure Conference. In London on the 29th March 2012, Dr. Lidia Brito and Dr. Mark Stafford Smith co-chaired “the largest gathering of global change scientists leading up to the United Nations Conference on Sustainable Development (Rio+20)”16, from which the document entitled The State of The Planet Declaration emerged (Brito & M.S., 2012, p. 1). The scientific organizing committee agreed on the need to construct new knowledge in order to solve the current global challenges, stating that:

In one lifetime our increasingly interconnected and interdependent economic, social, cultural and political systems have come to place pressures on the environment that may cause fundamental changes in the Earth system and move us beyond safe natural boundaries. But the same interconnectedness provides the potential for solutions: new ideas can form and spread quickly, creating the momentum for the major transformation required for a truly sustainable planet (Ibid, 2012, p. 1).

This declaration mainly includes scientific perspectives, yet its content mentions the importance that local knowledge systems have in the solution-oriented approach, which is necessary to move societies on the right path towards sustainability. Recently, the 2014 summary report on climate change from the Intergovernmental Panel on Climate Change (IPCC) stated that the educational options for raising social transformation in response to climate change should integrate, gender equity, extension services, sharing indigenous, traditional and local knowledge, participatory action research and social learning (Gray & Colucci-Gray, 2014, p. 27).

Fulfilling the strategy to include indigenous knowledge systems17 into the dominant education models requires challenging actions. On the one hand, constructing new


17 The concepts of ‘local wisdom’ and ‘traditional knowledge’ are used interchangeably; understanding that both terms are related to common sense and close observation of nature and experience.
knowledge requires a more compelling educational role, because changing practices to conform to a given model is a difficult process that is too time consuming. On the other hand, “actions are not isolated from culture, so changes of an individual might not meet with the approval of others in a culture, and contemplated changes might be regarded as taboo” (Tippins, 1993, p. 14). Present societies need to think about cultural, technical and institutional ways to enable social learning and improve the ability to share agreements.

David W. Orr, renowned American environmental educator, argues that “the demands of building good communities within a sustainable society within a just world order will require more than the specialized, one dimensional mind and more than instrumental cleverness” (Orr, 1993, p. 3). Education is the key to impact and make a difference: “all previous peoples who had sustainable cultures wove education and research together within the vessel of community” while Western culture has taken education and research out of community and broken that vessel (Ibid, 1993, p.4). From the Latin American front another intellectual urges societies to re-think the foundations of the dominant modern worldview. For the last 20 years Enrique Leff has been researching and reflecting about the current economic rationality, concluding that “the environmental crisis is the reflection and the result of the western crisis of civilization and is caused by this civilization’s ways of knowing, understanding and therefore transforming the world” (Eschenhagen, 2008, p. 1). The new construction of knowledge, therefore, will not require starting from scratch. There is no need to invent sustainable human communities, people can learn from societies that have lived sustainably for centuries18. It requires instead a meeting of cultures or “a dialogue of knowledge” (diálogo de saberes, term coined by Enrique Leff). The common message among both scholars Orr and Leff implies getting out of the box of the “scientific objectification of the world”19 that has limited the capability to imagine alternative ways of reaching social and ecological well-being20.

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20 Ecological wellbeing: Ecology is the study of the relationship between organisms and their environment. Very often, the health of an environment is directly tied to the well-being of its inhabitants. Ecological well-being measure
1.2 Indigenous knowledge and scientific knowledge. Two streams, one path towards sustainability

Traditional knowledge or indigenous knowledge refer to the accumulated set of practical experiences of the natural environment embedded in some societies that is historically situated and particular to the specifics of locality and group dynamics\(^\text{21}\). In general terms, this knowledge is orally shared from generation to generation and reinforced with cultural rituals. The practitioners and students of indigenous knowledge often idealize it, arguing that for millennia, this special relationship with Mother Nature has allowed them to develop particular knowledge of the environment that is the foundation of their lifestyles, institutions, spirituality and worldview. In some fields like agriculture, education and natural resources management, there is the assumption that indigenous people are stewards of nature and have a broad knowledge of how to live sustainably (Smith H. A., 2007, p. 198).

Another widely known, general conception is that “formal education\(^\text{22}\) systems have disrupted the practical, everyday life aspects of indigenous knowledge and ways of learning, replacing them with abstract knowledge and academic ways of learning”\(^\text{23}\). Therefore, due to an implied risk of losing valuable knowledge, the rationale for this research focuses on the need to reconsider the relationship of science and indigenous knowledge and reevaluate the idea of replacement into an act of inclusion, where plurality of thought and diversity of culture complement formal education.


\(^{22}\) Formal education was introduced to many developing countries in the 19th century (often by colonial governments) to produce administrators, clerks, teachers and interpreters. This type of education was based on abstract knowledge systems – scientific knowledge – that evolved in the western industrialized world. Formal education systems had little place for indigenous knowledge or indigenous methods of education. It was, until recently, assumed that indigenous knowledge was irrelevant, unscientific and outdated. Therefore, few attempts were made to integrate indigenous knowledge into formal education despite its potential value in solving contemporary problems. (Fien, 2010)

Inspired by Native American culture and Chinese Confucianism, Gary Holthaus questions the learning of native wisdom. He states that “if we want to think about a sustainable culture and find ways to create one, we have models right at hand . . . the models have roots and forms in several cultures, but in each case they grow from antiquity . . . they have been around long enough; there must be something we can learn from them, if we have sufficient humility and wisdom of our own” (Holthaus, 2008, p. 3). On the other hand, what if societies from the past were not sustainable at all? How are we going to learn from them if they were not significantly better than present societies? In his book Collapse, Jared Diamond argues the following:

We shouldn't be so naive as to think that study of the past will yield simple solutions, directly transferable to our societies today. We differ from past societies in some respects that put us at lower risk than them; some of those respects often mentioned include our powerful technology (i.e., its beneficial effects), globalization, modern medicine, and greater knowledge of past societies and of distant modern societies. We also differ from past societies in some respects that put us at greater risk than them: mentioned in that connection are, again, our potent technology (i.e., its unintended destructive effects), globalization (such that now a collapse even in remote Somalia affects the U.S. and Europe), the dependence of millions (and, soon, billions) of us on modern medicine for our survival, and our much larger human population. Perhaps we can still learn from the past, but only if we think carefully about its lessons (Diamond, 2005, p. 7).

At some point Diamond and Holthaus agree on the fact that past cultures offer lessons to be learned. Whether considering past social development experiences critically or humbly, it is important to first recognize that there is more than one way of knowing and then to analyze with a broader perspective how to complement the education for sustainability without compromising local knowledge systems.

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24 The way of life taught by Confucius (6th–5th century BC) is based on ideas of mutual obligation, maintenance of hierarchies, a belief in self-development, education, and improvement, and above all, an ordered society. It abhors violence and tends to look down on profit-making, though it is not wholly opposed to it. The ultimate ideal was to become sufficiently wise to attain the status of ‘sage’ (sheng), but one should at least strive to become a ‘junzi’, often translated as ‘gentleman’, but perhaps best thought of as meaning ‘a person of integrity’ (Mitter, 2008).

25 Education for Sustainability (EFS), or Sustainability Education, is a commitment to an educational system that is transformative, value-based and future oriented. This kind of system empowers by experientially facilitating the knowledge, understanding, wisdom, and practices for making a positive impact on the sustainability of our collective and future wellbeing. This system prepares people to become stewards of our planetary eco-systems and the Web of Life, and it promotes values and actions for inter-generational equity, justice, peace and engaged citizenship. From:
Furthermore, while the current wave of interest in indigenous knowledge dates back no more than a few decades, “the knowledge systems themselves have accompanied humankind through countless millennia of environmental change and cultural adaptation” (Nakashina & Roué, 2002, p. 3). However, an intellectual debate over the validity of indigenous knowledge vs. scientific knowledge systems has been taking place long before its latest, more environmentally oriented recognition.

Claude Lévi-Strauss, a renowned philosopher, anthropologist and author of *The Savage Mind*, (1962) reflected on the nature and character of indigenous minds, which he described as agents of mythical thought (Nakashina & Roué, 2002, p. 3). In his book, *The Culture Cult*, Roger Sandall defines this mythical thought as “romantic primitivism” which in his words is “the moral transfiguration of the tribal world . . . projecting a benignly Disneyfied way of life, all flowers and contentment, all stress-free smiles and communal harmony” (Sandall, 2011, p. 9). He emphasizes that, not surprisingly, the tales of mystical wisdom and ecological reverence are eagerly adopted by modern indigenes seeking a more tasteful view of their own past.

Sandall’s arguments have been challenged by the work of the anthropologist Harold Conklin, pioneer of ethnoscience, a discipline that strives to understand the indigenous knowledge from within, and by Fikret Berkes, a human ecologist who has dedicated a book to traditional ecological knowledge entitled *Sacred Ecology*. In the book Berkes explains the recent interest in the use of indigenous ecological knowledge as follows:

There are probably several factors involved in the increased attention accorded to traditional ecological knowledge: the presence of a dedicated core group of scholars producing not only academic material but also feeding information into international policy circles; parallel developments in other interdisciplinary, policy-relevant fields such as environmental ethics, commons and environmental history; public dissatisfaction with the outcomes of modernist analysis in fields such as resource conservation and management; and the emergence of indigenous scholarship to claim and use indigenous knowledge in

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26 Ethnoscience emerged out of a need to describe cultures from the inside. It made use of the categories operative within those cultures themselves to gain access into their cognitive universes. It was based on the assumption that the existence of a word to name a concept is the most reliable indication that the concept exists in that culture. Thus, ethnoscience became involved at first with the description of systems of terminologies. Linguistic methodologies were used to provide more rigorous methods for gathering and analyzing data, and the field was sometimes referred to as “ethnographic semantics” (Sturtevant 1964; Colby 1966) cited by (Berkes, 1999, p. 51)
education and culture. Perhaps it is the case that the accumulation of a “critical mass” of knowledge in the subject area happened to coincide with a search by the public, policy makers, scholars, and professionals for alternatives to a materialist tradition in ecology and environmental science (Berkes, 1999, p. 21).

The work of Conklin and the awareness of the valuable knowledge of indigenous people about the natural world have inspired other scholars to study the elements that indigenous knowledge can provide to systematic understanding of ecology or biology, thus causing emerging fields to appear such as ethnoecology and ethnobiology27. However, there is a persistent appraisal to be considered critically. “This method of transforming alternative knowledge systems into ‘ethnosciences’ does not lift such knowledge to a higher plane, it merely informs people that their knowledge is of an inferior sort that can be improved by systematization and rationalization according to the logic of the superior ‘real’ science”28.

In addition, although the title of this section implies a binary opposition between scientific knowledge and indigenous knowledge as two separate streams, the advantages of this academic discipline (ethnoscience) reveal a feasible project of constructing a bridge between practitioners from both shores. “The challenge is to create a context of mutual respect and genuine equality for this dialogue. This is not just a matter of changing attitudes. Ultimately it requires a transformation of the political economy of scientific research”29.

Upon this matter, the use of indigenous knowledge for sustainable development has been considered not only within the academic field as, Berkes pointed out; its presence into the international political agenda has also increased over the years. Surprisingly, not long ago, on September 13th 2007, the United Nations General Assembly, in its 61st plenary session, approved the resolution for the United Nations Declaration on the


29 (Ibid, 1994)
Rights of Indigenous Peoples, recognizing that respect for indigenous knowledge, cultures and traditional practices contributes to sustainable and equitable development and proper management of the environment (United Nations, 2008, p. 1).

In 1987, twenty years before the launch of the Declaration on the Rights of Indigenous Peoples, the role of indigenous knowledge was loosely mentioned in the report of the World Commission on Environment and Development: Our Common Future, establishing that tribal and indigenous peoples will need special attention as the forces of economic development disrupt their traditional lifestyles - lifestyles that can offer modern societies many lessons in the management of resources in complex forest, mountain, and dryland ecosystems (Brundtland, 1987, p. 15). However, it was not until the launch of the United Nations Decade for Education towards Sustainable Development 2005 – 2014 that indigenous knowledge was considered an educational asset. It aims at promoting teaching which respects indigenous and traditional knowledge and encourages the use of indigenous languages in education. Indigenous worldviews and perspectives on sustainability should be integrated into education programs at all levels whenever relevant30.

1.3 Sustainability and indigenous worldview

The critics of the dominant, capitalistic model often describe it as materialistic and technocratic, complaining of its widespread influence on lifestyles around the world. Due to this, attempts have been made to reach an alternative modernity through academic and political discourse, resulting in a variety of concepts proposed to change the way societies seek progress. The evolution of such concepts has been driven under different social movements, some with sharing characteristics. For instance, based on ecological economics and anti-consumerist ideas, the 1970’s concept “Degrowth” proposed by the Club of Rome think tank and theorized by the Romanian economist

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Nicholas Georgescu–Roezen became a significant social movement in Europe. Likewise, “Ecosocialism” a current of ecological thought and action opposed to the infinite expansion of a production model and consumption model that destroys nature, represents an original attempt to connect the fundamental ideas of Marxian socialism to the gains of critical ecology (Löwy, 2015, p. 1). In recent years the economist Tim Jackson also discussed the dilemma of growth in his book *Prosperity without growth* (2009), arguing that “an economy predicated on the perpetual expansion of debt-driven materialistic consumption is unsustainable ecologically, problematic socially and unstable economically. Changing this requires the development of a new macroeconomics for sustainability: an economic engine that doesn’t rely for its stability on relentless consumption growth and expanding material throughput” (Jackson, 2009, pp. 175-176).

The widely accepted concept of sustainable development was defined in 1992 at the UN Conference on Environment and Development in Rio de Janeiro, Brazil by the former Norwegian prime minister Gro Harlem Brundtland. The development which meets the needs of the present without compromising the ability of future generations to meet their own needs has been included in government strategies, scientific research, business plans and media, although its adoption and overuse has qualified sustainable development as an abstract, ambiguous and unfeasible concept or in the words of James Lovelock, “meaningless drivel”.

However, while the concept itself may be open to different interpretations, it is relevant to consider how the concept of sustainability adapts to different social and cultural contexts. Brundtland’s definition suggests the idea of “balancing economic, social and environmental goals, although this balancing act is inherently ambiguous. Sustainable development may accommodate potentially conflicting values, beliefs and points of view on what is a sensible, desirable and feasible thing to do” (Loeber, Mierlo, Grin, &

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33 The term sustainable development is often used synonymously with sustainability. However, while sustainability implies that wellbeing can be at least maintained over time, sustainable development implies in addition that the factors that determine quality of life, such as literacy and education in general, health, human rights and so on, improve over time. (Markandya, Perelet, Mason, & Taylor, 2002, p. 173)

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Leeuwis, 2009, p. 83). But, how can one compare the western born concept of sustainability with a particular indigenous worldview?

Here are the arguments of the sociologist Ricardo Pérez Avilés: 34

The western vision incorporates the environmental and social elements to the development scheme as externalities. Due to the goal of development was and still is economic growth. It is not a homogeneous view, in a way that has different and many times conflicting interpretations, ranging from a neo-liberal perspective i.e. market and privatization or the adoption of a strong conception of sustainability 35.

Considering the context of indigenous people in Mexico, Pérez Avilés added: “on the other hand the perceptions of peasants and indigenous people in general, respond to their worldview, a vision that envisages them as part of the whole natural environment”. This view does not imply that these human groups have never acted unsustainably. “Sustainable Development is a concept that has been imposed upon indigenous people, forcing them to incorporate it into their practices” 36. The indigenous worldviews and the western concept of sustainable development are different visions which are difficult to compare. The element needed in order to find compatibility between these two perspectives is culture.

To include culture in the sustainability equation (economy + ecology + environment) is an idea further discussed by Nina Witoszek and Atle Midttun throughout their theory Ecomodernity: “today the ideal of sustainability is neither a matter of documenting a threat (there has been enough evidence), nor finding technological and economic

34 Ricardo Perez Aviles is a renowned professor and researcher of the Benemerita Universidad Autonoma de Puebla at the Department for Sustainable Development.

35 Authors writing on strong sustainability demonstrate that natural capital cannot be viewed as a mere stock of resources. Rather natural capital is a set of complex systems consisting of evolving biotic and abiotic elements that interact in ways that determine the ecosystem’s capacity to provide human society directly and/or indirectly with a wide array of functions and services (Noël and O’Connor, 1998; Ekins et al., 2003; De Groot et al., 2003; Brand, 2009). In contrast, weak sustainability postulates the full substitutability of natural capital. From this perspective, technological progress is assumed to continually generate technical solutions to the environmental problems caused by the increased production of goods and services (Ekins et al., 2003).

solutions (there are enough solutions); it is the matter of overcoming political, social, and cultural obstacles to necessary change” (Midttun & Witoszek, 2013, p. 2); (Midttun & Witoszek, 2015). Moreover, they argue that in order to attain a feasible sustainability, we need to find persuasive stories which “equally appeal to reason, emotions, ethical values and desire for role models. These elements may be at odds with one another, and yet, when woven together in an imaginative way, they have the power to entice and draw the crowds” (ibid, 2015, p. 2). The concept of Ecomodernity from which the cultural aspect frames an approach for this thesis allows us to embrace the benefits of modernity in a different more inclusive way as its definition suggests,

as a new stage of modernity that advocates a shift from unrestrained growth to sustainable development, simultaneously at three levels: in culture, by combining the legacy of humanism with ecological wisdom and holistic thinking and practices; in industry by highlighting renewable energy and a post carbon economy; and in politics by advancing the ideas of sustainable development, partnered governance, human rights and eradicating ecocide (Witoszek, 2013, p. 246).

Along the incorporation of humanism and ecological wisdom as suggested in Ecomodernity, another social philosophy inspired by the indigenous term Sumak Kawsay currently known in Spanish as Buen Vivir (roughly translated as well-living) helps this research to illustrate the importance of culture in reference to sustainability. Highly accepted across South America, the worldview of Quechua indigenous people from the Andes describes a way of doing things that is community-centric, ecologically-balanced and culturally-sensitive. The leading scholar on the subject Eduardo Gudynas, executive secretary of the Latin American Centre for Social Ecology in Uruguay, explains that with Buen Vivir, the subject of wellbeing is not the individual himself, but the individual in the social context of their community and in a unique environmental situation37. Gudynas suggests that: “It helps us to see the limits of current development models and it allows us to dream of alternatives that until now have been difficult to fulfill”. Nevertheless while Buen Vivir might be criticized as a utopian vision, it is a concept relevant for this research due to its recognition of the indigenous construction

of knowledge as an act of decolonizing knowledge of Western Neoliberal\textsuperscript{38} development\textsuperscript{39}.

