

Belize and Guatemala: Mayan Heritage

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The project consists of lesson materials for students related to the Maya: their land, their culture and their natural environment. The lessons are intended for secondary students in middle and high schools in Social Studies, Spanish, or ESL classes. This project is not intended as new research on the Maya. Instead, it is a compilation of available resources made accessible for today's youth. Research and data from disparate sources have been distilled into discrete units for helping students understand the Maya and their world. This project is intended to introduce students to the fascinating world of the Maya and help them develop interest in and respect for this vital, influential culture. Lesson components can be used together as an entire unit, individually as needed, or as differentiated activities for groups within the classroom. This unit will be translated in its entirety into Spanish. All lesson components will be included in this work in both English and Spanish. This allows for use in classes conducted in English and in Spanish as well as for classes learning English or Spanish. For language learning classes, using both versions side by side may be useful in incorporating informational text whilst learning vocabulary and grammar.

To develop this project, I traveled to Belize and Guatemala to gain information and build a better understanding of the sites, peoples and cultures of the Mayan heartland. My base of operations for the trip was San Ignacio, a town in Belize near the Guatemala border and in the epicenter of Belizean archaeology. My group arrived July

Belize and Guatemala: Mayan Heritage

2 and went straight to the 2014 Belize Archaeology and Anthropology Symposium. My contact in Belize, Joe Awe, helped us plan the trip so that we could attend the symposium. We attended two days of lectures and seminars and met many of the leading Mayan archaeologists working in the country. Many of them were excited about the prospect of developing lesson materials for youth and were very helpful. I met with several government officials in education and archaeology and they were supportive and interested in the possibility of using this project in schools across Belize. Once the Spanish translation is complete I will also contact education officials in Guatemala to offer them the project for nationwide use as well.

My travel included a variety of locations with significance to Mayan culture and history. First were the archaeological sites of Xunantunich and Cahal Pech (Belize). Cahal Pech is an actively excavated site and I was able to interview the excavators and see very recent discoveries. These sites provided me a strong foundation in understanding the Mayans in the context of their environment as well as the dynamics of how cities were built and how they functioned. This knowledge was expanded upon visiting the major archaeological sites of Caracol (Belize) and Tikal (Guatemala). An aspect I did not fully appreciate before my travel is the significance of caves in Mayan culture. My group spent two days exploring two caves associated with Mayan rituals, Barton Creek and Actun Tunichil Muknal (Belize). Actun Tunichil Muknal is a limited access site, requiring three river crossings on foot before swimming into the cave. Then, several hours of trekking leads to a variety of artifacts and human sacrifice remains.

The knowledge, photographs, and objects I brought back with me will be essential in developing a meaningful, engaging project to benefit students and teachers. As I develop the project I am creating teacher resources as well as student resources. I seek to provide enough rigorous, relevant material to allow any teacher, even one without any prior knowledge of the Mayans, to effectively engage their students in understanding this fascinating culture. The project is not yet finished but it is large in scale and ambition. The English version of this project already exceeds 37,000 words

Belize and Guatemala: Mayan Heritage

and will be fully translated into Spanish upon completion. Topics completed or in progress include the following: Geography, Mayan Language (vocabulary as well as hieroglyphs), Math, Science (including astronomy, the Mayan calendar, medicine), Agriculture, Plants and Animals, Mayan Society (including history and culture), Arts and Architecture, Archaeological Sites (a profile specific to each site I visited is being written), Contemporary Mayans, and a variety of projects and in-class activities for students.



An active dig at Cahal Pech, Belize. Just days before I arrived a tomb was discovered under thirteen layers of plaster flooring. I got to see it before its discovery was announced.



Xunantunich is the best known, but not the largest, Mayan site in Belize. The large pyramid is noteworthy for a massive hieroglyphic frieze still extant on two sides.

