**The Achievements and Challenges of Guatemala**

Objectives:

This unit is intended to focus on some of those aspects of Guatemalan life and history that are of great significance to understanding the people of Guatemala today and their situation.

By using or adapting the core lessons and activities, your students will learn about the following:

* [Mayan achievements in time-recording](http://www.worldtrek.org/odyssey/teachers/guatlessons.html#calendar2) (with mini-lesson on [The Use of Calendars](http://www.worldtrek.org/odyssey/teachers/guatlessons.html#calendar1))
* [Mayan achievements in math](http://www.worldtrek.org/odyssey/teachers/guatlessons.html#math2) (with mini-lesson on [How People Use Numbers](http://www.worldtrek.org/odyssey/teachers/guatlessons.html#math1))
* [Life on a plantation](http://www.worldtrek.org/odyssey/teachers/guatlessons.html#plantation)
* [The history of The US-driven coup of 1954](http://www.worldtrek.org/odyssey/teachers/guatlessons.html#coup)
* [Forces driving environmental destruction in the Peten, Guatemala](http://www.worldtrek.org/odyssey/teachers/guatlessons.html#envt)

**1.A Mini-Lesson: The Use of Calendars**  
  
Many thanks to **Richard Zapien** for contributing this lesson!

**Disciplines:**

Social Studies

**Objective:**

Understand how time is used by all people to organize their lives and mark the reoccurrence of important events.

**Teacher Background:**

Our Gregorian calendar is based on a set of interlocking wheels. Every seven days, a new week begins ("is seated", the Maya would say, using the same verb for the accession of a new king). Every 28 to 31 days, a new month is seated. Every 365 days, a new year. In the United States, every four years, a Presidential election, etc.

Each of these Gregorian calendar wheels, if you will, spins continually, repeating when it's turned all the way around. In seven days, the day-name wheel will repeat and there'll be another Friday.

Each wheel, or group of wheels, gives an incomplete, but perhaps useful, picture of time. Saying "I was born on September 21st" gives some information. For instance, it allows your friends to plan their shopping every year. But it doesn't allow for an age calculation, for instance. Saying "tomorrow is Saturday" is important in deciding whether or not to go to work, but won't on its own tell you if it's your birthday.

But sometimes absolute historical dates are necessary (for instance, to determine whether a person is in the all-important 18-34 year age bracket). The Gregorian calendar solves this problem by adopting a mythical starting point, a notional Year One (pegged to an event of religious significance to many, the birth of Jesus Christ), and counting all dates in an unbroken linear sequence since then. "September 21st, 1966 is the twenty-first day of the ninth month of the 1,966th year since what is celebrated as the birth of Jesus Christ. There have been many 21sts, and many Septembers, and even many September 21sts throughout history, but September 21st, 1966 identifies exactly one snapshot of the day-number wheel and the month-name wheel, one unique day in all history.

**Materials:**

-Overhead Projector, or Chalkboard

-Pencils

[Calendar Month](http://www.worldtrek.org/odyssey/teachers/gifs/gregcalendar.gif)

**Procedures:**

1. Ask students the question, "Why is time important to people?"

2. Discuss student responses and then handout the "Calendar Month."

3. Explain to students that they are to fill in the calendar with the dates and names of the present month, and they are to write in at least one thing they do or will have done, along with the time of its occurrence. This activity is best done at the beginning of a month, whereby students have to try to plan future activities.

4. When students have finished, hold a discussion session asking them to tell the class how they came up with the events in future dates. The goal here is to have students realize that they set future priorities based on events they have already realized.

5. Now ask students if the events of their present calendar change based on the changing seasons, holidays, and/or school related activities. To help them understand all of this, ask them how they would know if it is Friday without a calendar or anyone telling them. Ask if they would know what day is their birthday, or December 31.

**Assessment:**

Students should be able to realize that all cultures base their activities based on past events, and very often, according to seasonal changes (ie. harvests, weather factors). The calendar only helps people organize themselves for these changes.

**1.B: Mayan Calendar Calculations**  
  
Many thanks to **Richard Zapien** for contributing this lesson!

**Discipline:**

Mathematics / Social Studies

**Objectives:**

To understand that the Ancient Maya organized their time based on the seasonal changes of their physical environment, and planned for future events based on reoccurring cycles.

**Teacher Background:**

The Maya calendar is based on two separate pairs of wheels, together known as the Calendar Round, both tied to a linear count of days, called the Long Count, whose zero point is an unknown mythical event that occurred on August 13, 3114 BC. That date, incidentally, is well before the beginnings of any advanced cultures in the region. The Maya themselves regarded the zero date as only the latest in an infinite series of such zero dates, repeating every five thousand years or so (guess when the next one is!).

The linked 'appendix' demonstrates the first Calendar Round sequence, the Tzolk'in, which is made up of twenty day-names and 13 day-numbers. The Tzolk'in counts days by assigning a number and a name to each, as follows: 1 Imix, 2 Ik', 3 Ak'bal, and so on, for a total of 13 X 20 = 260 days before it begins to repeat. The 260-day Tzolk'in period is of great ritual significance (it's still in use in the Guatemalan highlands), but has no special astronomical rationale like our lunar months and solar year.