1.3.1 The institutionalization of Indigenous knowledge by UNESCO

The institutional side of this thesis is framed by the international guidelines of the United Nations. As previously mentioned, the UN Declaration on the Rights of Indigenous People introduced the importance of indigenous knowledge but also recognized “the urgent need to respect and promote the inherent rights of indigenous peoples which derive from their political, economic and social structures and from their cultures, spiritual traditions, histories and philosophies, especially their rights to their lands, territories and resources” (United Nations, 2008, p. 2). The extension of that recognition is part of the implementation of the United Nations Educational, Scientific and Cultural Organization (UNESCO) on subjects such as cultural diversity, indigenous knowledge and education for sustainable development (ESD\textsuperscript{40}):

…building an effective global approach to sustainable development and ESD needs to address respecting, protecting and maintaining the cultural diversity of the world now and in the future. Cultural diversity exerts strong influence on ESD in that: all ESD must be locally relevant and culturally appropriate; culture influences what this generation chooses to teach the next generation including what knowledge is valued, skills, ethics, languages and worldviews; and ESD requires intercultural understanding if people are to live together peacefully, tolerating and accepting differences amongst cultural and ethnic groups\textsuperscript{41}.

\textsuperscript{38} According to the Oxford Dictionary (online version, 2015) Neo-liberal denotes a modified form of liberalism tending to favor free-market capitalism. ‘Neoliberalism is built on the ideological perspective of liberating individuals from state intervention to pursue economic self-interest. (Gray & Colucci-Gray, 2014, p. 18)


Throughout the last decade, one of several strategies promoted by UNESCO consists of engaging cultural diversity and sustainability to foster aspects relating to the protection and promotion of traditional knowledge as a source of intangible and material wealth, and in particular the knowledge systems of indigenous peoples, so as to benefit them in their own development (UNESCO, 2005, p. 16). In response to many societies around the world, UNESCO argues that the issues involving education in multilingual contexts and multicultural societies should be included in public action plans to promote the universal human right of education for all. However, “the governability of pluralistic, democratic societies increasingly depends on the capacity of governments to provide equity in public and social life, and to educate citizens who are open to intercultural dialogue and tolerant of each other’s ways of being and thinking” (UNESCO, 2006, p. 8).

1.4 Intercultural education for sustainable development

Education is a significant instrument for human development; it is important to remember that education is a fundamental human right and primary universal education is one of United Nations Millennium Development Goals. In terms of sustainability, education plays an important role in fostering “critical thinking and to improve people’s capability to deal with local and global developmental issues and to find solutions for the problems of sustainable development” (Lasonen, 2009, p. 198). However, to find those solutions requires the participation of the whole population. Thus one ideal of education for sustainable development in its global dimension is to embrace cultural diversity.

The relevance of cultural diversity is related to the idea that the western development model is incompatible with the complex social, cultural and political dimensions of societies pursuing different goals and reflecting their own values. Thus a culturally sensitive approach to development is the key to address the interlinked social, economic

and environmental problems confronting the planet as a whole. Nevertheless, it was in 2002 at the World Summit on Sustainable Development in Johannesburg that cultural diversity received further recognition as a cross-cutting dimension (rather than as a separate, fourth pillar of sustainability), with an important role to play in all development projects, from poverty eradication and the safeguarding of biodiversity to resource management and climate change (UNESCO, 2009, p. 189).

The terminology of both multicultural and intercultural are used in various academic disciplines, such as pedagogy, communication, psychology, and anthropology, to refer to the exchange between two cultures or interaction between two or more differing cultures (Provenzo, 2009, p. 207). But what do the terms intercultural and multicultural entail for education? Generally speaking, the term intercultural is used when referring to education and training, and the term multicultural when referring to culturally diverse societies (Batelaan & Gundara, 1991, p. 7).

Thus intercultural education involves questions linked to and reflections upon conceptions of the human being and knowledge, curricula, teaching, learning, administration and learning environments. Furthermore, UNESCO holds that an education that casts diversity in a positive light shapes the experiences, lifestyles and identities of individuals and groups towards the acceptance and respect of a multicultural world. Thus, being intercultural implies promoting tolerant interactions on the basis of mutual respect for and appreciation of multiple cultures.

In general, further discussions about the use of the terms multicultural and intercultural remain a subject of ongoing debates. Different sociopolitical and educational initiatives have used the term ‘multicultural’ in a particular European context to describe a specific type of integration within communal policy and guidelines for community development programs (Provenzo, 2009, p. 207). On the other hand, in Latin America, according to David Lehmann, the intercultural concept has become more prominent (Lehmann, 2013, p. 780).

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43 David Lehmann is Emeritus reader in Social Science at the University of Cambridge.
The meanings of multicultural and intercultural and their descriptive uses in education have produced confusing notions. There is an exchange of meanings in which authors are continually changing from one level of comprehension to another (Dietz & Cortés, 2009, p. 54). However, as pointed out by Lehmann, referring to the important work of Luis Enrique López, multiculturalism can be understood as “fostering tolerance but not equality” while interculturalism is seen as “the selective appropriation of concepts across cultures in the interests of building a dialogue among equals” (Ibid, 2013, p. 784). Due to the latter, this research assumes the concept of intercultural education as a social learning process where the interactions within a multicultural society enable cooperation and increase participation, because it allows constructing more varied solutions to address the needs of all learners and therefore of societies.

1.4.1 Intercultural approach within the Mexican context

Natural and cultural diversity and a rich plurality of knowledge systems, in fields such as agriculture, medicine and natural resource management, are important characteristics representing Mexico’s reality. On the one hand, given its geographic location, topography and climate, its long history of in situ evolution and the manipulation and domestication of plant populations and species by indigenous people, Mexico is one of the five biologically megadiverse countries in the world. This characteristic is shared with China, India, Peru and Colombia. On the other hand, Mexico is an ethnically diverse country, containing 65 different ethnic groups which represent roughly 10% of the country’s population. Nonetheless, indigenous people are the least represented in

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higher education with an estimated percentage between 1% and 3% of the total enrollment in Mexico\(^47\).

In response to this educational inequality and in congruence with UNESCO’s guidelines on the intercultural higher education field, Mexican development and education initiatives have recognized the value of its native cultural diversity. Started under the presidential cycle of Vicente Fox (2000 – 2006), the creation of Intercultural Universities in 2004 attempted to overcome the social and cultural exclusion of indigenous people. The participants involved in the initial stage were the General Coordination for Intercultural and Bilingual Education at the Ministry of Education, indigenous organizations and academic institutions in each region. Today, twelve Intercultural Universities are currently operating. Each university defines its curriculum according to the needs and regional potentials in which it is located. Students are engaged in activities in which they relate to the surrounding communities through research and development projects, with the aim of working and contributing to the development of their territory, their people and their culture. In addition, the authors of this higher educational model established that the method to be adopted in the Intercultural Universities stands in stark contrast to the one prevalent in most educational institutions (Villar, 2006, p. 156). Their purpose is to create a system in which the students are invited to interpret new information in the context of their own experience, and to break with the established practice of the one-way transmission of information (Lehmann, 2013, pp. 781, 792).

This qualitative research focuses on the experience of UIEP. This higher education institution is based in Huehuetla, a rural municipality located in the north highland region of the state of Puebla (Sierra Norte de Puebla) in Mexico, which, due to its outstanding natural and cultural wealth, provides an interesting context. Known since pre-Hispanic\(^48\) times as Totonacapan, the region where Huehuetla is located was primarily a settlement of the Totonac culture. From a historical perspective, the development of this society has attracted many researchers because, despite the vulnerability in which the Totonac people have lived, first due to the Aztec hegemony

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\(^48\) In Mexican history, the term pre-Hispanic refers the time prior to Spanish conquests.
and the later arrival of Spanish conquistadores, people in this region have managed to maintain their presence within the current Mexican society.

Factors like political oppression, religious influence, dominating knowledge discourses, loss of land, environmental changes, migration, historical marginalization and poverty are regional problems from which the population of Huehuetla has not been exempt. Such struggles imply that the resilience of the people in this region might be linked to a sustainable behavior learned for generations. Today, Huehuetla possesses an interethnic society that includes Totonacs (a great majority), Nahuatls and, to a lesser extent, Otomis, Tepehuas and mestizos, and is the regional meeting point where UIEP’s students from the present-day Totonacapan are systematizing their indigenous knowledge.

1.5 Presentation of the subsequent chapters

In order to address the objectives and research questions the development of this thesis is organized as follows.

Chapter 2 outlines the theoretical framework, focusing on the social constructivist theory of Lev Vigotsky, the theory of social construction as a pedagogical practice by Kenneth Gergen, and the social identity theory of Henri Tajfel and John Turner as the basis for a broader understanding of the intercultural education model. Furthermore, this chapter explains the research methodology used in this research. The process in which this thesis presents its results is divided in two phases which include the presentation of historical findings and the analysis of the information gathered during fieldwork.

Chapter 3 discusses the historical evolution of the Mexican culture which gradually made room for the intercultural education model. This chapter creates the background for understanding how state interventions regarding development and education have influenced the social identity of Mexican native peoples and, consequently, their knowledge. Within the pages of this chapter is a brief description of the struggles that indigenous people in Mexico have faced over five hundred years of different modern interventions.
Chapter 4 offers the analysis of fieldwork findings, and results obtained from the open-ended questionnaire applied to the 88 students from the Intercultural University of the state of Puebla (UIEP). It also describes a chance encounter with a group of Totonac women who are the proud owners of the ecotourism center Kakiwin Tutunaku. This encounter represents an accidental discovery for this research and helps to understand how interculturalism is lived outside the university’s experience.

Finally, chapter 5 returns to the research questions and presents the conclusions in light of the UIEP experience. It states the main points from the analysis of findings, which highlight achievements, flaws and feasible alternatives for improving the scope of intercultural education, particularly regarding its implementation of sustainable development within the mainly indigenous communities of ancient Totonacapan.
2 Theoretical framework

All our knowledge has its origins in our perceptions.

Leonardo da Vinci

This chapter focuses on the social constructivist theories that frame the pedagogical approach taken by the intercultural higher education model promoted in Mexico. Reference is made mainly to the constructivist scholars, Lev Vygotsky and Kenneth Gergen on social learning processes and Henri Tajfel and John Turner on the social identity theory. Further on, this chapter describes the chosen historical – ethnographic approach as the research methodology and the analytical process used to address the objectives and research questions.

To understand how knowledge develops it is important to recognize the cognitive abilities that individuals need to understand and act in the world (Navarro, 2008, p. 66). This process involves a sequence of actions. At the beginning of this chapter, Leonardo da Vinci’s quote shows the origin of knowledge’s construction. The first step is one’s perception, which is the notion given by the senses. The second step is attention, which is concentration of the senses on a particular object. Then comes the process of storing experiences, the ability known as memory. The fourth stage is language, which structures systems of sounds, symbols, signs, gestures and words with the purpose of communicating ideas. Reasoning, the action of forming concepts and solving problems comes afterward. And finally humans construct meaning, which is the ability called learning. This last ability is the main subject referenced in this chapter.

2.1 Constructivist approach

The paradigm of constructivist learning theory states that learning is an active, contextualized process of building knowledge based on personal experiences and
perceptions of the environment. According to Thomas Schwandt (1998), we all are constructivists in everyday life because there is a general recognition that the learning process for human beings is not passive. People create new concepts, models and schemes to make sense of experiences and continuously test and modify these constructs in the light of new experiences. For constructivists, learning is not knowledge written on a person’s mind as if the mind were a blank sheet waiting upon which to be written. Constructivist theorists use “the metaphor of construction because it aptly summarizes the epistemological view that knowledge is built by individuals” (Cobern, 1993, p. 51).

Even though there are different constructivist approaches, what is relevant for this research is the role of social interactions to construct knowledge as pointed out in Lev Vygotsky’s social–cultural constructivist theory. He states, “We learn through our interactions and communications with others . . . culture is the primary determining factor for knowledge construction. We learn through this cultural lens by interacting with others and following the rules, skills, and abilities shaped by our culture”49. Moreover, to contextualize learning processes, Vygotsky argued as follows:

Culture creates special forms of behavior, changes the functioning of mind, and constructs new levels in the developing system of human behavior. . . . In the process of historical development, a social being changes the means and methods of his behavior, transforms natural inclinations and functions, develops and creates new, specifically cultural, forms of behavior (Vygotsky, 1983, pp. 29-30)50.

Vygotsky’s theory represents the basis for this study in terms that recognize culture as the element needed for the construction of new behavior linked to the knowledge needed to pursue an inclusive education towards sustainability. In addition, given the intercultural education model, this theory sets the foundation on placing value on

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students’ prior experience and potential, with a focus on know-how in contrast to conventional models which focus more on merely the transferring of technical skills (Lehmann, 2013, p. 792).

2.1.1 Social constructivism in educational practice

Social constructivism transcends the mental comprehension of the individual cognitive processes in order to focus attention on the world of meaning and knowledge collectively constructed and shared. This paradigm, considers that the world is a set of social artifacts given as a result of historical interactions among people; its main concern emphasizes on the collective meaning making of the world through language and other social processes (Jurgenson, 2003, p. 50). To further comprehend how the model of intercultural education implemented in Mexico has developed and interpret the experiences of the main group of students, given their social and historical context as well as their interactions with nature, the theory of Kenneth Gergen on social construction as an educational practice is used as an inspiration. Kenneth Gergen argues in his book, *Social constructivism in context*:

Practices of education are typically linked to an assumptive network, that is, a shared discourse about the nature of human beings, their capacities and their relationship with the world and each other. In the case of education, perhaps the pivotal concept is that of knowledge itself. How, then, do we define or conceptualize knowledge such that educational practices are necessary, and certain practices become favored over others? Clearly disparate concepts of knowledge will lend themselves to differing views of the educational process...Beliefs about knowledge, then, inform, justify and sustain our practices of education (Gergen & Wortham, 2001, p. 115).

Assuming this point helps to establish different scopes of scientific knowledge and indigenous knowledge. Gergen further suggests that “all practices construct the world in their own way, carry values of certain sorts and lend themselves to certain futures at the expense of others” (*Ibid* 2001, p.136). In line with this statement, the purpose of intercultural education is to construct an alternative way of learning, one that opens new possibilities for educating collectively while being mindful of the value of different points of view. Due to the environmental conditions faced today it is imperative to translate the theory into practical responses for particular circumstances.
2.2 Determining identity

The intertwined theories explained so far are relevant for understanding the basis of intercultural education, but the concept of identity is also considered central to this thesis. Identity can be understood as Clifford Geertz remarked in his book, *The Interpretation of Cultures*, as “the granular images into which individuals views of who they are and who they aren't” (Geertz C., 1973, p. 239). The Nobel laureate Amartya Sen, however, considered identity as a social construct describing it as a significant influence on human behavior and central to human life. The sense of belonging to a place, community and fellowship is closely related to the way we shape our knowledge and comprehend our ethics and norms (Sen, 1999, p. 5).

For this study, it is important to determine the role that indigenous knowledge and sustainable practices have upon the development of social identity in Huehuetla. As Sen argues, there can be little doubt that the communities or cultures to which a person belong can have a major influence on the way he or she sees a situation or views a decision. “There are various influences on our reasoning, and we need not lose our ability to consider other ways of reasoning, just because we identify with, and have been influenced by membership of a particular group” (ibid, 1999, p.22, 23).

Moreover, it is important to consider that social identities can be shaped by a hegemonic power or can be produced from below as indigenous peoples and communities self-organize for survival and the resistance of oppressive forces (Conway, 2007, p. 26). This point is illustrated in chapter three which offers the historical background of Mexico’s cultural and educational history and the social inequalities that different ethnic groups in Mexico have faced throughout a long process of hegemonic education interventions aimed to construct a modern and homogenous Mexican national identity.

2.2.1 Social Identity Theory

The social identity theory of British social psychologists Henri Tajfel and John Turner, used in this thesis, helps to understand the psychological basis of intergroup behavior, particularly for the main group of students from UIEP. This theory, that was developed to explain the relationship between categorization and intergroup discrimination (Deaux, 2000, p. 1), asserts that an individual has multiple “social identities”. In other
words, it is an individual-based perception of what defines the “us” associated with any internalized group membership\(^{51}\) (Tajfe & Turner, 1979, p. 36). This study assumes a social identity model (pointing to diverse ways in which social identities may differ from one another) lined up to the work of Brown et al. (1992)\(^{52}\) which suggest two dimensions in which groups will differ - individualism versus collectivism (Deaux, 2000, p. 4). This quest to recognize the social identity of higher education students in an interethic setting like Huehuetla requires an understanding of the relationship between the person (student) and the social system (his/her community). Having established a category in the features and meaning of identity (individualism vs. collectivism) it is necessary to direct the attention to the motives behind choosing an identity, and to the behavioral domains in which identities are enacted, in order to understand this social process (Ibid, 2000, p.14).

This research considers collectivism as an attitude of sustainable behavior and follows the assumption that to the degree that collectivism is associated with a particular social identity, its members should be particularly likely to take on the agenda of the group (Ibid, 2000, p.13). Thus taking into account the history and the diversity of ethnic identities\(^{53}\) in Mexico, this theory has helped to identify this characteristic of collectivism within the study group.


\(^{53}\) Indigenous communities, peoples and nations are those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of societies now prevailing in those territories, or parts of them. They form at present non-dominant sectors of society and are determined to preserve, develop and transmit to future generations their ancestral territories, and their ethnic identity, as the basis of their continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal systems. Cited in Global Issues for the 90s, Centre for Teaching International Relations, University of Denver, 1993, pp. 86-97.
2.3 Research methodology

A historical – ethnographic approach represents the governing philosophy behind the methods employed in this study. As mentioned earlier, the objectives of this thesis include: firstly to provide a historical overview and discuss the progress of the status of indigenous knowledge in Mexico. How has it advanced from being a repressed tradition to becoming part of an intercultural education today? And secondly, this thesis will provide insights into the intercultural education experience of UIEP through a study of students’ perceptions of traditional knowledge. What is the students’ relation to indigenous culture and what are the implications of intercultural education for reclaiming sustainability in Mexico?

The particular objectives of this research include the following: a) to identify the potential sustainable practices of the Totonac and Nahuatl worldview; b) to find out if this indigenous ecological knowledge remains active in spite of the historical influence of western education and development models in Mexico.