Visiting these sites in person has allowed me to better see how the built and natural environments are related and impact one another. Though no one has a definitive answer for why the Mayan cities collapsed in the Postclassic period I was able to gain insights into several leading hypotheses of what happened. Additionally, seeing the significant efforts at terraforming at many sites demonstrated that the Mayans were both skilled builders and had a deep understanding on the workings of their environment. For example, the siting of Mayan cities away from water sources and the time consuming construction of so many building platforms, plazas, and causeways seemed puzzling. As I visited more sites I grew to understand that the cities were sited in swampy areas suitable for intensive farming and that is why so many stone

Belize and Guatemala: Mayan Heritage

platforms were needed. And, a source of running water was not always needed due to abundant rainfall which was channeled into reservoirs. The system the Mayans used is impressive and offers us lessons in water conservation and use.



A drainage channel leading from a plaza to a reservoir in Cahal Pech. A system such as this could provide a mountaintop site a constant supply of water.



As this view from atop the largest pyramid at Xunantunich demonstrates, many Mayan sites were nowhere near a source of fresh water. It seems like a mistake but the Mayans had an ingenious solution.

The largest Mayan site in Belize is Caracol. To reach it involves a fairly rugged 37 mile unpaved road trek close to the border in an area with occasional banditry. The Belize military offers escorts to the site to protect visitors. We did not encounter any bandits but we did require military assistance when the rugged road caused a wheel to come off of our vehicle. The site has been excavated for thirty years by the same archaeologists, the Chase family. Four members of the family have Ph.D.s in archaeology and are leaders in the field. I met them at the aforementioned symposium and came to the site to see their work first-hand. I found it interesting that many structures found at the site have not been excavated at all. Satellite-based remote sensing has been used to detect many hitherto unknown structures. But, limited funds and personnel have caused archaeologists to concentrate on prioritized sectors only.

Belize and Guatemala: Mayan Heritage

Concern for the preservation of structures and artifacts has also led archaeologists to excavate some sites but then rebury them when they have been studied. I asked for clarification of this practice, as it seems counterproductive. They explained there were two main reasons for doing so. First, the porous limestone used in structures is very susceptible to damage from the elements and the budget for proper conservation and restoration is very low. Second, excavation sites attract looters. I was unaware of the scale of looting at Mayan sites. Souvenir hunters and professional looters alike will shadow archaeologists and dig trenches through carefully excavated areas to take pottery and other artifacts to sell to private collectors on the black market. The looting activity is severe enough to warrant a military presence at Caracol as well as at Xunantunich. Therefore, if a site cannot be preserved and protected well, archaeologists will investigate and rebury sites for their own protection.

Caracol, itself, is the largest Mayan city found in Belize. Excavations over the last thirty years have revealed the regional importance of the site and added a great deal to our knowledge of Mayan culture. The largest structure at Caracol, the Caana, is still the tallest building in Belize today. In its heyday, it is thought that that Caracol had over 60,000 inhabitants, putting it on par with the largest city in Belize today. Part of what I am creating for this project is a profile sheet for most sites I visited. A sample of one is appended to this report.



The Caana at Caracol



A model showing how Caracol looked in its prime

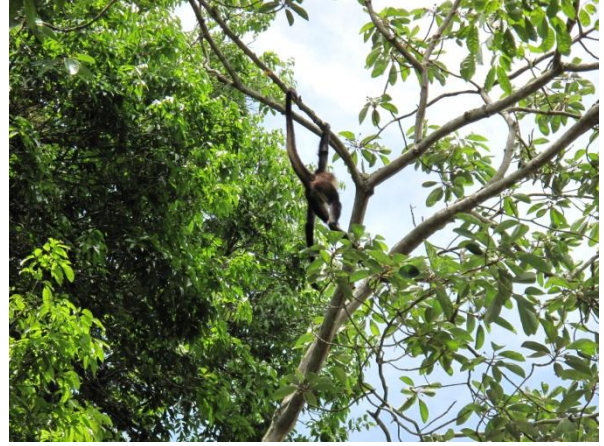
Belize and Guatemala: Mayan Heritage

In addition to exploring historical sites I also learned about the nature of Belize and Guatemala. Belize is home to over 550 species of birds and the area is host to a vast diversity of plant and animal life. I have selected a dozen plants and animals to profile in greater detail for student use. A sample of one is appended to this report. I was hoping to encounter some of the five species of wildcats (jaguar, jaguarundi, margay, ocelot, puma) in the area but only found some tracks in the jungle. We also found tapir tracks but the only exotic animal I was able to photograph was the coatimundi. To assist me with learning more about these animals I reached out to personnel at the Belize Zoo. They were excited to share about their native animals and are interested in using the profile sheets I am creating at the zoo for their visitors. I have conducted written interviews with zoo personnel and am incorporating those for students to use. My own seventh grade students, 192 science students, have been submitting questions to pose to the zoo personnel alongside my own questions. They have been eager to get involved with the development of the project and their curiosity about the natural and cultural worlds of the Mayans has certainly been piqued by this project. Participating students were able to win prizes - Guatemalan Mayan highland textile samples - for their efforts. The level of engagement was so high that I ran out of prizes and had to email a distributor in Guatemala for more. I also brought back full size Guatemalan and Belizean flags to display in my classroom. The majority of my students were completely unfamiliar with both countries so I used their questions to teach them about our neighbors just to the south. My students want to see and hear more about Central America. Later in the fall I will accommodate them with developing a bulletin board on our hallway with detailed information, photographs, and other materials related to this Mayan project. This board will be posted in a central location for all 561 7th grade students at my school to view for one month.

Belize and Guatemala: Mayan Heritage



Ocellated turkeys were a Mayan protein staple



One of many spider monkeys I encountered



A peanut headed moth



A coatimundi found at Tikal, Guatemala

I took pictures of other distinctive plants and animals as well. The ceiba tree is a massive one, covered with spikes when young and towering up to 200 feet when full-grown. The Mayans called it the Tree of Heaven because its roots reached to the underworld and its crown to the heavens. One small creature I found interesting was the leaf cutter ant. It is hard to photograph something that small but I did capture several videos showing them at work. Students should enjoy seeing them in action as they learn about them. In addition to creating a project for teachers to do with students I am also creating a companion website. This website will include an interactive component, such as these videos and others related to topics presented in the unit.

Belize and Guatemala: Mayan Heritage



The massive root system of the ceiba is shown above. The tree is so tall that the trunk flares out like a buttress system to keep the tree from toppling.



The crowns of ceiba trees tower over the landscape. Lower branches fall off so only the top has leaves and the long straight trunk is mostly bare. This makes the tree attractive to canoe builders.



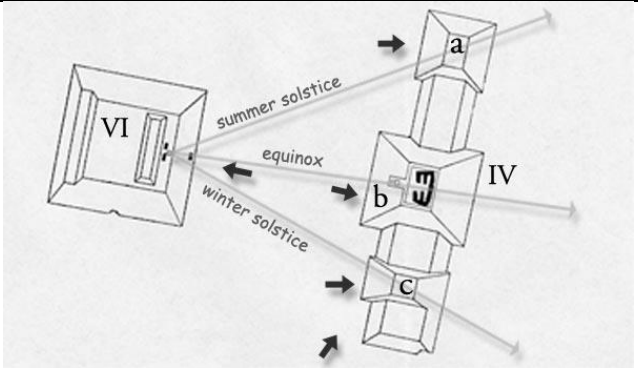
Young ceiba trunks are covered with massive spikes. The spikes fall off once the tree is strong enough to not be easily uprooted by animals.

I have been researching various aspects of Mayan culture to create a fully-developed unit of instruction for teachers. My travel has been helpful in understanding the Mayan calendar and writing systems. I have created instructional materials to distill essential components of these into student-friendly sections. With all of the misinformation and hype related to the Mayan calendar and 2012 I think this topic will be instrumental in helping students develop cultural awareness. Language is a very complex topic; there are some thirty dialects in the Mayan language family. Rather than try to teach the language, I have chosen to focus on matching hieroglyphs to sounds and the numbering system. Mayan math has its own instructional unit, complete with teacher directions needed to understand the base-20 system as well as student activities, including Mayan Sudoku. I also learned about Mayan sciences, chiefly astronomy, and how they relate to culture and to architecture.