The research questions addressed are as follow: 1) What has been the history of a gradual inclusion of indigenous knowledge and culture in Mexican education 2) What is the dominant worldview among the students of the Intercultural University of Puebla and how sustainable is it? 3) How is intercultural education perceived and experienced by the students from UIEP and are there any variations in these perceptions? 4) Given the intercultural approach, are these students committed to their communities in order to maintain their social identity and achieve sustainable development?

2.3.1 An overview of education for indigenous people in Mexico

The first phase of this thesis consists of a review of historical literature from the point of view of the changes in the socio-cultural and educational background of indigenous people in Mexico. The analysis maps the historical dynamics from which the recognition of culture diversity and the initiatives to bring higher education to indigenous people have evolved into the present intercultural education promoted in Mexico. The qualitative data analyzed in this phase relies on history books, articles, official documents (laws and programs) and videos. The outcomes of this analysis are presented in chapter 3.
2.3.2 Fieldwork in Huehuetla

The second phase consists of analyzing the information gathered through fieldwork. This research is physically bound to Huehuetla, a rural municipality of the state of Puebla in Mexico that today is the land of roughly 16,000 inhabitants. It is believed that Huehuetla, as the meaning of its name suggests (from the two Nahuatl words; "huehue", old and "tla" place, “old place”) “was the oldest town of the Totonac indigenous people” (Méndez, Tlamani, & Valverde, 2006, p. 298). Explained in historical chronicles, the Totonac-speaking people were the main ethnic group settled in a region known as Totonacapan.

![Map of Huehuetla](image)

Figure 2. Huehuetla within the Totonacapan region. Map adapted from (Rouy, 2005, p. 189); INEGI Geographic Information of Huehuetla (2009); CDI Atlas of Indigenous People (2015)

Books, articles, local political documents and a few international academic papers helped to describe the historical background of the knowledge embedded in Huehuetla along with the regional, social, cultural and environmental characteristics of this community. Further information showing the present-day context was found in the Municipal Development Plan of Huehuetla, Puebla 2014 – 2018. In addition, an informal interview with a group of Totonac women, owners of the ecotourism center Kakiwin Tutunaku, enriches the pool of qualitative data.

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54 According to the 2010 national census there were 15,689 inhabitants in Huehuetla.

The central part of fieldwork was the visit to UIEP which took place in February 2015. Collecting data during this visit consisted of observations, casual interviews with a few professors, a formal interview with the rector of UIEP Alibert Sanchez Jimenez and a review of the University’s annual report (2013-2014). The information about the objective, vision, and curriculum content of each program offered by the UIEP was found on the university’s website. This qualitative information represents the official perspective of the model of intercultural education promoted at UIEP.

The main focus of my research has been the emic knowledge of students from UIEP to understand their intercultural learning experience. These students have their own life expectations, interests, backgrounds and needs. Thus, for this study, it is relevant that the point of view of these main research participants is mediated by their own culture and history. The heterogeneous group of interest consists of 88 students who answered the following open-ended questionnaire.

1. How would you define the concept “environment”?

2. What are the social and environmental problems in your community?

3. What are the environmental values that you have learned from your parents and grandparents?

4. How would you define the concept “sustainability”?

5. Do you speak a native language besides Spanish? Did your parents teach you or did you learn it at school?

6. Do you think there is loss of culture in your community? Yes/No Why?

7. What are the changes your parents and grandparents have seen that have significantly modified the identity of your community?

8. Do you consider that people in your community live in a sustainable way?

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56 http://www.uiep.edu.mx

57 Emic knowledge: *Emic* is used to refer to first-order concepts—the local language, concepts, or ways of expression used by members in a particular group or setting to name their experience. *Emic* may also be used to refer to the processes of cataloging, description, and categorization. (Schwandt, 2007, pp. 81,82)
9. In your perspective, which local traditions should be preserved?

10. How would you like to see your community in the future?

11. How would you contribute to promoting development in your community?

12. Why is studying at UIEP important to you?

There were 50 young men and 38 young women ranging from 18 to 24 years of age. The majority of students were from Huehuetla, Cuetzalan and Olintla but there were also students from the nearby municipalities of Puebla and other states like Veracruz, Guerrero and the state of Mexico. Table 2 shows the number of completed questionnaires grouped by degree program and semester.

To interpret the content of the 88 completed open-ended questionnaires a simple quantitative analysis was carried out using the method of descriptive statistics. For each question, the large sets of answers were summarized, interpreted and categorized with single numeric indicators. Subsequently, the answers were analyzed through a percentage analysis which helped to describe the perceptions of our main research informants. The results of this analysis are presented in chapter 4.

<table>
<thead>
<tr>
<th>Bachelor degree program</th>
<th>Semester</th>
<th>Total</th>
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<tbody>
<tr>
<td></td>
<td>8º</td>
<td>6º</td>
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<tr>
<td>Language and Culture</td>
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<td>Sustainable Development</td>
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<tr>
<td>Alternative Tourism</td>
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<td>Community Forest Engineering</td>
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<td>5</td>
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<tr>
<td>Completed questionnaires</td>
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<tr>
<td>Total enrollment, spring semester 2015</td>
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Table 1. Number of students from the Intercultural University of the state of Puebla who answered the open-ended questionnaire, 18, 19 February 2015
3 A brief journey into the history of Mexican indigenous consciousness

The cultural element becomes paramount, since the continuity of Mexican history implies an effort to admit the presence of the past, joining tradition with development.

Carlos Fuentes

Within the pages of this chapter, a historical overview of the Mexican cultural diversity and the challenges that indigenous people have faced over hundreds of years of education interventions, political oppression and cultural impositions aimed to unify and modernize the nation will be presented. The aim of this chapter is to discuss these historical twists which have had an impact on the development of the present-day Mexican intercultural education model and on the attitudes towards indigenous knowledge. In particular, this knowledge’s important role in regional and local sustainable development will be highlighted.

The idea that, to advance of progress, education and specifically higher education is oriented to develop technical capabilities as a measure to boost competitive economies (Lotz-Sisitka, Fien, & Ketlhoilwe, Traditions and new niches. An overview of environmental education curriculum and learning research, 2013, p. 194), has implied that conventional dominant models and its methods to “improve or develop” indigenous communities (in general rural populations) do not always consider the wisdom that local people already have nor their basic needs.

A powerful inspiration for this thesis has been the writer, Carlos Fuentes. In his book, A new time for Mexico, he questions terms like modernity and progress and indigenous knowledge. The writer, Carlos Fuentes (1928 – 2012) Mexico’s elegant public intellectual and grand man of letters, whose panoramic novels captured the complicated essence of his country’s history for readers around the world… Mr. Fuentes was one of the most admired writers in the Spanish-speaking world, a catalyst, along with Gabriel García Márquez, Mario Vargas Llosa and Julio Cortázar, of the explosion of Latin American literature in the 1960s and ’70s, known as El Boom. Source: Depalma, A. (2012, May 16). Carlos Fuentes, Mexican man of letters, dies at 83. Retrieved December 8, 2014, from New York times: http://www.nytimes.com/2012/05/16/books/carlos-fuentes-mexican-novelist-dies-at-83.html?pagewanted=all
struggles throughout Mexican history. He describes contemporary Mexico as torn between two forms of modernity: “the exclusionary modernity, drawn from Western models, that banishes all that it does not understand; and the inclusive modernity which understands that there are many ways of being modern, of being contemporaneous with one’s own values” (Fuentes, 1997, p. 213). He points out that certain awareness of the need for an inclusive modernity rose after the Zapatista59 armed rebellion exploded in Chiapas on January 1, 1994. After a long-lasting history of abuse, the largely indigenous, peasant based movement decried the loss of national sovereignty declaring war on the date that the North American Free Trade Agreement between Mexico, The United States and Canada was coming into effect. This way Mexico’s most southern and poverty-stricken state stood against a neo-liberal ideology claiming for demands such as land reform, indigenous rights to education, healthcare, food security and cultural autonomy (Conway, 2007, p. 4).

More than two decades ago, Chiapas gained worldwide attention as a movement that protested Mexico’s extreme inequalities. Nowadays, although Zapatistas nominally remain at war with the Mexican state, the rebels’ struggle is more ideological than militant. After fighting ended, they created their own autonomous municipalities, called caracoles (snails), which are independent of local government on land they took back from large landowners in the 1990s60. Nevertheless, the levels of poverty and marginalization in Chiapas and other provinces largely inhabited by indigenous people (Guerrero, Oaxaca, Puebla, Veracruz) remain among the highest in Mexico, and make up roughly 10% of the national population61.

Zapatistas have appealed to Mexican and international civil society to participate in their movement “for humanity and against neoliberalism” (Conway, 2007, p. 4) but, like Fuentes argues, many Mexicans still conceive only of a Western model of development as the way to be modern (Fuentes, 1997, p. 212). The process to embrace alternative ways remains challenging. Seeking an inclusive modernity and the importance of the

59 The EZLN (Zapatista Army for Mexican Liberation) better known as Zapatistas called themselves after Emiliano Zapata (1879 – 1919) leading figure of 1910 Mexican Revolution and today’s symbol of social movement.


original and diverse cultures of Mexico inspired this study to identify within the indigenous ecological knowledge of Mexico, the potential values from which sustainable ways of living can be learned.

Fuentes recognizes that “the native cultures of Mexico value the ritual and mythical world, death, nature, a sense of community and capacity for self-government, which our makeshift modernity might well need to become more complete” (ibid, 1997, p.125).

Mexico cannot be only one of its parts but must be all of them, though some of them, such as the indigenous regions, are slowly dying, victims of all kinds of abuse, of injustice, misery, solitude, alcoholism, migration. How do we maintain the value of these cultures and save them from injustice as well? Can indigenous values coexist with those of Western progress, with modern conditions of health, work, and social protection? (ibid, 1997, p.27)

These questions open up a broad and complex discussion that cannot be completely addressed here, and that is part of the ongoing problems which indigenous people face in Mexico.

### 3.1 Pre-Hispanic inherited wisdom

Research on indigenous wisdom as complementary to scientific education would not be complete without identifying the holders of this knowledge. Whom are we referring to as indigenous people? The etymology of the word “indigenous” ⁶² comes from old Latin *indu* “in, within” and *geno* “beget or produce”. Latin authors like, Virgilio, Ovidio, Tito Livio and Plinio used the term indigenous to distinguish Latin people, natives of the ancient Lazio (Montemayor, 2000, p. 25). Since Roman times and particularly during the nineteenth century the term indigenous has been commonly employed to

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differentiate original peoples or those who inhabited a country or a geographical region at the time when people of different cultures or ethnic origins arrived\textsuperscript{63}.

Boasting 112.33 million inhabitants\textsuperscript{64}, the present-day Mexican Republic has evolved from many indigenous civilizations. Mexico is and has always been, since pre-Hispanic times, culturally diverse. But beneath the Spanish culture and language, an indigenous legacy is undeniable. It is manifested in the physiognomy, culture, gastronomy, spirituality, its 68 original languages and many traditions such as the sharing of communal property of the land, the provision of mutual support among families, and fulfillment of collective obligations\textsuperscript{65}. Indigenous’ inherited ways of understanding the universe, nature, and fellow men has been the result of a lengthy historical process; expressed differently in each region, depending on its distinctive environmental conditions and particular context. Such worldviews are reflected in systems of beliefs, rules and behaviors. Nevertheless, in all cultures within the country, there exist similar elements coming from a common pre-Hispanic source, subsequently blended with Christian components\textsuperscript{66}.

Largely recognized in Mexican contemporary literature, the groups that lived and flourished in Mexico prior to Spanish colonization in the early 16\textsuperscript{th} century (referenced by some authors as the “first root” of Mexican identity) fell into two different cultural categories: the hunter-gatherers of northern Mexico and the agricultural peoples of Mesoamerica who developed advanced civilizations. The term Mesoamerica was coined in 1943 by the German-Mexican anthropologist Paul Kirchhoff. Taking into account geographic limits, ethnic composition, and cultural characteristics, he defined and delineated an area starting in northern Mexico and continuing south through Central America to the Gulf of Nicoya (Costa Rica). The first civilization which developed in the area of the Gulf Coast was the Olmec, known as the mother culture of Mesoamerica. Among other Mesoamerican civilizations were the Maya, who became the great


\textsuperscript{64} Data from last 2010 national demographic census (INEGI 2010)


astronomers and mathematicians of Middle America; the Zapotec and the Mixtec from the Valley of Oaxaca, who were the most talented craftsmen in Mexico; the warlike Toltec, who swept across the Valley of Mexico; the Totonacs known as jaguar people from slightly north of the Olmec area; and the Aztecs, who in less than a century settled an immense empire (A.D.1200 – 1521) (Creamer, 1987, p. 35).

Figure 3. Mexican Pre-Hispanic cultures and their prominent ceremonial centers

“These native peoples of Mexico used to live (and some still live) in communion with their natural habitat. Watching the movements of the stars was a key approach to nature; they calculated their calendars and through observation they could make predictions over natural phenomena.” From the Olmec period (1200 – 400 B.C.), the Mesoamericans had devised the complex calendar which had a very great significance to the Mayas. Based on a vigesimal notation, it achieved an even more exact measure of the length of the year than that which formed the basis for the Gregorian calendar largely used today (Calvert, 1973, pp. 21,23).

They were cultures of land, linked to earth for survival, trying to maintain ideal conditions of life. Their thinking process was tied to creativity, perception, image, physical sensation and intuition; it involved being open to the natural world with all of

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one’s senses, body, mind and spirit. When nature warned a coming drought or when rains favored crops, people would perform different kinds of rituals or dances.

Another relevant aspect of interconnectedness with the land among pre-Hispanic cultures has been maize agriculture. The domestication of maize or corn from a grass called teocintle approximately 10,000 years ago, transformed early societies of Mesoamerica from nomadic groups and largely hunter-gatherers to sedentary agricultural civilizations. Even today, maize is not only a crop, but also a deep cultural symbol intrinsic to daily life. As the basic grain, it shapes daily meals, and its growing cycle influences the timing of community rituals and celebrations. Spiritually, physically, and economically, maize not only sustains indigenous peoples in rural areas but is a fundamental ingredient in every Mexican household regardless of region or social status.

From the earliest times, separate areas have always depended on one another, for the exchange of produce (maize, cotton clothes, chili peppers, turkeys, etc.) and ideas (Gyles & Sayer, 1980, p. 9). During thousands of years, from Olmec influence to Toltec dominance (750 – 1200 A.D.) and ultimately the Aztec hegemony, people from different ethnic groups co-habited together. But as in any other part of the world, life together took place in the middle of military confrontation, and also through commercial, cultural and genetic exchanges. The latter was the result of marital unions among different ethnic groups.

Hence family resemblances between these civilizations are much more striking than their differences (Calvert, 1973, p. 22). One of these similarities can be seen in their myths and heroes. Although each of the pre-Hispanic cultures had mythologies of its

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own, there were certain common features that can be called Mesoamerican in general\textsuperscript{72}. For instance, Mayans worshipped a god called \textit{Kukulcan}, the feathered serpent\textsuperscript{73}, also known as \textit{Quetzalcoatl}, the giver of maize to mankind and the principal deity which the Toltecs and Aztecs revered as a god of wisdom and knowledge.

\begin{figure}
\centering
\includegraphics[width=\textwidth]{Figure_4_Diego_Rivera_1950.png}
\caption{Diego Rivera (1950) El \textit{Tajín} Mural painting in the National Palace of Mexico City. The central foreground event depicts an Aztec expedition to collect tribute (left) from Totonac people (right).}
\end{figure}

\subsection{3.2 Five centuries of confrontations for knowledge and identity}

In all colonial histories, violent encounters between native peoples and conquerors have brought discrimination, political exclusion and the marginalization of indigenous cultures. In Mexico, following a pattern that spans pre-Hispanic times, new nations have been built on the ruins of previous civilizations. In 1519 a Spanish expedition lead by Hernán Cortés entered the metropolis of the Aztec empire, \textit{Tenochtitlán}, where he and


\textsuperscript{73} To Aztecs and Mayans, serpents also symbolized transformation as they are able to shed their skin and begin anew. In Pre-Hispanic mythology, serpents were often associated with the earth and the sky, depicted with wings to symbolize the connection that made them divine communicators of wisdom. Source: Vargas, C. (1999) \textit{Mazacuata} Retrieved July 3, 2015 from: https://sites.google.com/a/mazacuata.com/about/
his soldiers were dazzled by the advanced civilization they found. In that city, bigger than Paris, Europe’s greatest metropolis at that time, they found wide streets, ornately carved buildings and markets (Mann, 2002, p. 9). The Aztecs were socially organized; they had developed specific agricultural techniques, and also had an education system. They were warriors, architects, poets, craftsmen and politicians to whom culture, art and their whole way of life were inspired by religion (Gyles & Sayer, 1980, p. 11). Nevertheless, after the fall of Tenochtitlán in 1521, the Spaniards, like other colonial and usurping powers, set out to destroy all forms of indigenous knowledge. Books were burned, whole cities were razed along with their centers of education, and intellectual leaders were tortured and assassinated. Yet native people survived, and to some extent, their response was to reproduce their traditional practices secretly as an expression of religion resistance (King, 1994, p. 6).

Throughout the 300 years of Spanish domain, Europeans, Africans and native Mesoamericans blended together, thus originating a well-defined caste system. The top stratum was formed by *peninsulares*, people from Iberian Peninsula born in mainland Spain, who held the highest positions in both the government and the clergy. Next came the *criollos*, (creoles) who were those born in Mexico of Spanish parents. The so-called mestizos, descendants of Spanish and natives, were considered inferior by pure-blood Spaniards and thus, remained poor and uneducated for many generations. With these fundamental castes, each region developed the cities of the New Spain.

74 For over a hundred years before the Conquest, education in Tenochtitlán was compulsory for all male children (started at the age of 6 or 9 years old). They studied either in the specialized *calmeca*, or the *telpochcalli*, which were attended by the great majority. The students in the *calmeca* (attended mainly by sons of nobles or priests) were taught to read and interpret the *codices* and calendars; they also studied the tribe’s history and traditions, and memorize the sacred hymns and other texts. Those who attended a *telpochcalli* were taught the fundamentals of religion and ethics, and were also trained in the arts of war (Portilla, 1992, pp. 328-329).

75 Spanish authorities were responsible for the forced migration of an estimated 200,000 or more enslaved Africans. By the early 1600s Mexico had a larger African slave population than any other country in the Americas. They were distributed and worked in a number of industries throughout the country and thus many people of African descent mixed with the Spanish (*mulatos*) and indigenous populations (*zambos*). From: Minority rights group international. (2005). World Directory of Minorities and Indigenous Peoples. Retrieved August 3, 2015, from Afro-Mexicans: http://www.minorityrights.org/4455/mexico/afromexicans.html


But life for native people had a different end. Carlos Fuentes argues that “the conquest of Mexico left the native population a defeated people, and sometimes a defeated people prefer to go unnoticed. . . wishing to be forgotten so as not to be struck once more” (Fuentes, 1997, p. 28). Willingly or not, indigenous people were banished to the suburbs and rural towns, where they were subjected to a different legislation which enabled their subsistence as a culturally distinct category (King, 1994, p. 6). From this period on, indigenous people, those carriers of pre-Hispanic roots have been struggling against racial prejudice and inequality.

Under the conditions of this social and cultural complexity which originated in colonial times, the historical process to forge a uniform social identity has mostly denied the existence of many ethnic groups. Structures of power, conflicting political and intellectual ideologies, along with economic interests, have produced a fragmented identity which generally lacks pride for the native cultures. Beginning with the evangelization of the natives up to the current intercultural education policies, the aim of the next sections is to trace relevant periods in history and people who have favored or condemned the educational conditions of indigenous peoples and consequently how their knowledge has been developed.

### 3.2.1 Evangelize the “Indios”

In 1492, upon the arrival of European explorers to American lands, the diverse cultural and ethnic groups living in Mesoamerica were all classified under the same category as “Indians” or Indios in Spanish. This geographical and historical misconception is attributed to Cristopher Columbus when he, in his enterprise to navigate an alternative route to reach India, landed instead on a “New World”. Without knowing that his expedition did not arrive upon its intended Asian destination, he called the native inhabitants of those new lands Indians (King, 1994, p. 7). Although the use of the word Indio persists today in countless literature and as part of daily discourse to indicate, sometimes derogatorily, differences between non-indigenous people, in this research the use of this term has been avoided for two reasons. First, because after the establishment of the Mexican Republic in 1824, the term Indio was no longer used in official
documents. And secondly in order to respect the real Indian culture and the specific identities of the peoples that currently shape the ethnic diversity of the American continent.

After Columbus’ first encounter, Europeans largely discussed the nature of the inhabitants of the New World, debating whether indigenous peoples were human beings or savage, soulless creatures whom they could dominate. These arguments apparently concluded after Pope Paul III promulgated a papal bull *Sublimus Deus* in 1537, opposing the enslavement of indigenous peoples and calling them “true men.” But the reality in New Spain was different. The Spanish had various official methods to subjugate the natives: the Royal *Encomienda* (tribute paid to the Spanish crown from profits from forced labor), *Repartimiento* (forced labor), and *Hacienda* and *Rancho* (land grants).

As mentioned earlier, many peoples of ancient Mexico had a rich pre-Hispanic culture which was expressed, for example, in their form of writing. Although only Mayans developed a hieroglyphic script, in central Mexico writing was largely pictographic and ideographic. Their records were painted on deerskin, which was then folded like an accordion. Those books, which are usually referred to as *codices* (codex), dealt with subjects such as mythology, rituals, divination and genealogy. The social anthropologist Linda King argued that despite the divergent types of writing used by the pre-Hispanic peoples of Mesoamerica, it is evident that there are certain common denominators in their use of literacy. She explains,

> Writing was also used to record the accumulated knowledge of the civilization, not only the history of specific peoples and the rights of the nobility founded on inheritance but also the sciences of astronomy and mathematics, which were central to Mesoamerican religion. Knowledge and writing were, as in many cultures, inseparable, and it was this cognitive link that led, in the years

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following the Spanish Conquest, to the destruction of the pre-Hispanic writing systems (King, 1994, p. 41).

Considered as works of superstition and witchcraft, most of codices were burned by the Spanish conquerors and missionaries who had the commission to “civilize and evangelize” the native peoples of the new world (Gyles & Sayer, 1980, p. 22). The role of the church and its missionaries was to impose the principles of Catholicism on the natives for controlling them. However, it is important to point out that not all of the missionaries agreed to abolish native knowledge. From the few codices that escaped the flames, they gathered up and rescued old songs and narratives that were faithfully remembered by the natives after the Conquest.

Giving an interpretation of some of the pictorial manuscripts, the missionaries worked out means of writing the native languages with Latin alphabet, and this enabled them and their pupils to record the texts in the original words. The vast ethnographic work of Franciscan Friar Bernardino de Sahagún, published in a book entitled The General History of the Things of New Spain (1547), and the History of the Indies of New Spain (1581) written by the Dominican Friar Diego de Duran are two of the most important literary references that contemporary scholars have to interpret those original pre-Hispanic cultures of Mexico (Portilla, 1992, p. 329).

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Throughout this process of constant changes and adaptations; missionaries took responsibility for the education of the natives, creoles, mestizos, and even girls and women from all castes, creating the basis for education in Mexico. Churches, convents and monasteries were the first places where Franciscan friars taught indigenous children the catholic doctrine using pictographic images as a didactic tool. This way, in 1525, Pedro de Gante founded the first elementary school *Escuela San Francisco* (San Francisco School), exclusively to instruct indigenous children and in 1536, *El Colegio de la Santa Cruz* (the College of the Holy Cross), mainly to educate the sons of the indigenous nobility (Zepeda, 1999, p. 91). Finally, *La Real Universidad de Mexico* (the Royal University of Mexico), the first higher education institution of the American continent, was established in 1551, by the approval of the emperor Charles V, for teaching both creoles and indigenous several subjects including Theology, Latin grammar, Law and Arts.

During the development of a colonial education system, “reliance on indigenous knowledge was limited, but there was some interest in the nature of native knowledge. The *Historia Natural y Moral de las Indias* (The Natural and Moral History of the Indies), published in Seville in 1590 by Joseph de Acosta S.J. (1540-1600), is representative of the trend to write comprehensive studies of society, history, religion and science” (*Ibid* pp. 178,179). Another example can be seen in the work of the priest
Jose Antonio Alzate (1737-1799), who is considered to be one of the pioneers of scientific journalism and an outspoken defender of Hispanic and Native American knowledge. His efforts in Botany to identify local plants, study their properties, and more importantly to highlight the way native people understood the nature surrounding them, was strongly opposed to the method established by the Swedish naturalist Carl Nilson Linnaeus, which in Alzate’s view did not consider local circumstances of any kind (Berquist, 2007, p. 125).

The new institutions that flourished in the cities of New Spain became the centers for intellectual production inspired by philosophical ideas, new sciences, new ways of production and new political arrangements developing in Europe (D'Ambrosio, 2008, p. 184). Eurocentric bias in education in Mexico persisted in the periods that followed, throughout most of the sixteenth, seventeenth and eighteen centuries, first influenced by the Renaissance Humanism and later on by the Enlightenment.

3.2.2 In between revolutionary ideals

The Mexican novelist and political analyst Carlos Montemayor wrote that by the middle of the eighteenth century, the perception of indigenous people began to change. There was no need to combat, submit or evangelize them. The interest of the supporters of the independence was to reassess the glorious days of the pre-Hispanic cultures as an inherited legacy for an emerging independent nation (Montemayor, 2000, p. 57). By the early nineteenth century, Spain's mercantilist trade policies and its discrimination against native-born Mexicans (creoles) in colonial business and administrative affairs fostered widespread resentment and a desire for greater autonomy. The geopolitical crisis of the Napoleonic wars (1803–1815) and the influence of Enlightenment ideals provoked the insurrection in 1810. Hence an appraisal of pre-Hispanic cultures arose as a need to identify Mexico with its own history in order to construct a new social identity.


Several generations of historians of different academic and political backgrounds argue that the independence movement was the work of the creoles elites, exclusive groups of literate and often well-educated men at the apex of Mexican and other Latin American societies. However, the question remains whether the idea of creating republican societies mostly existed in the minds of a few intellectuals, or if indigenous groups of Latin America also participated in the construction of independent nations. The work of historians such as Florencia Mallon, Peter Guardino, John Tutino and Eric Van Young, among others, underlines in various ways both that indigenous peasant communities envisaged a state different from that imagined by elites, and that indigenous people did influence political developments and state formation on local as well as national levels (Saether, 2005, p. 56).

This turn to the pre-Hispanic past in a quest to identify a new nation, aimed to unite all native peoples, creoles and mestizos alike, to expel the Spaniards. The first constitution, signed in 1814, seemingly established indigenous equal rights with other Mexicans, but in reality left them worse off. The new nation-state ceased to recognize the communal land rights of the indigenes, sanctioning instead expropriation and sale to local landowners. The indigenous people no longer had the right to be educated in their own language. After independence, all education was to be imparted in the national official language of Spanish. Maya and Nahuatl lost the prestige they had held as semiofficial languages during the colonial regime, and the idea of linguistic unity as the expression of modern nationhood took hold (King, 1994, pp. 56,57).

In the aftermath of political independence achieved in 1821, Mexico suffered a prolonged and tumultuous period of factionalism, the loss of half of its territory to the United States in 1847, and financial instability. During those difficult years rived by bitter disputes between conservative and liberal ideologies, the newly established republic suffered political turmoil and the effort to install state institutions was a difficult task to accomplish. The rule of the native Zapotec president, Benito Juárez

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brought the first attempt towards modernization, though it was interrupted by conservative reaction, French intervention, and the Maximilian’s failed monarchy between 1864 and 1867 (Fuentes, 1997, p. 36). Nevertheless, during Juárez’s liberal government, a period known as La Reforma (the Reform: 1854 – 1876), the congress drafted the Federalist Constitution of 1857. These liberal laws ended special jurisdiction for the clergy, limited the power of the church, placed the army under ultimate civilian control, abolished hereditary titles and imprisonment for debt, and gave Mexican citizens their first genuine bill of rights, including the right to a secular education.

A complete reorganization of the education system was directed by a commission headed by the prominent physician and positivist intellectual, Gabino Barreda. His Plan de Instrucción Pública (Public Instruction Plan) devised a school curriculum that concentrated on mathematics and the physical sciences. For the first time, education became mandatory. Juarez himself argued that “Freedom for me is the sacred right to think . . . education is the fundamental part of social happiness: it is the principle on which liberty rests, and the growth of all towns”. This ideal, however, did not represent reality. Racism against natives persisted and, despite the opening of new schools, the liberal aspiration to bring literacy to all remained an unfulfilled goal, especially in rural areas where indigenous people were excluded simply because they did not speak Spanish. On the other hand, the professional careers available for young male Mexicans in the middle of eighteen hundreds were the army, priesthood and law, the latter being the most favored path. However, new career prospects were beginning to open up as a result of the creation of the machinery of state government after independence (Garner, 2001, p. 25). Under Juárez’s command, the Royal and Pontifical University of Mexico

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86 Austria’s Archduke Ferdinand Maximilian von Habsburg and his wife, Princess Charlotte of Belgium, accepted the invitation to take the throne of Mexico, offered by Napoleon III, conservatives and clerical party. (McAllen, 2014, p. xi)


88 Gabino Barrera (1818 – 1881) considered the scientific method to be the solitary effective way of knowing, with mathematics being the best way to learn deduction. Because the education of the individual was to lead to a reconstruction of society, Gabino Barreda expressed the belief that every man [sic] should prepare for a profession. He rejected handicrafts and technical labor as unprofessional. All academic subjects were aligned for their usefulness in the world of work. Barreda insisted on the interrelation of all phenomena; therefore, education was to be homogeneous, uniform, and rigorous, regardless of one's career path, in order to prepare everyone for the new society. In some ways, the effect was to broaden education for all students (i.e., no early specialization and the inclusion of the sciences), but the arts and humanities were subjugated to the sciences. From: Hutto, M. D. (1990). Historical text archive. Retrieved August 15, 2015, from Barreda, Gabino: Prophet of Mexican Positivism: http://historicaltextarchive.com/sections.php?action=read&artid=130
was closed and in turn different national schools were established. Among these education centers were the Science and Literature Academy, the National School of Engineers, the National Library and the National School of Higher Studies\(^9^9\).

At the close of the nineteenth century, stability was finally achieved through the modernizing and politically repressive regime of General Porfirio Díaz. His thirty year dictatorship (1877 – 1910), based under the slogan “Peace and Progress,” centered his strategy on the attraction of foreign capital and conciliated an alliance with the Catholic Church. Known as Porfiriato, this period brought the most important economic development in Mexican history. To accomplish the principal financial and commercial interests of the state, Díaz relied on the members of his cabinet of ministers, the group of politicians and intellectuals who were known as los científicos, or the scientists. These men believed that through the positivism philosophy of Auguste Comte and Herbert Spenser, they could attain the knowledge of social process so accurate that revolution would become impossible (Calvert, 1973, p. 43).

Like in any other developed nation of the XIX century, the Industrial Revolution brought a blooming material prosperity to the upper classes. In Mexico, a few privileged citizens and foreign landlords enjoyed a lifestyle highly influenced by the arts, literature, architecture, technology and many other cultural aspects of European trends, especially by the French model\(^9^0\). Meanwhile, under a relative political tranquility imposed upon Mexico’s poorest inhabitants, social inequalities were rather ignored by the elite. The indigenous people were seen as a major impediment to economic development. One of the leading intellectuals in charge of the Instruction Ministry during the later years of Porfiriato and member of the group of científicos, Justo Sierra, wrote in 1902 that the linguistic diversity of the country was an obstacle to the complete formation of the consciousness of the motherland and that the linguistic unification would be the invaluable vehicle of social unification causing the indigenous languages to atrophy (Turner, 1968, p. 81). The repudiation of the diversity of languages spoken in the national territory also negated the right to existence of the many ethnic groups that still survived (King, 1994, p. 58).

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In addition, the rebellions of the Yaqui and Mayan were the major concern of Díaz’s regime. Although native Mixtec himself, Díaz had no sympathy for the indigenous insurgents who dared to defy his authority (Vandervolt, 2006, p. 160). The measure to suppress indigenous dissidence would be regulated by a vast force of rural police known as the Guardia rural through a combination of coercive sanctions and inducements, or as the epigrammatic motto had it, pan o palo, which meant, “bread or the stick” (Calvert, 1973, p. 43). In the book Barbarous Mexico (1911), the disparities between Díaz “peace and progress” politics and unjust labor conditions of a nascent working class, are documented by the American journalist John Kenneth Turner. The latter dispelled a general view that foreigners had about Mexico’s democracy. In the decline of the Díaz dictatorship, the sense of dissatisfaction that grew among different sectors of the population was also spread throughout the literary work of college students who named themselves Ateneo de la juventud (Atheneum of Youth). This group, whose task included a search for national identity (Haddock, 1997, p. 706), set a series of criticisms against the dominant positivist philosophy used by Díaz’s administration and the group of científicos.

The Mexican Revolution (1910 – 1921) marked another armed chaotic period. In the last ten years of Porfiriato, different sectors of society started a dynamic mobilization in favor of democracy. By 1908, at the age of 78 years old, Díaz relented to growing social pressure and proclaimed that Mexico was ready for democracy, thus the 1910 elections would be free. Francisco Madero, a wealthy politician, formed the Anti-Reelectionist Party to challenge Díaz's dictatorship. Madero believed that some democratic political reforms would reduce social tensions and enable the government to continue its economic growth. Near the election day, Madero's moderate challenge seemed strong enough to defeat Diaz who nullified his promise of free elections. Madero was arrested and Diaz won the fraudulent election. After a short time in prison, Madero was released and escaped to Texas, where he issued the Plan de San Luis, declaring the 1910 election void and calling for an armed revolt. A general rebellion developed, Madero, along with his supporters, were victorious in overthrowing Diaz, who fled to Paris where he remained in exile until his death in 191591.

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However, the leaders of the Revolution had different goals and political interests. In this research, the important ideals are those promoted by two revolutionaries. In the north, small farmers, peasants and mine workers joined the rebel forces of Pancho Villa. In the state of Morelos (central Mexico), an area of old conflicts between indigenous communities, a peasant-based guerrilla movement was led by Emiliano Zapata whose goal of land reform was expressed in his motto Tierra y Libertad (Land and Liberty)\(^92\). Separately, the efforts of Villa and Zapata were to restore communities’ rights to land, forest and waters by proposing a program that favored a decentralized, self-ruling and communitarian democracy, inspired by indigenous shared traditions (Fuentes, 1997, p. 35).

As a result of the Revolution, the Agrarian Law promulgated in 1915 by Venustiano Carranza\(^93\) framed an important precedent to incorporate the demands of land redistribution among peasants, which was later incorporated as the 27\(^{th}\) article in the Mexican Political Constitution of 1917. Farming communities and ejidos\(^94\) obtained ownership of their collective goods, although not all of them achieved the security of land tenure they would have liked (Bárcenas & Betancourt, 2001, p. 77).

During the Revolution some indigenous communities highlighted their cultural differences, reinforcing their social identity and strengthening their governance systems, ties of kinship and solidarity, their language and all customs. This process enabled them to create autonomous spaces and to survive as groups (CDI, 2011, p. 19). However, in its early version, the constitution did not mention the word indigenous within its

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\(^{93}\) Venustiano Carranza (1859-1920) was a Mexican politician, warlord and general. When the Revolution broke out, he initially allied himself with Francisco Madero's faction and independently raised his own army when Madero was assassinated. With the goal of reconciling the interest of the different revolutionary factions, mainly between the followers of Villa and Zapata, Carranza called for a National Convention that initially gathered on the 1st of October, 1914. The convention named General Eulalio Gutierrez as interim president but Carranza disapproved and installed his own government in Veracruz. From there, he planned the offensive against Zapata and Villa. He published dispositions regarding agrarian, fiscal, labor, judicial issues, including oil and mining resources. He decreed the free municipalities, legalized divorce and established maximum work hours and minimum wages. He became President of Mexico from 1917 to 1920, but was unable to keep a lid on the chaos that had plagued the country since 1910. Source: Minster, C. W. (2015). *Biography of Venustiano Carranza*. Retrieved November 17, 2015, from about.com: http://latinamericanhistory.about.com/od/presidentsofmexico/p/vcarranza.htm

\(^{94}\) A piece of land farmed communally under a system supported by the state.
content, it did not recognize ethnic authorities, nor the indigenous cultural diversity of the country (CDI, 2011, p. 11).

3.2.3 The *Indigenismo* of the twentieth century

At the beginning of the twentieth century, Mexico beheld the growth of the mestizo middle class and an ideology in which they were seen as the basis of modern Mexican nationalism. It was a period characterized by the opposing notions of Social Darwinism and Romantic Idealism. The mestizo ideology based on Social Darwinism held that the progressive disappearance of the weak laid the foundation for a strong nation. This implied that the indigenous peoples would gradually disappear, unable to compete with the stronger mestizo culture. By depriving the indigenous communities of their lands, and thus their means of subsistence, the mestizos ensured the economic subordination of the ethnic minorities, which at the ideological level proved their supposed inferiority (King, 1994, pp. 58, 59).