Belize and Guatemala: Mayan Heritage

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Mayan Sudoku, created for this project



The "E Group" is an architectural structure found in lowland Mayan cities. It features three temples on a raised platform. Their positions are aligned with the solstices and equinoxes when viewed from atop the pyramid opposite on the plaza. This is a clear link between architecture, religion, and science.

I am trying to create a project which will be of greatest benefit to teachers as well as students. To do so, I have been reaching out to teachers to find out what types of activities they have been doing in class and where they feel that they need additional content resources and activities. This work will not just be a compilation of facts to hand students but also instructions for teachers on how to teach the content and activities for teachers to use in their classes. A variety of requests from teachers is making its way into the finished project, including argumentative writing, recognizing propaganda, and data table analysis. Though the focus of this unit will be for social studies and Spanish classes, aspects of this project will prove useful in several other disciplines. I have been asked to present at the 2014 Fall Conference of the Foreign Language Teachers Association of North Carolina, to be held in Winston-Salem in October. At this conference I plan to share the work I have already created and seek feedback for other materials teachers would like to have me create. The conference features teachers statewide from kindergarten through postgraduate, so I anticipate a rich variety of feedback to guide me as the project continues to develop.

Belize and Guatemala: Mayan Heritage

I debated about how in-depth the section on Mayan languages should be in the project. The topic is very complex and is not likely to be pursued in detail by the target classes. Therefore, I have given the languages, themselves, superficial treatment in favor of learning the sounds associated with the Mayan glyphs. Some students may be interested in learning more about the languages. There are web sources available which give more information and links to those will be added to the companion website I am developing.

An aspect I am researching is the complex history of the Mayan world. Social Studies classes will emphasize an understanding of the different historical eras and their characteristics. I am working to develop materials to help students meet this expectation but to do so without becoming a tedious memorization of dates and places. My years of classroom experience help me to design student activities which will keep students motivated and engaged while learning more than they would have from simply memorizing a textbook. A variety of activities is being developed for different aspects of Mayan heritage, ranging from making presentations, using technology, and constructing paper pyramids and codices.

The initial field testing of content materials has been conducted at my school, Community House Middle School, through the 8th grade social studies classes. The four teachers have a combined 583 students. For this trial I provided twenty pages of teacher information and student pages related to geography of the Mayan region. At the beginning of 8th grade social studies students are exposed to the prehistory of the Americas. Instructional resources do not currently include any mention of the Mayans at all. It is this omission that I am seeking to rectify with this project. Additional testing of materials will be conducted in sixth grade social studies classes at my school in the spring. The sixth grade curriculum covers the world until AD 1450. The Mayans are mentioned briefly in the existing curriculum, primarily references to their accurate calendar and speculation about the collapse of Mayan cities. This project offers a much-needed opportunity to broaden students' understanding of the Mayans and their rich

Belize and Guatemala: Mayan Heritage

culture. I have been in discussion with the three teachers and am developing resources suitable to their needs. Another 558 students will test out the materials, allowing me to refine further to create a final product well-suited to meet the needs of 21st century learners in a diverse world. The Career and Technology teachers at my school have requested data tables to use in their class instruction. Toward this end, I have included 1-3 data tables or relevant information in several sections of the project. These may be used as these teachers see fit in their instruction. I have included several suggested activities for teachers needing activities incorporating raw data. Hundreds of students will be exposed to data related to Mayan heritage in their technology instruction.

To summarize, I am developing a comprehensive instructional unit related to Mayan heritage which will exceed 50,000 words in length when completed. This unit will give students a deeper understanding of this significant culture and an appreciation for the diversity of our students and their cultural backgrounds. A variety of instructional resources will make this unit valuable to teachers across different disciplines and grade levels. The 2013-2014 Council Scholars Program of the World Affairs Council of Charlotte, sponsored by Wells Fargo, Carolinas HealthCare System, BAE Systems, Novant Health, and UNC Charlotte has been of great help in making this project possible. The following pages are samples of the work I am creating.



CITY PROFILE

Caracol (*Oxwitzá'*)



DESCRIPTION

Caracol is the largest Maya site in Belize. In the Classic Period of Mayan history, Caracol was a significant regional power. At its height, Caracol (*Oxwitzá'* in Mayan) had twice the size and population of today's largest city in Belize. Like most Mayan cities, Caracol was not located near water and relied upon reservoirs to store the ample tropical rainfall. Located in the foothills of the Maya Mountains, the city was surrounded by agricultural terraces linked to the site core by multiple causeways (raised roads). The largest structure, the Caana ("sky palace") is still among the largest in Belize today. The site was rediscovered in 1937 by mahogany loggers. The first archaeological investigations began in 1938 and were intermittent until the 1980s. Since then, a systematic excavation and research effort has led to significant advances in what is known about this important historic site in Belize.

ARCHAEOLOGY

The site core features several clusters of buildings with plazas. Fifty-three monuments have been found in Caracol thus far, 28 altars and 25 stelae. Several ball courts and reservoirs have also been found. Multiple tombs have been found in the site, including both middle class and elite burials. Excavations reveal evidence of artisan workshops (shells, chert, and other crafts) and apparent marketplaces at the ends of causeways. Archaeologists have identified several clusters of structures: the C Group (a palace compound and plaza), Barrio (elite residential area with temples and a plaza), Central Acropolis (palaces and temples), South Acropolis (residential complex), A Group (temples, stelae, and altars), B Plaza (multiple structures), and the Caana - the tallest structure in Belize today, composed of palaces and temples. The Caana has at least 71 rooms and may have been abandoned in a hurry; the remains of an unburied child were found in an upstairs room.

CHRONOLOGY

A.D. 70 Temple of the Wooden Lintel constructed

331 Caracol's ruling family takes control, establishing a dynasty

556 Tikal (a powerful Mayan state) defeats Caracol in war

562 Defeated Tikal in war

588 Kan II, ruler of Caracol, was born. He ruled 618-658 and oversaw a significant increase in Caracol's population and wealth.

619 Formed alliance with Calakmul (a powerful Mayan state) against Tikal

631 Defeated Naranjo (a powerful Mayan state) in war

680 Naranjo fights Caracol for independence

859 The last recorded date at Caracol

1050 Site abandoned

POINTS TO PONDER

How does technology help map out Mayan sites like Caracol? Watch this short video to learn more: <http://www.youtube.com/watch?v=EQn2u9KFf8s> (type this URL exactly as shown, including capital and lowercase letters)



PLANT PROFILE

CEIBA (Kapok)



Ya'axche

SCIENTIFIC DESCRIPTION

Ceiba (*Ceiba pentandra*) is also called the kapok tree. A full-grown ceiba tree will grow up to well over 60 meters (200 feet) tall with a huge trunk 3 meters (10 feet) in diameter. The trunk and branches are often covered in small thorns. The very straight trunk is well suited to being made into canoes. Ceibas are *drought deciduous*, which means they lose their leaves in the dry season and grow new ones in the rainy season. They produce a fiber in their fruits the Mayans call *pochote* which is used to make clothing and fabric stuffing. The fibers help the seeds spread in the wind. The fiber is soft as silk and is very light.

CULTURAL CONNECTIONS

The ceiba is the most sacred tree to the Mayans. It has a valuable role in Mayan weddings and healing rituals. The huge tree was believed to be what the souls of the dead would climb to ascend into heaven. It was the 'tree of life' whose roots extended to the underworld and branches up to heaven. The Taino of the Caribbean also held the ceiba as sacred. They would pray to the tree's spirit to find out if the tree was willing to be cut and how the tree wished to be used. Taking care of the tree's spirit in the wooden objects made from it was a lifelong obligation for the carver.