In opposition, members of the group of the Athenaeum of Youth and other intellectuals rejected that racist, social and biological determinism through a movement known as the Cultural Phase of the Revolution. This happened particularly through the ideas of the Romantic visionary, José Vasconcelos, one of the most influential writers on the ethnic question in Mexican nationalism. He dreamed of a modern utopia in which he proclaimed the mestizo as the unified great race of humanity. *La Raza Cósmica* (1922) or The Cosmic Race was the name he gave to a final blend of the diverse earth races, including European, African, Asian and American people that had come to live together in the Americas (McKenna & Pratt, 2015, p. 266). Yet, the latest theory implied that the different native ethnic groups had become mestizos.

The search for a new national consciousness resulted in a renewed appreciation of the advanced civilizations encountered by the Spanish conquerors in 1519 which included the Aztecs, Mayans and many others. The post-revolutionary years, from the 1920s through the early 1950s, brought an extensive scholarship devoted to native Mexican values and the meaning of their cultural expressions. Known as *Indigenismo* this

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massive political and social nationalist movement of lower-class, intellectuals, government officials, and ethnic groups, shaped the debate about how to politically, socially, and economically integrate indigenous peoples into national, mainstream societies while at the same time advocating the inherent value of indigenous cultures. In Latin America, Indigenismo was most influential in areas that had significant indigenous populations, particularly in the Andes region of South America, Mexico and Guatemala (Muñoz, 2013, p. 108).

Indigenismo found a popular voice in a variety of publications, including journals such as Ethnos and Mexican Folkways96, the literary work of Juan Rulfo97 and the public art of artists such as Diego Rivera (Fig.3). Indigenistas98 highlighted the positive attitudes of indigenous cultures generally described in terms of their bravery, fidelity, frugality, virtue, moral character, and most importantly, their resilience, creating an image of a native who was redeemable, and valuable to the nation (Dawson, From Models for the Nation to Model Citizens: Indigenismo and the ‘Revindication’ of the Mexican Indian, 1920-40, 1998, p. 285). In these terms, the indigenista Carlos Basauri (1940) emphasized that,

Their intelligence gives them a great capacity for the acquisition of scientific knowledge. Their discipline, love of hard work, and innate constancy facilitates their success in many endeavors. Their moral moderation separates them from the common vices of other races. However, the Indian, as a member of a social group belonging to a lofty civilization, has always maintained characteristics, both physiological and psychological, which intimately reflect the weight of his ancestral heritage. While these racial characteristics make the Indian different from other groups, they could be beneficial. If they were adapted to modern

96 Published by the Anthropology Department these journals were dedicated to the popularization of anthropology, ending indigenous poverty and the development of a “true” national identity. (Dawson, 2004, p. 12)
97 Juan Rulfo writer of El llano en llamas and Pedro Páramo
98 Mexican Indigenistas or indigenous advocates, spoke from a uniquely powerful perspective in post-revolutionary Mexico. Although not all of them spoke as anthropologists, and did not all speak with one voice, from one ideological perspective, or even describe the indigenous and the nation in similar terms, as a group Indigenistas spoke with the social scientific and cultural authority which made them experts on the indigenous’ place within the nation. (Dawson, From Models for the Nation to Model Citizens: Indigenismo and the ‘Revindication’ of the Mexican Indian, 1920-40, 1998, p. 282)
civilization, these virtues would be converted into a potent and unquestionably valuable element for human society.\textsuperscript{99}

The extended influence of \textit{indigenismo} also found a place at the institutional level, where prominent \textit{indigenistas} either founded or directed some of the following education strategies: \textit{Misiones Culturales}\textsuperscript{100} (1922) The Cultural Missions Program; \textit{La Casa del Estudiante Indígena}\textsuperscript{101} (1926) The House of the Indigenous Student; \textit{Internados Indígenas}\textsuperscript{102} (1932) Indigenous boarding schools; and \textit{La Escuela Socialista}\textsuperscript{103} (1934) The Socialist School (\textit{Ibid}, 1998, p. 281). At a higher educational level, for instance, \textit{indigenismo} influenced the present-day most prestigious Agriculture University in Mexico, \textit{Universidad Autónoma Chapingo}. Founded on February 22, 1854 as the National School of Agriculture, this University faced many changes during the


\textsuperscript{100} During the 1920s the federal government of Mexico took the first step in the nation’s history to provide free elementary education to all its citizens regardless of socioeconomic status, gender, or ethnic background. Because Western educational practices were entirely unfamiliar to many rural Mexicans, the education ministry developed a program of \textit{misiones culturales} charged with preparing such individuals for the arrival of public schools and (it was presumed) Western industrialized culture. (Tovey, 1999, p. 1)

\textsuperscript{101} The \textit{Casa del Estudiante Indígena} was established in 1926 to educate the indigenous elite. It was essentially a model school in which Indians were to be educated and then sent home to their towns to further the work of the Revolution. (Dawson, From Models for the Nation to Model Citizens: Indigenismo and the ‘Revindication’ of the Mexican Indian, 1920-40, 1998, p. 286) However the indigenous Mexicans who benefited from these programs proved less compliant than their benefactors had imagined, and the wholesale incorporation of the Mexican indigenous remained an elusive goal. Moreover, by the early 1930’s their failure to assimilate the indigenous mirrored the failure of the state as a whole to unite the nation under one dominant political regime. (Dawson, 2004, p. xxii)

\textsuperscript{102} According to Mary Kay Vaughan, Gilbert Joseph and others, the indigenous boarding school was one of the truly innovative programs of post-revolutionary \textit{indigenismo}. These institutions forced the national state to accommodate to local conditions, varying its practices in accordance with the needs and demands of different groups. (Dawson, 2004, p. xxii)

\textsuperscript{103} In 1934, the third article of the Mexican Constitution is amended to read: “State education will be socialist in character.” The change was promoted by the government of president Lázaro Cárdenas to develop its educational and cultural program, which was known as socialist education. Mexican socialist pedagogy stressed collective learning and organization for adults and children, and the learning of productive habits through collective gardens and cooperatives. Influenced by positivism, socialist education challenged superstition and institutionalized religion. While at the same time the state was able to promote a multi-ethnic nationalism based on its promise of social justice and development; and rural communities managed to create new spaces to preserve their local identities (Vaughan, 1997, p. 34). In the 1940s, once Cárdenas finished his presidential period, the socialist education project was successfully challenged and abandoned. Soon thereafter, the term 'socialist education' was deleted from the third article of the Mexican constitution. However, due to its emphasis on public education in the context of a long conflict between the state and the church, the controversy over the third article of the Mexican constitution continued for the remaining of the 20th century. From: Schugurensky, D. (2002, April). \textit{History of Education}. Retrieved August 22, 2015, from 1934 Mexican constitution proclaims socialist education: http://schugurensky.faculty.asu.edu/moments/1934mexico.html

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years of the revolution but was finally reestablished on November 20, 1923 under the premise of “teaching the exploitation of the land, not the men”\textsuperscript{104}.

Politically, \textit{Indigenismo} reached its peak during the presidency of Lázaro Cárdenas (1934 – 1940), when regional indigenous congresses were organized to give political voice to the country’s indigenous peoples and address their needs. President Cárdenas challenged indigenous Mexicans to become political actors and work with the federal government to end poverty, exploitation, and isolation. The individuals who attended these congresses called for a nation based on economic and political equality, education and cultural revival, using the tools provided by scientific studies about the social, cultural, and racial characteristics of human civilization. Opposed to this view, the Mexican elite were horrified to recognize indigenous people as part of a modern nation and criticized this attempt to be an ephemeral moment in which the state was presenting an illusion that would be gradually reassessed with better political practices (Dawson, 2004, p. xiv). Although Cárdenas’ national project was intended to modernize the country and its population, the \textit{indigenistas’} ethos undertook the indigenous culture as both the object of reform and the symbol of national soul (\textit{Ibid}, 2004, p. xiv). Clearly an \textit{indigenista} himself, Cárdenas also established the Department of Indigenous Affairs in 1936 to cater to indigenous interests and to give them a public place. This department later changed its named to the \textit{Instituto Nacional Indigenista} (National Indigenous Institute) and led the mission of \textit{indigenismo} after 1948. It still operates today as the \textit{Comisión Nacional para el Desarrollo de los Pueblos Indígenas} (National Commission for the Development of the Indigenous Peoples) or CDI (2003)\textsuperscript{105}.

During the promotion of \textit{indigenismo}, some indigenous cultural practices, like social organization, collective work and communal traditions were interpreted by \textit{indigenistas} as the model for building a more humane modernity. Nevertheless, not everyone shared


\textsuperscript{105} The National Commission for the Development of the Indigenous Peoples was created May 21, 2003, as a decentralized agency of the Federal Public Administration, non-sectorial, with legal status, with its own assets, with operational, technical, budgetary and administrative autonomy, with headquarters in Mexico City. The CDI was established as an institution for obligatory consultation on indigenous affairs for the Federal Public Administration complex, as well as for evaluation of government programs and actions and training of federal, state and municipal public servants for improving care for the indigenous population. CDI. (2010, September 22). Comisión Nacional para el Desarrollo de los Pueblos Indígenas. Retrieved August 21, 2015, from CDI. English version : http://www.cdi.gob.mx/index.php?option=com_content&view=article&id=1335&Itemid=200011
the same view. From the early 1920s to the present, most Mexicans have continuously perceived indigenous people as economically backwards (Dawson, 1998, p. 288). Critics of the *indigenista’s* philosophy point out that an idealization of indigenous people as emotionally primitive reinforced the idea that their cultural products were just folk art, hence *indigenistas*, even as they claimed to be objective, relegated indigenous people to museums. Nevertheless, as an attempt to support their ideals, the Secretary of Agriculture established the Dirección de Cooperativas Agrícolas (the Department of Agricultural Cooperatives) to teach indigenous people how to organize co-operatives which would be aligned with their cultural and social values (*Ibid* 1998, p. 289). Ironically, this agency was founded to teach indigenous people, using scientific methods, the practices that have historically defined them. Under this scheme, some indigenous individuals became empowered by the state to act as agents for their own improvement. These actors received the name of *indígenas capacitados* (trained indigenous) who often played the role of mediator between rural communities and the state. In this process, they established their needs and demands while simultaneously protecting their culture and preserving their knowledge, and in doing so, challenged the terms of their own domination (Dawson, 2004, pp. xviii, xxiii).

### 3.3 On the way towards social inclusion

As stated earlier, the Revolution set the beginning of significant, cutting-edge social reforms which are contained in the Mexican Political Constitution of 1917. This constitution is the one that is still in force today and has been amended throughout the years. Nevertheless, the reform on the subject of indigenous rights and the recognition of a multicultural nation was first discussed in 1992. The background was the protest of the indigenous peoples of Latin America against the commemoration of the discovery of the Americas 500 years earlier. This event was seen as an opportunity to show the oppressive character of the discovery and to make visible demands at a broader level and celebrate 500 years of indigenous resistance. They denounced the oppression that affected them and also showed the racist constitution of Latin American nations especially in Ecuador, Colombia, Mexico and Bolivia. Given social exclusion, pressures exercised by the state and the education policies promoted by national governments,
Latin American indigenous peoples moved to identity claims. They defended their ethnic difference and demanded the protection of their rights as indigenous peoples (Vanegas, 2009, p. 17).

Two years later, in Mexico, the Zapatista uprising demanded the full recognition of the rights of the indigenous peoples in the Mexican Constitution. In 1995, the government initiated a dialogue with the Zapatistas and in February 1996 the first outcomes were agreed, which set the basis for a new relationship between the national government and indigenous peoples. However, the former government refused to comply with what had been agreed (Bárcenas & Betancourt, 2001, p. 4). In consequence, during the rest of the nineties and the early years of the twenty-first century, the claims of important social sectors including media, civil society, peasant organizations, intellectuals and left wing politicians, did not cease (Corres & Haro, 2011, p. 62).

It was not until 2001 that the reform of the 1917 Mexican Political Constitution reaffirmed the nation’s multicultural composition in its second article. It states that the living ethnic groups, those who are descendants of the inhabitants of Mexico’s territory before the Spanish Colony, still preserve part of their own cultural, social, economic and political institutions (Araújo-Olivera & Silva, 2009, p. 540). This legal statement in favor of plurality aims to address actions to preserve and enrich indigenous languages, knowledge and every aspect of their culture and identity (Constitución Política de los Estados Unidos Mexicanos, 1917 [2001], p. 3).

The recognition of Mexico’s cultural diversity as one of its most important features, particularly in respect to the knowledge its ethnic groups possess, demands special attention. In this study, it is considered that the actions taken at higher educational levels might encourage the gradual change towards an inclusive and more respectful sustainable living. Mexican society, as a whole, must guarantee the full exercise of their rights to all indigenous peoples. In doing so, it requires not only the recognition of their rights but a reflection of the actions that have kept these groups at the margins of modern societies, disqualifying their vision of the world, and thus eliminating their chances to perpetuate their own ways of life with dignity (Araújo-Olivera & Silva, 2009, p. 541). Hence it requires education models and school training that promote respectful dialogues between different ways of thinking, backgrounds and ethnicities that in turn bring solutions to the social and environmental challenges of modern times.
In Mexico, early efforts to implement intercultural models of education were introduced in 1977 by the indigenous organization called the Alianza Nacional de Profesores Indígenas or ANPIBAC (National Alliance of Indigenous Bilingual Professionals). Composed of bilingual teachers, the alliance aimed to work for a bilingual and bicultural education that would reflect the reality of the different indigenous groups in the country. They criticized the Western approach to formal education provided then by the Mexican government. To empower indigenous people, ANPIBAC claimed that 

Education should be carried out by the indigenous people themselves, and develop their communities within their own cultural system and grounded in their world view and way of life. It should serve to create an aware society which respects the environment and other people, ensures the existence of the family and the community, and where people work for the benefit of the community and not for individual gains (Aikman, 1999, pp. 16-17).

However, disregarded by Mexican education authorities due to the apparently weak outcomes, this first project strengthened the idea that respect for cultural diversity is not limited to an academic intervention and that the implementation of politics that consider the knowledge within multicultural ethnic groups was needed for a consistent national development. The process to boost indigenous education at a higher level has faced many challenges, especially in rural areas where indigenous students may not succeed in passing the admission exams at the University level (Schmelkes, 2003, p. 5). Factors such as academic selection, the student’s socio-economic level, deficient high school training and universities’ urban locations all play a role in the process of exclusion.

To mitigate this effect and guarantee the admission of indigenous people into public universities, one of the latest government strategies was to create Intercultural Universities in areas with significant concentration of indigenous groups (Araújo-Olivera & Silva, 2009, p. 545). The first Intercultural Universities opened in 2003 in provinces with high levels of indigenous populations,106 as a strategy implemented by the Ministry of Public Education under the office of General Coordination of

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106 Currently Mexico has 11 State Intercultural Universities in states such as: Chiapas, Tabasco, Guerrero, Michoacán, Quintana Roo, Veracruz, the State of Mexico, San Luis Potosi, Hidalgo, Nayarit, Puebla and one Autonomous Indigenous University in Mexico City. SEP. (2015). Coordinación General de Educación Intercultural y Bilingue. Retrieved August 27, 2015, from la CGEIB: http://eib.sep.gob.mx/cgeib/la-cgeib/
Intercultural and Bilingual Education (CGEIB), a department created in 2001 to establish public education to the different indigenous groups at all levels.

Since the beginning of the twenty first century until the present, the official adoption of intercultural and bilingual education, aligned with UNESCO’s principles of intercultural education,\textsuperscript{107} has persisted as the model of indigenous education in Mexico\textsuperscript{108}. As explained by Lourdes Casillas, current director of secondary and higher education at the CGEIB, the idea of intercultural education has gained recognition after years of frustration in trying to improve the education of indigenous peoples. However, it is important to mention that intercultural universities do not exclude non-indigenous students. Intercultural higher education does not favor any one race, but the location of the campuses and course content are designed for indigenous students (Lehmann, 2013, pp. 779,783). David Lehmann further explains that intercultural universities play an important role in regional and local development; this education model, which emphasizes the social constructivist approach, focuses on encouraging a sensibility with respect to social commitment and to the preservation of and respect for cultural diversity, the environment and sustainability (\textit{Ibid}, 2013, p. 791).

Recently, the national government headed by President Enrique Peña Nieto launched the \textit{Special Program for Intercultural Education 2014-2018}, reinforcing the political discourse about intercultural education. This program establishes that intercultural education is one of the fundamental pillars that will construct the identity of a multicultural, democratic, equal and sovereign state nation. (CGEIB, 2014, p. 5) In addition, among its main objectives, this special program emphasized that:

\begin{itemize}
  \item Improving higher education among young people of different cultural and linguistic backgrounds requires the promotion of two particular strategies: first strengthening the role of current intercultural universities and second,
  \item 1. Respects the cultural identity of the learner through the provision of culturally appropriate and responsive quality education for all.
  \item 2. Provides every learner with the cultural knowledge, attitudes and skills necessary to achieve active and full participation in society.
  \item 3. Provides all learners with the cultural knowledge, attitudes and skills that enable them to contribute to respect, understanding and solidarity among individuals, ethnic, social, cultural and religious groups and nations. (UNESCO, 2006)
\end{itemize}


60
incorporating intercultural principles to the approach of conventional higher education institutions. (Ibid, 2014, p.11)

Highly relevant to this study, the latest public policy reaffirms the need to incorporate an intercultural approach. However, putting into practice and transcending the political discourse implies full commitment at all levels. Non-indigenous people need to become more critical about the attitudes and the school training that denies the value of different knowledge. In indigenous communities, people also need to be involved in the creation and evaluation of teaching plans and programs; their worldviews, their learning processes, and their own curricula must be included (Araújo-Olivera & Silva, 2009, p. 548).

3.4 Indigenous knowledge under the current development plans

It is relevant for this thesis to mention that Mexico’s present political aims of social inclusion, respecting cultural diversity and ensuring environmental sustainability are formulated within the national development plan (2013-2018) as important strategies to overcome a long history of poverty, especially among indigenous populations. Likewise, the development plan of the state of Puebla (2011-2017) pursues coherent actions to significantly improve the living conditions of the poor communities in the state. It further highlights that education for equality, rescuing cultural wealth and promoting rural sustainable development are key elements to narrow the social gap. Nonetheless, the local governing bodies are the authorities responsible for carrying out these actions.