STORIES

A Mayan legend tells of an evil spirit disguised as a beautiful woman who lives around the wide trunk of the ceiba tree. The spirit is not a part of the ceiba, which is good and the tree of life. The spirit comes from a thorny weed which hides itself around the base of the giant ceiba. The name of this evil spirit is *Xtabay* ("shta-bye"; female enslaver). If you travel on a path by a ceiba at night and catch a glimpse of a beautiful woman combing her long hair with cactus spines, don't stop or look at her! Should you happen to look into her eyes she will cast a spell on you causing you to fall madly in love with her. You will come closer and closer and then fall into a deep sleep. Once you awaken, you will find that you have been embracing a cactus and its spines have poisoned you, causing a terrible fever and then death.

How did this evil spirit come to be? Once upon a time in a village in the Yucatan there were two beautiful women. One was kind but sinful and the other was virtuous but coldhearted. The kind woman gave to the poor and helped the sick. When she died the villagers mourned her and remarked upon the beautiful, fragrant flowers growing at her grave. The kind but sinful woman's spirit lived in these flowers. The virtuous, coldhearted woman spent her time reminding others of how virtuous she was and never helped the sick or poor. This woman thought her scent would be much better than the kind woman's since she was so virtuous. But, when she died and the villagers mourned her, cactus flowers grew on her grave and smelled horrible. Her spirit was in the cactus flowers, which were as prickly and unpleasant as she was in life. The virtuous woman's spirit called upon evil spirits to help her return to the world whenever she wanted to. And it is this that gave rise to Xtabay. The moral of this story is that true goodness comes not from one's deeds but from one's heart. What you do is never as important as who you are.

Additional internet resources are located here: <https://sites.google.com/a/cms.k12.nc.us/mayan-heritage/plants-animals/ceiba> (type this URL exactly as shown)

Small Group Task >>> Ajaw Xulman Site Selection



You have completed several tasks related to Maya geography. You will use the work you have completed to help you with a group task. Your teacher will assign you to a group based upon the location you selected for the new city. Together, you will need to combine your ideas expressed in your letters to the king to develop a proposal highlighting the most important reasons why your site selection is the best for the new city. Your proposal will be in the form of a presentation for the class.

The Maya king (or his representative) will be present to evaluate the presentation. There are many ways to make your presentation convincing. The king's representative will be looking to see that your presentation is both factual and persuasive. Additionally, your teacher may also evaluate your participation with your group and your group's cooperation and effort.

Your presentation may be in any format you wish, but it must be presented for the class and the king's representative. Some suggestions include making posters, giving an oral presentation or using computer technology to develop a presentation. Adding visual elements, such as pictures and maps (these may be drawn or printed off from a computer), to your presentation will help make it more memorable for your target audience.

To guide you in developing your presentation's content, here are the components that will be evaluated:

1. **Containing** visual elements
2. **Stating** reasons for the site selection. *Multiple reasons need to be included and these reasons need to be significant.*
3. **Explaining** each of the reasons for site selection (#2 above). *You selected this site because you thought it was the best. You gave your reasons. Now, explain why the reasons you selected are important. For example, an explained reason might be: We selected a small island in the Mediterranean Sea as the ideal site. [#2 above] This island is along two major sea commerce routes, offering us many opportunities to profit from trade with all countries in the region. [#3 above; explaining why your reason is important]*
4. **Persuading** the king to select the site. *Use your facts, explanations, and your words to be convincing. Propaganda techniques will be useful, but don't go too far! Part of your grade comes from how much your presentation persuades the king's representative. So be convincing!*
5. **Refuting** others' claims. *Part of being convincing is to show not only that your choice is right but also that other choices are wrong. State and explain (like #2 and #3 above) why your group did not select the other two regions for the city's site and how both of those regions would be poor selections.*