For this reason, Huehuetla’s development plan follows up the strategies established at the state and national level. Under the slogan “Progress with identity,” the current local administration of Huehuetla considers providing a better quality of life for its people through a regional sustainable development a priority. For this research it was relevant

109 My own translation
to find the emphasis made on three particular strategies throughout the pages of the *Plan de Desarrollo Municipal de Huehuetla, Puebla (2014 – 2018)*. The first strategy promotes the participation of indigenous communities in planning and managing their own social development, ensuring respect for their rights and ways of life. The second promotes the economic development of indigenous communities, from the bottom up. This strategy suggests that by providing technical skills in line with native culture and values, people can generate income through their own projects. The third strategy refers to the policies related with the implementation of traditional ecological knowledge to improve the sustainable management of natural resources in areas where conservation of the environment and biodiversity is linked to their own physical and cultural survival. (2014, pp. 8,16).

Regarding an environmental diagnosis, this plan establishes that some current practices do not include sustainable natural resource management. One example is the increasing extension of land for coffee and corn production which represent the main agriculture activities in Huehuetla. Other practices include collecting firewood from the forest for food preparation and outdoor burning of household wastes. As a result, this plan highlights that urgent measures must be taken. This requires developing new knowledge to improve the quality of their soil and forest restoration, using a combination of traditional ecological practices in conjunction with scientific methods to avoid overexploitation and degradation of their natural resources. (*Ibid* 2014, p. 26)

**Conclusions:**

This review of past history has been a point of departure for this study. Understanding the construction of social identity and the role of the indigenous consciousness has not been easy, and is further challenged by conflicting scholarly perspectives. It can be inferred that in Mexico, the implementation of scientific education policies responded to the state’s interest in national unification. Its main goal was to change indigenous lifestyles by replacing their practices with, what the state considered, more modern ways of seeking progress. These efforts have brought divided perceptions among literate Mexicans. On one hand, there was persistent show of indifference towards indigenous knowledge, which accompanied the general idea that indigenous people only
have common sense. On the other hand, there was a romantic nostalgia for ancient civilizations which was the result of indigenistas’ publications that idealized the moral values of indigenous people.

Nevertheless, what is important in the context of this thesis is the historical resistance that Indigenous people have demonstrated against the state homogenization policies. Today they still hold an array of knowledge related to survival in such fields as botany, forestry, medicine and agriculture which was acquired through oral transmission. Through this overview of historical and ethnographic sources, the relevant values of sustainability one might identify are their sense of community, commitment for collective obligations, interconnectedness with the land as their main source of living, and their capacity for self-government.

As a countermeasure to a long period of cultural dominance, political repression and educational unification policies, indigenous people demanded cultural autonomy and the rights of land, healthcare, food security and education. After years of increasing social inconformities, especially after the Zapatista movement, indigenous people gained legal recognition. Mexican society is slowly moving towards a relatively new project of interculturalism, which seeks to reverse the effects caused by the implemented strategies that have aimed to modernize Mexican lifestyles without considering the cultural diversity and the valuable inputs of indigenous knowledge. Hence, the mission of Intercultural Universities is to provide higher education programs aimed to promote effective regional development. It is designed to rescue the languages, ideas and expression of all the different ethnic groups of Mexico. It is also meant to face the social and environmental challenges of modernity without losing the multicultural essence of the country. Its objective is to train professionals and researchers committed to the economic, social and cultural development of particularly indigenous communities through activities that enable social learning processes designed to reevaluate and revitalize the knowledge of different cultures within the country.
4 Multicultural society, Intercultural education

Let’s construct a Mexican nation using the technology of today, but practicing the customs and values of our past... Let’s respect cultural diversity. Let’s make a unified culture...a culture for peace!


Figure 6. “There will be no development without education, no progress without culture”. Mural painting: Public library of Huehuetla, Puebla.

This chapter develops insights into the perceptions of indigenous tradition by indigenous and non-indigenous students from the Intercultural University of the State of Puebla. It also outlines the social learning process which these students undergo. Given the information gathered by fieldwork, this chapter starts with the analysis of the Totonac and Nahuatl socio-cultural context and traditions in order to illustrate the particular knowledge and traditional practices that signify sustainable values among the major ethnic groups living in Huehuetla. Further on, these values were confirmed by the answers of 88 UIEP students.
Native communities of Sierra Norte de Puebla and particularly Huehuetla, like many other indigenous populations in Mexico, have proven to be adaptive to change and resilient to intrusion, in spite of centuries of discrimination and marginalization. They have been fighting for their rights over land use and seeking recognition of their identity against mestizo hegemony.

Several scholars have described the socio-cultural and environmental characteristics of this region highlighting that since pre-Hispanic times, its abundance of nature and strategic location have made it a desirable territory for other Mesoamerican groups, including the Aztecs who dominated the Totonacs before Spanish conquest. When Spanish conquistadors landed on Mexico's gulf coast in 1519, the first ethnic group they encountered was the Totonac people. Their indigenous warriors formed an alliance with Hernán Cortés to finally defeat the Aztec empire in 1521. However, during colonial times, Spaniards occupied the land of Totonacapan, forgetting the alliance with the Totonacs, and the forcing politics applied upon them which violently changed their social structure. Consequently, some groups located at the center of developing cities were taken as servants, while others fled to remote places, described by the anthropologist Gonzalo Aguirre as the “refuge regions” (1967). These hostile areas characterized by harsh climatic conditions and rugged topography made the implementation of European technology and the transfer of goods and people difficult, allowing indigenous people to resist labor exploitation and cultural impositions to some extent (Kan E. M., 2006, p. 131). Nevertheless, since the beginning of the Independence, modern developmental initiatives and educational policies have slowly reached those refuge regions and have threatened the survival of cultural expressions and ancestral ways of living. Today, one of those refuge regions within the ancient Totonacapan is known as Sierra Norte de Puebla (Rouy, 2005, p. 187). Located within the northern highlands of Puebla, the municipality of Huehuetla has been the safe territory of different ethnic groups including Totonac (great majority), Nahuat111 and to a lesser extent, Otomi, Tepehua and mestizos.

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111 “Nahua” or “Nahuatl” is a generic label for the peoples located mainly in central Mexico who speak dialects of the Uto – Aztecan language. Evidence suggests the Nahua peoples originated in the southwestern part of what is now the United States and northwestern Mexico. They split off from the other Uto-Aztecan speaking peoples and migrated into central Mexico around 500 AD. They settled in and around the Basin of Mexico and spread out to become the
The existing literature shows that the Totonac culture has been the object of less academic interest in comparison to other Mexican pre-Hispanic cultures such as the Aztecs or the Mayans; nevertheless, there is a variety of valuable information, particularly of ethnographic type. The most renowned studies are the following: Die Totonaken (1925) by German anthropologist Walter Krickeberg; La religion des Totonaqués de la Sierra (1969) by the French archeologist Alain Ichon and "The Totonac," in Handbook of Middle American Indians (1969) by American anthropologists H.R. Harvey and Isabel Kelly. At the national level Mexican scholars have also contributed to studies about the Totonac culture. One example includes the extensive work of Carlos Basauri entitled La población indígena de México (The indigenous population of Mexico, 1940) which contains a detailed description of “The Totonac family”. Other titles are Cultura Totonaca: El Totonacapan y sus culturas precostumbras (Totonac culture: The Totonacapan and its pre-Columbian cultures, 1942), by Enrique Juan Palacios; and Los pueblos de la Sierra: el poder y el espacio entre los indios del norte de Puebla (Towns of the Sierra: power and space among the Indians of the north of Puebla, 1987), written by Bernardo García Martínez (Rouy, 2005, pp. 187,190, 191).

In addition, there are a good number of contemporary academic papers (national and international) addressing different aspects of the history, linguistic diversity, economic development, and social life of the communities in the Sierra Norte de Puebla. However, only a few studies cover the indigenous ecological knowledge possessed by the native peoples of this region. Those limited literary sources include a book of ethno-botany written by Helena Leszcynska-Borys and Michal W. Borys entitled La flora en la cultura del Estado de Puebla (The flora within the culture of the state of Puebla, 2002). This book, illustrated with beautiful photos of the uses of flowers and plants in art, and traditional festivals and ceremonies brought interesting points to note. The most relevant to this thesis was the authors’ analysis of the valuable components of home gardens and traditional orchards, which they denoted as a self-production activity used
among indigenous people of *Sierra Norte* that can be linked to the environmental sustainability of this region.

On the traditional knowledge of Huehuetla, one article found was *Une écologie symbolique totonaque. Le municipe de Huehuetla (Puebla, Mexique)* by Nicolas Ellison. This paper explains the Totonac symbolic classification of the forest in contrast to the Mestizo’s perception of the environment. A second source was the chapter entitled *The presence of mind as working climate change knowledge: A Totonac cosmopolitics* included in the book *The social construction of climate change* (2007). This previous work encompasses the approach of this thesis by providing a suitable reference to the social and environmental concerns and the exploration of understandings of sustainable development. The author, William D. Smith argues that:

> For Huehuetecos “environment” and “cosmos” mean much the same thing. That is the environment reaches from the subsoil to the heavens and is animated by divine as well as human powers. The essential human role in the cosmos has much to do with qualities of thought . . . Totonacs do not exercise knowledge to parse out the components of “nature,” they exercise a kind of cognitive energy to see and thereby actually maintain the wave of the world… good thinking is a practical consciousness with the clear prescriptions regarding social relations (Smith W. D., 2007, p. 218).

According to Smith, these habits of good thinking, which maintain their social world together in constructive relationships, is related with their oral quality of learning. But before illustrating this point, it is necessary to notice how the interethnic relationships between NahuaTs and Totonacs have influenced one another’s ways of thinking and living in Huehuetla. Upon this matter, the findings of the ethnographic work of Vicente Lombardo Toledano, published in 1931, suggested that Totonac culture was highly influential in the NahuaTl communities of the *Totonacapan* region. He explained this point giving examples of common practices of Totonac origin, including, similarities between the headdresses worn by both NahuaTl and Totonac women, in the pre-Hispanic agricultural techniques of transplanting corn, the raising of Mexican bees in pots and the ritual of the *voladores* (Rouy, 2005, p. 190).

An enduring symbol of Totonac culture is the dance of *voladores* or flyers. This ceremony, which dates from pre-Hispanic times, has remained almost unchanged to
present (Gibson, 1971, p. 261). However, it is not a dance, but an act of worship performed as a way of ensuring a successful harvest, good rainfall and the harmonious succession of the four seasons. According to the Totonac myth of voladores, during a severe drought that gripped the territory of Totonacapan, an old wise man asked a group of five chaste men to go into the forest and search for the tallest and straightest tree. After having found the right tree, they stayed beside it overnight, fasting and praying for the tree's spirit. The next day they felled it and carried it back to their village, never allowing it to touch the ground. Only when they decided upon the perfect location for their ritual did they set the tree down. The aim of this ritual was to beg for the return of heavy rains to the God of fertility, Xipe Totec. The five men stripped the tree of its leaves and branches, dug a hole to stand it upright, and then blessed the site with special offerings. From the top of the trunk, the men adorned their bodies with feathers so that they would appear as birds to Xipe Totec and this way draw the god's attention to their prayers. The request made to Xipe Totec was heard and the rains returned fertility to the land, the hills became green again and the men and women satisfied their hunger and thirst and their suffering ended (Robles & García, 2014).

The main part of the ceremony involves four men hanging upside-down on ropes from a high trunk, which may be up to eighty feet high (around 24 meters), spinning down to the sounds of a flute and drum played by the caporal, a fifth man who performs on a small platform at the top (Gyles & Sayer, 1980, p. 50). In the words of a volador, “it is a communion between the infinite and the elements that generate life on the Earth”. The sound of the flute is the way they communicate with the gods, to bring the blessings down to earth which ensure the growth of maize and thus human existence.

As the platform rotates their ropes gradually unwind and they seem to ‘fly’ towards the ground. Each is supposed to circle the pole thirteen times before reaching the ground, and the total of fifty two turns symbolizes the passage of a century in the ancient Totonac calendar. Some say the four flyers represent earth, wind, fire and water, others

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say that they represent the four seasons of the year; but the man at the top or *caporal*
always represents the sun (*Ibid*, 1980, p.50).

Due to the Spanish conquest and its imposition of Christianity the church tried to ban
this ritual which was considered a pagan practice. Nevertheless, during the Colonial
times, the syncretization among Catholic dogma and Totonac beliefs allowed the ritual
of *voladores* to be part of the ceremonial calendar of the church. Over time the ritual
slowly died out, until finally the Totonac and a few Otomi were the only groups
performing this ancient practice. Today although the performance varied from town to
town within the *Totonacapan*, the ceremony is similar among different groups of
*voladores* (Gibson, 1971, pp. 272, 276). In Huehuetla and other communities of the
region, at several times of the year when the agricultural crops are gathered, the close of
the harvest is celebrated with a feast, usually in concurrence with autumn saints’ days,
and the ritual of *voladores* is performed. This ritual which involves hard collective
work (Figure 7) provides a sense of pride for their social identity. It is a way to preserve
the Totonac traditions and to celebrate their particular cultural presence.

![Figure 7. The collective efforts to erect the trunk for the *voladores* performance. Huehuetla, Puebla. June 3, 2015. Source: facebook page Huehuetla cuna del Totonacapan](image)

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Since 2009 the ritual ceremony of *voladores* is on the UNESCO representative list of the Intangible Cultural Heritage of Humanity.
In the Totonac and Nahuatl oral style of learning, similarities between these ethnic groups can also be found. For Nahuatl people, parents and grandparents have shaped moral behavior relying on the power of their tongues. “As soon as a baby was born, parents and other elders started talking to her or him, making speeches about the precarious nature of life on Earth, the best way to live, and the consequences of bad actions”\textsuperscript{115}. Similarly, children from the Totonac region still learn moral values from elders, treasuring the stories their grandparents told or wondering what their ancestors would do under certain circumstances. Evidence of this learning process was found in the short film called \textit{Video-letters from Huehuetla, Environmental Education in indigenous schools} (2010). This local education project headed by a rural development consultancy in collaboration with the Universidad Pedagógica Nacional (National Pedagogical University) and the Social Development Ministry provided a general analysis of the current social and environmental problems in Huehuetla, emphasizing elementary school students as the main actors of change towards sustainability.

These videos, that aim to encourage the audience to take collective actions to protect the environment, involved the participation of children, parents and teachers, focusing on issues such as water and air pollution, soil degradation, waste management and deforestation. For instance, on one of the videos the students explain that the overuse of chemical detergents threaten the aquatic life of rivers and springs and their own health; those products, as they illustrate, were not used in the past. They explained that their grandparents used to fish in the river and make their own soap\textsuperscript{116} to wash their hair, bodies and clothes\textsuperscript{117}. However, even when the measures mentioned to improve the quality of water did not include rescuing the old practices, it is relevant to note that children’s relationships with their grandparents still influence their education and thus the value of local knowledge still represents an opportunity to shape respectful values towards nature. Despite the fact that the focus of this thesis relies on higher education


\textsuperscript{116} The plants that have a natural soaping action were known by Nahuas as amollí (soap of the earth) (Kan E. M., 2006, p. 117). People smash the roots of this small plant to make soap that was commonly used in washing clothes. Its scientific name is Sapindus saponarius. Washing clothes at the river shore is today a common practice in small communities of Huehuetla, like Leacaman.

students, the information obtained in these videos points out positive signs that can be interpreted as a rising appreciation for the indigenous ecological knowledge within Huehuetla already at the elementary school level.

### 4.1 Bonds with the land

According to anthropologist Bonfil Batalla (1985), the culture of the indigenous peoples of Mexico is inseparable from its particular territory. In Huehuetla, people’s agricultural practices, their botanical knowledge, worldview and collective memory, in short, all the elements from which they can raise their cultural development, are linked to the particular environment of *Sierra Norte de Puebla* (Rosas, 1996, p. 105).

The base of sustainability in this region, one might interpret, is linked to their relationship with the *katuxawat* which in Totonac language signifies not only the farming land but the natural environment. In Huehuetla, as well as in other towns of *Sierra Norte*, sustainability is not merely the concept but the common objective that people have to address the constraints of everyday life. There is no equivalent or close concept in Totonac or Nahuatl language that could define what sustainable development is. However, understood from a Western perspective, is implicit and potentially contained in their practices, showing elements of nature conservation, appropriate development, collective participation and social equity.

Stated in the *Strategy for the conservation and sustainable use of biodiversity in the state of Puebla* (2013), the current state government describes Nahuatl and Totonac peoples as farmers that preserve ancestral agricultural techniques and artisans with a deep respect for nature. This document, that outlines some traditional practices linked to the protection of natural resources, highlights that the Totonac and Nahuatl people from *Sierra Norte de Puebla* share many aspects from their inherited Mesoamerican worldview which are characteristics that can be appreciated in their work, rituals and celebrations (CONABIO, 2013, p. 28).

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118 Several UIEP’ students from the Totonac ethnic group used the term *Katuxawat* to define the concept of natural environment.
For indigenous people of *Sierra Norte* the land is a synonym of subsistence, it is everything. It is the source of life, as the provider of food, shelter and the legacy for their children and grandchildren (Yala, 2004, p. 102). Huehuetla, encompasses a native population classified as “extremely marginal” according to national demographic statistics and academic analysis. Ironically, in contrast to the favorable environmental conditions characterized by a temperate climate with year round precipitation and evergreen tropical vegetation (Guzman, 2010, p. 245), poverty strikes the isolated villages. People depend mainly on crops for self-subsistence which are grown in their *milpa*, a small plot of land adapted to the steep mountain slopes.

The "Milpa" system is a traditional intercropping system of regional vegetables. Present day indigenous farmers cultivate this intercropping system through the practice of slash and burn together with small plots of other vegetable crops such as chiles, corn, beans, squash and various kinds of edible plants known as *quelites*. The milpa entails a rotation of annual crops with a series of managed and enriched intermediate stages of short-term perennial shrubs and trees, culminating in the re-establishment of mature closed forest on the once-cultivated parcel. The milpa cycle involves two years of cultivation and eight years of fallow, or secondary growth, to allow for natural regeneration of vegetation. As long as this rotation continues without shortening fallow periods, the system can be sustained indefinitely.199

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On the other hand, the market goods produced in this region include oranges, papaya, sesame seeds, different kinds of bananas, pepper, vanilla and lumber-yielding trees such as tropical cedar and caoba or mahogany (Rouy, 2005, p. 196).

Production of coffee, like in other communities of Sierra Norte, was the most important activity promoted by the Mexican state in the early 1970’s as an agricultural modernization project linked to the Green Revolution\textsuperscript{120}. Although during the first years of the implementation of the Green Revolution technology Sierra Norte experienced a sudden economic boom, years later it was associated with ecological deterioration, and later economic decline. In addition indigenous people perceived a negative impact upon their diets and nutritional losses which resulted from the eradication of traditional foods or from their substitution by non-traditional foods (Grenier, 1998, p. 6).

The impacts on the land due to the expansion of mono-cropping coffee, grazing and the use of herbicides to clean vegetation from the planting sites, reduced the forest to a few patches surviving only in the most rugged places which induced the transformation of Huehuetla’s society and their natural environment. As a result and due to instability and the decline of the regional coffee market during the 1990s, Huehuetla’s inhabitants fell into an economic crisis from which they haven’t fully recovered. Migration, climate crisis and loss of biodiversity are part of their current social and environmental problems (Smith W. D., 2007, p. 221).

Contrary to the predominant Western perception of nature, indigenous people from Sierra Norte de Puebla in general, still consider that the land is not merely an economic resource. However in many indigenous highland communities, like the case of Huehuetla, land tenure is based on small properties where labor is collectively shared among members of the family and friends in a practice known as mano vuelta (roughly translated as giving a helping hand in return) (Méndez, Tlamani, & Valverde, 2006, p. 300). Spiritually, the Earth is still thought of as a living force. Mountains, hills, caves gullies, springs, trees and hollows are some of the places where worship may be carried out. The soil also represents the element from which people are made, which is why in

\textsuperscript{120} Green revolution technology is associated with ecological deterioration, economic decline (at local level), and poorer diets and nutritional losses resulting from the eradication of traditional foods or from their substitution by non-traditional foods. (Grenier, 1998, p. 6)
Totonac language the human body is referred to as *tiyat-liwa* or flesh of earth (Yala, 2004, p. 103).

It is believed that every element on earth, every animal, plant, and human activity has a spiritual owner. To show them respect, native people, Totonac and Nahuatlts alike, ask permission or forgiveness through rituals or dances whenever they are going to seed the land, harvest, build a house, chop down a tree, fish or hunt. They believe that if any of these human activities is carried out unnecessarily, the owners would get angry and punish the offender (Olivera, 1996, p. 190). Interpretive studies on the religious characteristics of Totonacs and Nahuatlts from *Sierra Norte de Puebla* (Kan E. M., 2004, p. 15), (Baez, 2004, p. 12) suggest that people’s relationship with their deities responds to concerns for survival in this world and their actions are aimed to please those forces of nature that have a direct influence on their lives. Thus, the people’s greatest responsibility is to maintain a balanced environment in which they may satisfy their needs while recognizing that their behavior towards nature may influence their own *tlan talatamat* or social well-being.

Alain Ichon interpreted that the system of Totonac beliefs is syncretic as a result of the combination of Pre-Hispanic rituals and colonial Catholic traditions (Ichon, 1973, p. 458). A form of syncretism, for example is that Christ has been assimilated to *Chichiní* the god of the sun who is the giver of life and owner of corn and Saint John the Baptist or Saint Michael to *Aktsini* the god of water and thunder. Secondary deities are *Kiwikgoló* owner of the mountain and the forest and *Xmalana tiyat* the owner of the cropping land (Rouy, 2005, p. 204). However, different academic sources and recent analysis on poverty levels in Huehuetla, like the one held by the *Universidad Iberoamericana Puebla* in 2010 entitled *Tierra de dos tiempos* (Land of two epochs) suggests that the modern developmental schemes that have been introduced in Huehuetla have endangered the ways of perceiving, preserving and protecting the environment. People are gradually forgetting the old gods, those owners of nature. In consequence, there has been a slow process of ecological and cultural deterioration. Yet the ecological knowledge, skills and understanding of nature embedded in Huehuetla

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121 UIEP Totonac-speakers students used the two words *tlan talatamat* to literally translate well-being or good living, relating it with the concept of *buen vivir*. 
were pointed out as advantages that scientists and local people can use to improve their own life conditions (Guzman, 2010, p. 220).

4.1.1 Kakiwin Tutunaku: The hill with three hearts

The highlands of Huehuetla, which hold cultural and natural treasures, are home to a thriving ecotourism enterprise proudly owned and managed by Totonac women. This initiative not only aims to provide eco-friendly accommodation and to delight visitors with their culinary arts but also the local ecological knowledge transmitted to their guests lets them enjoy the region with respect so that future generations have the same privilege. What could be better than to experience a place through the culture of its native inhabitants? The ecotourism center called Kakiwin Tutunaku, “the hill with three hearts,” owes its name to two Totonac words. According to a Totonac – Spanish dictionary, Kakiwin means monte (Ramos, 2007, p. 94) (hill or mountain in English). The word Tutunaku is the name that people use to identify themselves as an ethnic group as well as the language they speak. An etymological interpretation gives the roots: tutu – three and naku – heart, which combined is “three hearts”. Although, a historical version suggests that Tutunaku refers to their three ceremonial centers: Tajin, Zempoala and Yohualichan (Kan E. M., 2004, p. 6).

Kakiwin Tutunaku belongs to an organization named Taputsama Talakxtumit or “seeking equity”. It is an organization which describes itself as committed to the “mission to preserve and improve our environment by creating decent jobs for our people. We do so by offering our visitors and guest, besides accommodation, walks and guided tours through our region, workshops about our culture and last but not least, a tasty way to get to know us: our traditional food” (Mendez, 2015). The Kakiwin Tutunaku initiative was founded in 2002 by 35 Totonac women and a year later, with the help of the consultancy Yoltli A.C., they started building an eco-hotel that presently has two cozy cabins, one hostel, a learning center and a restaurant. This ongoing project has interesting eco-technologies including a cistern to catch the rainwater, a sewage water treatment facility and their own compost which uses wastes from the kitchen that
are later used to nourish their gardens. Today, working under a permaculture philosophy, 58 organized women share work and profits from the ecotourism center.

In the 1980s a group of Nahuatl people from Cuetzalan, a town not very far from Huehuetla founded the consortium *Tosepan Titataniske*, meaning “together we will win” (Zeppel, 2006, p. 94). It was based on the same principles that would later inspire the women in Huehuetla, and has become a pioneer in organic coffee production in Mexico and created the first eco hotel entirely owned and run by indigenous women (Toledano & Ortiz-Espejel, 2014, p. 90). In addition, Cuetzalan is the most popular tourist destination in Puebla, for Mexicans and foreigners, due to its qualification as a *pueblo mágico* or magic town, a program of the Mexican tourism ministry aiming to promote and develop small towns around the country.

Under the same basic principles, the two cooperatives started their projects with funds provided by Mexican institutions, to buy land (ironically, land that used to be theirs) and build the hotels. Women received training on hotel and restaurant management and in addition they were qualified by the Secretariat of the Environment and Natural Resources to be environmental promoters, learning how to collect rain water, classify wastes and identify species of local tress for a better use of natural resources. It should take only common sense but there are specific studies on tourism that confirm that “ecotourism as a mechanism for achieving local conservation and development goals is more successful when the projects prioritize local involvement and control”.

Proof of this are the ongoing projects *Kakiwin Tutunaku* in Huehuetla and the consortium *Tosepan Totataniski* in Cuetzalan.

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125 Comision de Desarrollo de los Pueblos Indígenas (CDI) Indigenous Peoples’ Development Commision

Their common objectives to empower women, enhance local knowledge, ennoble the culture and preserve the environment respond to a collective worldview in the region. In recent years, several municipalities at Sierra Norte have stood against international interventions on their territory, known by locals as “death projects,” such as mining, hydroelectric dams and natural gas extraction using hydraulic fracturing technology. As a Nahuatl farmer explained:

We do not want that mining companies come to settle down and to harm us, to take out our water, and contaminate it, because when they do hydroelectric dams, they are taking us a lot of water, almost 90%, and mining companies will exploit gold, silver, copper and everything they find. We know they use reagents such as cyanide, and they will poison our rivers and groundwater. So we are not allowing it. We are talking to our indigenous and non indigenous brothers, to wake up . . . What we want is life, and we do not want the government to make deals with foreigners to come and draw on our natural resources that we have kept and cared with much effort and our ancestors had kept.

People in this region are well aware of their bonds to the environment; most of them have chosen to live as their ancestors did, believing in the preservation of their natural environment and devoted to the spirit that has provided all their needs for countless generations. In Sierra Norte de Puebla there are 98 mining concessions for the exploitation of gold, silver, copper, zinc and eight projects to build hydroelectric dams and several pipelines, however the fate of these “death projects” is still uncertain. A positive outcome is that this territorial and water defense has united most of the affected peoples. The locals’ outcry keeps spreading warning messages and the echo can be heard all along Sierra Norte de Puebla.

The Kakiwin Tutunaku experience represents an unexpected discovery for this research. These Totonac women faced many struggles from the beginning of their project, including the lack of approval from men in the community and the lack of tourist promotion from the local authorities. Their collective work and commitment has set an example among other women in this region and outside. This knowledgeable

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experience was an opportunity to learn about the use of herbs and plants, to listen to their legends and appraise the caring hospitality of Totonac women who are the core of that chain of people protecting their means of subsistence.

4.2 The Intercultural University of the State of Puebla

From the city of Puebla, there’s only one bus line that travels to the farthest towns of Sierra Norte de Puebla. To Huehuetla, it is five hour trip. At first, as the bus goes through the city, the outskirts and through a landscape of mostly maize field crops, pasture lands and a few scattered villages, the trip doesn’t seem very promising. But then, the bus begins to go up hill and the landscape changes to a rewarding, lush green, passing through mountains, alongside steep cliffs and misty canyons, introducing its passengers to a region full of history both from before and after the arrival of the Spaniards that today is home of the Intercultural University of the State of Puebla (UIEP).

![Figure 9. Route from the city of Puebla to Huehuetla. Source Google maps](image)

Founded in 2006, the UIEP is a public institution that offers tuition–free higher education in an area where an indigenous population represents the majority. The institution’s main objective is to train professionals and researchers (indigenous and non-indigenous) through a model of education based on the principles of sustainability
and framed within an intercultural approach. In addition, UIEP collaborates with different social sectors including peasants’ organizations, groups of women, the council of elders, and even local mayors to boost human, economic, social and cultural development within the indigenous communities of the region.

The natural environmental conditions of *Sierra Norte de Puebla*, the multicultural context and the inner knowledge that local people have represent the vessel from which professors and students are researching. There are a variety of topics including conflict resolution, community organization, the use of medicinal plants, forest resource management, the benefits of organic fertilizers and more. The bachelor programs offered at UIEP include the following: Language and Culture, Sustainable Development, Alternative Tourism and Community Forest Engineering. In addition, by the time this fieldwork was completed, the University was to set to open the two new degree courses of Nursing and Law, starting in fall semester 2015.

From teachers’ perspectives, the student’s indigenous knowledge represents the real intellectual wealth of the native towns. However, teachers recognize that making the students feel that their particular needs are being met and their background appreciated are quite challenging tasks. To this point it is relevant to add the parents’ concerns over the increasing lack of interest that young people show for rural labor. One experienced professor argued that the process of cultural regeneration is very important for building young people’s confidence and recovering ancient traditions, but some students do not want to live the same way as their parents do. Some of them feel ashamed of their culture or think that the practices that their parents and grandparents have taught them are useless or even ridiculous. Others are reluctant to share their knowledge (Betanzos, 2015).

Due to the latter, the current rector, Alibert Sánchez Jiménez explained that the intercultural approach opens up tolerant and respectful dialogues between the holders of traditional knowledge (the students) and scientists (the teachers) in order to systematize the wisdom embedded in the native towns. In this sense the strategy of some teachers is to promote outdoor workshops and projects that enable the students to learn from closer

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experiences with the local people. He considers that a true “dialogue of knowledge”\textsuperscript{130} is taking place since “we are immersed in a multicultural society that allows us to carry out better social interactions and exchanges of knowledge” (Jiménez, 2015).

The need to systematize this native knowledge responds to a general perspective of underestimation resulting from a long process of political domain and social repression. Rescuing this native wisdom is highly relevant. High levels of poverty and marginalization strike these communities and a rising number of young people are migrating to the cities and to the United States, which represents the main challenge that this University is trying to address. To do so, the UIEP aims to attract a higher number of students, and encourages them to stay in their regions, making them feel proud of their indigenous identities and training them to respect their own worldviews and traditions which at large will positively impact the development of their towns (Jiménez, 2015).

\textbf{Figure 10.} Facilities of the Intercultural University of the State of Puebla in Huehuetla, Puebla.

The original aim of UIEP is to provide higher education to every ethnic group of Puebla including \textit{Náhuatl, Totonaco, Popoloca, Mazateco, Otomi Mixteco} and \textit{Tepehua} peoples. However, the location of its campus limits this task. According to official data from the national 2010 population census, the state of Puebla held 5.7 million inhabitants, of which 1.1 million were identified as indigenous peoples (i.e. 18 percent

\textsuperscript{130} Referring to the term \textit{Dialogo de saberes} coined by Enrique Leff
of the total population). This same source shows that the mostly indigenous populations live in the poorest regions of the State: *Sierra Norte, Sierra Negra* and *Mixteca*. The UIEP campus is located within *Sierra Norte*, a predominantly rural region with a high rate of indigenous population, composed of 68 municipalities from which several communities, including Huehuetla, showed very high levels of marginalization, according to the official social and economic development indicators used by the *Consejo Nacional de Poblacion* (National Population Council).

According to the International Fund for Agricultural Development, in general, three factors determine poverty status in Mexico. One is geographic area and proximity to urban centres – The incidence of rural poverty is highest in areas that are far from urban centres, whereas populations living near urban centres have greater opportunities for income diversification. The second is ethnicity – The poverty rate in indigenous communities is well above that in non-indigenous communities. And the third is gender – Women head most single-parent households and face a lack of job opportunities and access to productive resources (IFAD, 2014).

The rector explained that the location of the UIEP campus in Huehuetla initially responded to political interests more than to mindful planning. Although it is true that UIEP is located at the “heart of *Totonacapan*” and it is gaining regional recognition by providing higher education to an increasing number of Totonac, Nahuatl and mestizo students, the truth is that Huehuetla is a small municipality that lacks apt infrastructure to support the needs that a state university demands (Jiménez, 2015). Its remote location increases the costs of communication and transportation services. Roads in bad conditions, lack of accommodation for both students and teachers and the distance between Huehuetla and the city of Puebla, make it difficult to attract qualified professors willing to work there on a full-time basis. Nevertheless, the ongoing efforts to address some of these problems show positive outcomes. For example, before the construction of the students’ dormitory, a project achieved by the present UIEP administration (2013 onwards) there were few places where students from the most distant communities and low income backgrounds could stay.

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131 *Catalogue of national indigenous municipalities*. (CDI 2010). In general the social and economic issues of several communities at *Sierra Norte* include high illiteracy rates, lack of basic services - electricity, piped water, and sanitary drainage systems, and from inefficient house structures arise precarious living conditions. In addition there is a lack of health and educational facilities, as well as roads in bad condition which makes access difficult to some areas, especially during rainy season.
In terms of the intercultural education model implemented in this university, the rector highlighted that with the help of the 24 qualified professors and one indigenous wise man\textsuperscript{132}, the students become competitive professionals committed to the economic development of their communities, preserving the environment and respecting their cultural diversity. However, there are contradictions to pay attention to. On paper the intercultural method links the constructivist approach to the mutual exchanges between modern science and traditional knowledge in which both have equal weight and can complement and collaborate with each other (Lehmann, 2013, p. 793), though in terms of feasibility, this collaboration does not seem to be balanced. The wise man comes from a native community and holds traditional knowledge about the culture, language, values and practices of the region but he has no formal training, thus his role is limited to teaching the Nahuatl language. Moreover, the curriculum content and structure of each program focuses more on scientific courses which will provide the technical skills the students need to systematize their traditional knowledge.

A brief analysis of the UIEP’s program content (Table 3) shows that from a technical point of view it would be necessary to revise the scope offered in each academic program, since they only partially cover all the elements contained within the sustainable development approach. For instance in the program of Language and Culture, subjects focus only on socio-cultural aspects, while the content of Alternative Tourism relies on the study of natural resource management. Moreover, even though the four programs are designed to promote community-based projects, only the program of Language and Culture promotes the values and principles of interculturalism. In general terms, only the content of the program of Community Forest Engineering brings a unifying perspective that offers sufficient technical skills to generate economic alternatives focused on the rescue of traditional ecological knowledge, socio-cultural aspects and suitable strategies for natural resource preservation.

\textsuperscript{132} Unfortunately, during fieldwork the indigenous wise man, Eliseo Zamora was not available for an interview.
<table>
<thead>
<tr>
<th>Main areas of knowledge</th>
<th>Language and Culture</th>
<th>Sustainable Development</th>
<th>Alternative Tourism</th>
<th>Community Forest Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedagogy; Linguistics; Culture; Sociology; Law</td>
<td>Ecology; Sustainable Development; Native Languages; Eco-technologies</td>
<td>Tourism typology; natural resources management; Niches for alternative tourism</td>
<td>Ecology; Forestry and natural resource management; Culture Sociology</td>
<td></td>
</tr>
</tbody>
</table>

| Aptitudes | Social development | Social and economic diagnosis; Social cultural Research; Social integrated projects; Social alternative tourism; Social innovative projects; Social alternative tourism projects; Social innovative creations of alternative tourism products; Social management of projects of alternative tourism; Social technical assessment of traditional practices and knowledge and promoting the adoption of collective work; |
|------------|-------------------|------------------------|---------------------|-----------------------------|
| Design of teaching strategies; Translation and interpretation; Culture management; Communication natural resources; Social project management; Producers’ and communities’ organization | Socioeconomic | Organization, management and of projects of alternative tourism; Marketing and advertisement strategies to promote alternative tourism; Planning and development of forest activities, marketing and production; Consultancy in environmental services; Teaching; Technical support; Organization of groups for community management of agro forestry resources |

<table>
<thead>
<tr>
<th>Attitudes</th>
<th>Language and Culture</th>
<th>Sustainable Development</th>
<th>Alternative Tourism</th>
<th>Community Forest Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>He/she has an intercultural approach and is an indigenous rights defender</td>
<td>He/she applies ecological principles; Integrates knowledge of their communities</td>
<td>He/she values and applies the legislation required to preserve the cultural and environmental patrimony</td>
<td>He/she is capable of bringing technical assessment incorporating traditional practices and knowledge and promoting the adoption of collective work.</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Summary of content of the programs offered by the Intercultural University of the State of Puebla

The rector further explained that the ideal condition would be to add PhD trained bilingual or trilingual native professors to the academic staff. Unfortunately, there is a
lack of scholars fulfilling this criterion, which confirms the flaws of the prevailing higher education system in Mexico (Jiménez, 2015). Towards the end of the interview, the rector concluded that UIEP has many challenges to be addressed in the following years since the intercultural method is relatively new in Mexico. He clarified that the curriculum’s content for every degree is under a re-evaluation process.\footnote{The contents of the programs should be evaluated every five years, according to national and international accreditation bodies} In addition he pointed out that for the upcoming nursing program they will require the recruitment of traditional midwives\footnote{Wise men and midwives have important roles within the society. During fieldwork I noticed that the only one hospital in Huehuetla has modern facilities which include one traditional medicine unit. Doctors and traditional midwives work independently respecting each other and more importantly preserving the traditional health practices of the community}. The latter testifies to the fact that within the academic community there is still a need to contrasts basic scientific concepts with those deriving from native people so as to seek empathic collaborations towards equal validity of knowledge. This point, however, implies the need of further institutional and academic evaluations about effective teaching methods that bring referents on the paths from which intercultural experiences can improve in the future.

### 4.2.1 Students’ perspective

Previously cited, Amartya Sen (1999) argues that there can be little doubt that the communities or cultures to which a person belong can have a major influence on the way he or she sees a situation or views a decision. The heterogeneous group of 88 students from UIEP has visibly different perspectives in how they analyze a problem or how they answer a question, due to their own identity, historical and social background. Their visions reflect the social learning process in which they are immersed showing the implications of their intercultural training and their multicultural background.

In principle, the intercultural education model is distinguished by being neither specifically aimed at indigenous peoples nor centrally concerned with language. Native languages including Nahuatl and Totonac are taught as second languages, and English as a foreign language with Spanish as the medium of instruction. The students form a heterogeneous group so it cannot be assumed that they will all understand either the Totonac or the Nahuatl language. Within the group of 88 students, the percentage
analysis shows that 36% are Totonac native speakers, 16% are Nahuatl native speakers, only 1% are trilingual (Totonac, Nahuatl and Spanish) and not surprisingly the majority, 44%, speak only Spanish. This result is a reminder of the past, discriminative education systems for indigenous people in Mexico. As pointed out in several informal conversations with local people, students and professors, the cultural repression is seen in general to be inseparable from the authoritarian character of past education initiatives. People have distanced themselves from their mother tongue due to years of an education system that imposed Spanish as the hegemonic language. One or two generations back, it was common for schoolchildren to be punished by teachers for speaking their native languages and thus causing them shame or fear to speak them. As they grew older, some stopped speaking it altogether, losing the ability to teach their own children. Others preferred to hide their language, keeping it only for themselves.

Their cultural expressions have suffered further changes and some of the traditions and values have been lost. An important 93% of the students confirmed this and added that disdain for traditional practices allude to the expansion of capitalistic ways of consumption. Globalization, economic crisis and migration were the issues cited the most. They considered that there is clear evidence reflecting changes in eating habits, agricultural practices and dressing styles. However, not only social, cultural and economic factors have been the driving forces altering students’ lifestyles. Students distinguish that the regional environmental problem stems from the loss of moral values and careless attitudes toward nature. Students emphasized that the environmental problems of the region consist in inappropriate waste disposal practices, deforestation and loss of biodiversity, soil degradation (excessive use of chemical fertilizers) and potable water scarcity (pollution of springs and rivers).

Worldview is, as Clifford Geertz defined, “people’s picture of the way things in sheer actuality are, their concept of nature, of self, of society. It contains their most comprehensive ideas of order” (Geertz C., 1973, p. 127). To reconstruct students’ worldview, they were first asked to define the concept of natural environment. The results showed that 59% of them conceptualize it in terms of the interactions between biotic and abiotic factors of an ecosystem. An ecosystem consists of the biological community of living organisms (biotic) and non-living organisms (abiotic) that occurs in a specific locale, and the physical and chemical factors that make up the environment. Abiotic factors include: the sunlight, temperature, precipitation, water or humidity, soil or water chemistry. Biotic factors are:

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135 An ecosystem consists of the biological community of living organisms (biotic) and non-living organisms (abiotic) that occurs in a specific locale, and the physical and chemical factors that make up the environment. Abiotic factors include: the sunlight, temperature, precipitation, water or humidity, soil or water chemistry. Biotic factors are:
interactions that occur within natural physical space. 14% perceive that the natural environment consists of all the natural capital that surrounds them and from which people’s livelihoods depend on. And finally, only 8% of the student used words like *nuestro hogar* (our home) or *Madre Tierra* (Mother Earth). These results show that students tend to place themselves separate from their natural environment, which is relevant to understand that within UIEP the students are taking a position of analytic observers of nature rather than seeing themselves as being subjects to nature.

This is followed by a fundamental question aimed to complement the interpretation of students’ worldview: What are the cultural values concerning the environment that you have learned from your parents and grandparents? To this question, 77% of the students answer that the most important value is respect, which implies respecting the cycles of nature, working the land and taking only what is needed for a common wellbeing and letting nature recover itself. The remaining group replied that the values learned at home are love for the family and devotion for Mother Earth. Honoring her implies ensuring their lives on Earth. These answers show the contrasting ways from which students are learning to conceptualize nature at UIEP.

Then, if their socio-cultural background places respect towards nature as an important value learned at home, they were asked if they consider people in their communities to live in a sustainable way. The results show that little more than half the group (56%) answered no, explaining that especially among young people the mentality and habits of consumption are changing. Earning money is the most important individual goal instead of seeking common wellbeing. In addition the modern ways of increasing land productivity, that some government initiatives have promoted in their communities did not consider the negative impacts on nature. On the other hand, the rest of the group considered that in their community, people still preserve traditional ways of living and that it is rare to see people using modern techniques to grow food. The latter results provide two contrasting views. One group confirms that an increasing consumption of goods and services, i.e. eating canned or packaged products, wearing imported clothing or the use of cell phones, threaten the traditional ways of living. It especially affects the

people’s health and the traditional dressing habits. Nevertheless, among the students’ answers, there were comments such as, “we do not want the same lifestyle as our parents,” which implies that looking at the past means going backwards. The rest of the group embraces traditional practices and respect towards nature as the elements that will allow their communities to move towards sustainable development.

The next point is to question the vision students have about the future in their communities. 63% of the group recognizes that they want a modern community empowered by their own traditional wisdom with the capacity to seek progress and live in balance with nature. They would like a better organized community where people work together towards collective benefits, staying aware of their natural and cultural potential. 14% want a community which is less polluted, and less urbanized. This group perceives environmental pollution and urban development as the fundamental cause of their community’s deterioration. Nevertheless, this shows a limited vision since reducing these threats does not implicate that living conditions in their town people will improve. Another 12% would prefer that present conditions (their sense of belonging and the abundance of natural resources) never change. This group has a certain degree of nostalgia for its pre-Hispanic cultural heritage, which implies strong opposition to western living standards. The remaining 7% did not answer this question.

The next question was whether students would like to contribute to the development in their community. 48% of the students replied that they would like to promote development from the bottom up. The actions to be taken would be to propose collective innovative projects using local wisdom, improving natural resources management and adapting ecological technologies, especially for the rural context they live in, in order to increase income among people. 40% explain that their future contribution to their communities involves teaching and sharing knowledge and promoting environmental education. 9% did not have a clear idea about future contributions to their people. And finally the remaining 3% aimed to help their communities by joining government institutions and taking public service positions in order to foster intercultural initiatives by political means.

Regarding the last question, students explain why it is important for them to study at the Intercultural University of the State of Puebla. The majority, 48% held that the most important part of their education at UIEP relies on the re-evaluating process of their
own socio-cultural baggage which produces tolerant interactions with other students and their professors. 28% prioritized the technical knowledge they gain which will allow them to solve social and environmental problems in their communities. 17% perceived it as a great educational opportunity which will enable them to have better paid jobs. 7% did not give it any importance. Likewise, the interpretation of the results given in this last question showed that an important 64% view their education as a tool that will bring collective benefits, while the remaining 36% tend to focus on individual gains. These answers show mainly positive perspectives; however, few critical students think that the intercultural education model is just a political discourse. One male student enrolled in the sustainable development course said that “at the end, it is up to each and every one of us if we want to rescue the values of our traditional knowledge or not”. In his particular vision, there is a persistent colonization process which is made today through the imposition of scientific knowledge.

Conclusions:

This chapter has identified the potential sustainable practices inherent in the Totonac and Nahuatl traditional worldview, according to the UIEP students’ perceptions and further information gathered in the field. According to Amartya Sen’s arguments, the sense of belonging to a place, community and fellowship is closely related to the way humans shape their knowledge and comprehend ethics and norms (Sen, 1999, p. 5). In this sense, communities in Sierra Norte de Puebla are the main source of indigenous knowledge. Its role in students’ identities has enabled them to revalue the practices that can help them to reclaim sustainability in their region.

The main components that UIEP students revealed about their social identity are the use of native languages, either Nahuatl or Totonac, their traditional dress and food, their culture as a whole, the natural environment they live in and their ancient agricultural practices and forest management. These elements define who they are, but above all, the most important component of their identity consists in their principle of collectivism. Culture and identity are perceived much as the same thing. Students’ perceptions are not unified. Among these young men and women there is a persistent sense of collectiveness and pride for their indigenous heritage. The students’ relation to
indigenous culture and knowledge shows strong bonds with the land and their ancient oral ways of learning which they gain at home from their parents and grandparents. However, some students expressed an increasing tendency of placing individualistic ideals above community interests, threatening those components of their social identity. Not all of them choose to live like their parents do. The lack of interest in rural labor and the economical marginalization of the region are the main motives behind this choice.

For these 88 students, the implications of studying at UIEP bring opportunities for students of Sierra Norte to gain access to higher education, and the possibility to revalue their indigenous ecological knowledge. The persistent challenge of the intercultural education is to help students choose to stay in their communities. At UIEP, the students’ education entails a process from which they can be committed to developing their communities inspired by their inherited traditional sustainable practices.

Those active practices related to sustainable ways of living and linked at the same time to their social identity involve actions of collective participation, respectful and tolerant behavior for one another, botanical knowledge, self-production agricultural techniques linked to natural conservation and their resilient capacity to deal with change throughout a long process of political interventions. These characteristics rely on their rural context, worldview, system of beliefs and their ways of knowing, which reflects that even though respect is a value quite relevant for the educational model of UIEP in practice, it is the knowledge learned within the vessel of community that bring these students the values from which they can reclaim better sustainable ways of development.
5 Conclusions

This dissertation has been an attempt to identify the values of sustainable thinking and practice of the Totonac and Nahuatl culture of Sierra Norte de Puebla. For UIEP and its intercultural education model, the students emphasized that inherited attitudes towards the natural environment, tolerance to different ways of thinking and an attitude that allows coexistence enable a sharing knowledge process to critically apply suitable solutions to the current social and environmental problems of this region.

This research relied on the rising interest in indigenous ecological knowledge, particularly for education towards sustainability. It has been shown that as a result of a long process of indigenous people’s demands for their rights for land and recognition of their worldviews, international organizations and many national governments including Mexico are showing willingness to recognize the value of cultural diversity.

The argument largely discussed by many scholars, including Gary Holthaus and Fikret Berkes, is that such indigenous knowledge is a result of life experiences or common sense knowledge which has been passed down from one generation to another. Compared with many modern technologies, traditional practices might not offer fast results, but they have been tried and tested, proving to be in many cases effective, suitable at a local level, low-priced and culturally appropriate. In any case, the argument is that by themselves the western technocratic approach or the traditional wisdom bring limited solutions to the complex, social environmental problems of our time, thus what is needed is a social learning process which enables synergy between science and tradition in order to pursue a sustainable future.

Regarding the multicultural context of Mexico, the results of a brief historical overview showed that after a long period of cultural domain and political repression, indigenous people continue under high levels of marginalization which affect not only their social wellbeing, but their natural environment. Due to the latter, the relatively new initiative of intercultural universities has the mission to provide higher education programs aimed to promote effective regional development. Its objective is training professionals and researchers committed to the economic, social and cultural development of particularly
indigenous communities through activities that enable social learning processes aimed to reevaluate and revitalize the knowledge of different cultures within the country.

This research focused on the experience of the Intercultural University of the state of Puebla (UIEP), an institution that provides higher education to a young interethnic society, using an approach guided by two main axes: sustainable development and intercultural relations. I have tried to answer the question:

What has been the history of a gradual inclusion of indigenous knowledge and culture in Mexican education?

In Mexico, the implementation of scientific education policies responded to the state’s interest in national unification. Its main goal was to change indigenous lifestyles by replacing their practices with, what the state considered, more modern ways of seeking progress. The historical resistance that Indigenous people have demonstrated against the state homogenization policies has enabled them to preserve the knowledge related to their own survival in such fields as botany, forestry, medicine and agriculture which were acquired through oral transmission. The inclusion of indigenous ecological knowledge emerged as a countermeasure of a long period of cultural domain, political repression and educational unification policies. Indigenous people demanded cultural autonomy and the rights of land, healthcare, food security and education. After years of increasing social inconformities, especially after the Zapatista movement, indigenous people gained legal recognition. Mexican society is slowly moving towards a relatively new project of interculturalism, which aims to reverse the effects caused by the implemented strategies that so far have aimed to modernize Mexican lifestyles without considering the cultural diversity and the valuable inputs of indigenous knowledge. Hence, the mission of Intercultural Universities is to provide higher education programs aimed to promote effective regional development. It is designed to rescue the languages, ideas and expression of all the different ethnic groups of Mexico. It is also meant to face the social and environmental challenges of modernity without losing the multicultural essence of the country. Its objective is training professionals and researchers committed to the economic, social and cultural development of particularly indigenous communities through activities that enable social learning processes aimed to reevaluate and revitalize the knowledge of different cultures within the country.
My second question was this: What is the dominant worldview among the students of the Intercultural University of Puebla and how sustainable is it?

Within the learning environment of UIEP, students’ worldview reflects a tendency to place themselves separate from their natural environment. They are becoming analytical observers of nature rather than seeing themselves as being subjects to nature. This view, however, contrasts with their socio-cultural background and the knowledge they gained prior to their training received at UIEP. The important role of parents and grandparents in their education reflects great values especially those of respect towards nature and for one another. Nevertheless, they also recognize that their attitudes are changing, as most young people see themselves out of the rural context, and mostly attracted by western capitalistic lifestyles, indicating that there is a degree of unsustainable influence. It can be said that their inherited worldview, the one constructed through the knowledge transmitted within their communities, shows stronger sustainable values, however a long history of conditions of marginalization and constant poverty threatens this view which in the end may prioritize economic growth above the rest of the integrative elements of sustainable development. In this sense, UIEP might consider revising and reinforcing the contents of its approach to incorporate more elements of the socio-cultural background and the students’ own values learned at home.

My third question is this: How is intercultural education is perceived and experienced by the students from UIEP, and are there any variations in these perceptions?

In realizing the challenges of the learning process occurring at UIEP and the knowledge embedded in their culture, there are sustainable initiatives pointed out by the students, implying that to some extent the mission of UIEP is being achieved. On the one hand, there is a conscious need to learn from one another. The majority of the students believe that the intercultural method counteracts the effects of the capitalist system. Although, opposite perspectives were found among the few students who clearly established that this intercultural model partially accomplished its entire intended objectives, others thought that this model did not transcend its political discourse and that there is still a colonization process carried out through scientific knowledge.
My last question was this: Given the intercultural approach, are the students committed to their communities in order to maintain their social identity and achieve sustainable development?

In terms of a shared space in which the students engage in dialogue and in a joint venture to find different ways of being and thinking and a common search for a way forward, the different perspectives of this group of students contradict the official vision promoted by UIEP. The majority of students pointed out that achieving a better future involve getting out of the marginalized conditions they live in. They envision modern communities empowered by their own traditional wisdom with the capacity to seek progress and live in balance with nature. They dream of a better organized community where people work together towards collective benefits, staying aware of their natural and cultural potentials. The strategies to be taken focused on implementing development projects from the bottom up which will benefit the entire community. In this sense the intercultural method in which these students are immersed encourages them to become collective promoters of the development of their own communities. However, their current formal education will not guarantee that these students will stay within their communities and search for a greater collective wellbeing.

In general terms (with the exception of the program Language and Culture) all programs have elements that are intended for the student to construct a holistic view of sustainability, in which they would understand that it is not possible to isolate the economic, social and environmental dimensions of development. However, these programs do not allow the student to know how they should engage the values of their culture within the dimensions of sustainable development or how to combine scientific knowledge with their traditional knowledge.

The success of learning environments like the one presented in this research requires further evaluation since intercultural higher education in Mexico is slowly gaining national recognition. The outcomes show progress, but it is important that UIEP reevaluates the content of their programs to fully apply an intercultural approach as a social learning strategy which will enable students to be committed constructors of their own social identities. To make students more aware of the valuable outputs of the traditional practices, the recommendations suggested in this study encourage UIEP’s authorities to include courses of knowledge and indigenous philosophy in the
curriculum. The role of the wise man should not be limited to teaching language. Both students and teachers should have more encounters with the wise man and increase the educational participation of the council of elders. The students’ parents and students themselves should be involved in the discussion of the curriculum’s improvement, since it is at home where the students acquire the fundamental sustainable ethics of their community and the benefits of young people’s education should be focus on community wellbeing. Increasing the student’s participation and fieldwork should be fundamental for every program offered.

In the article *Reclaiming the commons* (2001), the author Naomi Klein argues that

> Communities need a political framework that encourages, celebrates and fiercely protects the right to diversity: cultural diversity, ecological diversity, agricultural diversity—and yes, political diversity as well: different ways of doing politics. Communities must have the right to plan and manage their schools, their services, their natural settings, according to their own lights. Of course, this is only possible within a framework of national and international standards—of public education. . . The Zapatistas have a phrase for this. They call it ‘one world with many worlds in it’. . . We need to have some trust in people’s ability to rule themselves, to make the decisions that are best for them. (Klein, 2001, p. 89)

The needs of the communities of *Sierra Norte de Puebla* should be reflected more on the UIEP’s curriculum to reinforce the traditional ecological knowledge of the communities in this region and become regional, national and even international inspirations of a thriving educational initiative towards sustainability.
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