The second Calendar Round sequence, (not included as part of this lesson) the Haab, is 365 days long and consists of 18 months of 20 days each, plus one month of five days. The Haab goes like this: 1Pohp, 2 Wo, 3 Sip, and so on.

The full Calendar Round for a particular day, then, is the Tzolk'in and the Haab. Haab, are of different lengths, containing a number-name combination, the reoccurrence of which only occurs every 52 years. For most purposes, like birth dates, accession dates, and so on, the Ancient Maya were content to give the Calendar Round date, knowing that readers could infer the particular 52-year period in which the event occurred. Likewise, in our present Gregorian calender we often bring to mind events that occurred in the "80's", or "70's", rarely included the 'century' we are referring to.

The combination of number plus day name plus number plus month name is called the "Calendar Round" date. It is a combination of the sacred calendar of 260 days with a solar calendar of 365 days. The solar calendar is composed of 18 months of 20 days.

Note: some Mayan calendars have absolute beginning dates and some count from the beginning of each ruler's reign.

**Materials:**

-Overhead projector, or Chalkboard

-Pencils

[Mayan Sacred Rounds Appendix](http://www.worldtrek.org/odyssey/teachers/gifs/sacredrounds.gif)

[Mayan Calendar Calculations](http://www.worldtrek.org/odyssey/teachers/gifs/calendar.gif)

**Procedures:**

1. Have students carefully cut out each of the two Calendar Rounds.

2. Explain to students that the names of dates were calculated by moving the interlocking Rounds so that each date was assigned a name-number relation.

3. Demonstrate the names for day 1 (from the Mayan Calendar Calculations student sheet). It should read [1 Imix]. Now go through a few more of of the days and have students record the name-number relationship of the remaining 48 days on their handout. A teacher correction sheet is not provided in order to let you, the teacher, experience the procedure also. (It's really very easy!)

**Assessment:**

Ask students the following questions:  
1. Why was time so important to the ancient Maya?  
2. In what ways are Maya calendars like our calendars? How are they different?  
3. What would be the difficulties of not having an absolute beginning when keeping track of time? What are the advantages?

**Extra Credit:**

Have your students create calendar rounds using the Gregorian calendar (one whell with the seven days of the week, one whell with the days of the months). They will run into a problem that our months do not have a uniform number of days. See how they think the problem should be solved.

**2.A Mini-lesson: How people use numbers**

Many thanks to **Richard Zapien** for contributing this lesson!

**Discipline:**

Mathematics / Social Studies

**Objective:**

Place the use of numbers into a historical context (i.e. point out why we really on numbers to put order into our lives)

**Materials:**

-Overhead projector, or chalkboard

-Pencils

-Paper

**Procedure:**

On an overhead projector or other, write the following questions:

1. Why do people need to count? List situations (i.e. we use 'hours' to keep up with daily schedules)

2. How did people count before numbers were invented? (Ask students to discuss various ways to count objects in the room without using Arabic numerals or number symbols. They may make hash marks (similar to Roman numerals), use fingers and toes, or find other ways to show one-to-one correspondence).

3. What are some methods that people have used to keep track and calculate numbers? (i.e. calculators, Chinese abacus)

4. What aspects of modern life would become difficult if there were no numbers? (Virtually everything in life would be; from making phone calls, using computers, buying food, to waking up in time for class.)

**2.B: Mayan Math CAlculations**

Many thanks to **Richard Zapien** for contributing this lesson!

**Discipline:**

Mathematics / Social Studies

**Objective:**

* Students will gain an understanding how the Ancient Maya used their numerical systems.
* Students will demonstrate their understanding of the Mayan numerical systems by using them to "translate" Arabic numerical equations.

**Background for the teacher:**

Classic Maya people developed a sophisticated mathematical system independent of any "Old World" influence. Our current "Arabic" math system uses 10 symbols (1 through 10) and works in base 10 (10, 20, 30, etc.). The ones' place can hold up to nine units, then we move into the tens', hundreds', and thousands' places. Our system is based on ten because people traditionally counted on their fingers. The Mayan system uses only three symbols and works in base 20. It is presumed that this is because they counted with both their fingers and their toes. (Incidentally, the English "dozen" was derived from people counting the digits of their four main fingers using their thumb. Try it!) In Maya math, a dot represents one, a bar represents five, and a shell represents zero. In fact, the Maya were some of the few people ever to discover the concept of zero! In this activity students will explore numbers and place value using the Maya system. Look below for an illustrated example.

**Materials:**

-Overhead projector or chalkboard

-Pencils

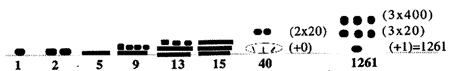
-Toothpicks, and beans

[Mayan Math Worksheet](http://www.worldtrek.org/odyssey/teachers/gifs/mayanmath.gif)

**Procedures:**

1. Optional: Introduce activity by demonstrating base 10 place value, using ones', tens', and hundreds' place. Give student pairs manipulatives (markers and sticks or other shapes) and have them come up with other base systems. Ask them to show their systems to others.

2. Explain to the students that Mayan math works better for recording dates and measuring time than does our base 10 system. Ask students to predict why this is so. Explain how the Maya system works:   
The Maya used a dot for one, a bar for five, and a shell for zero.   
Like the Roman numerical system, when five Mayan dots are accumulated they are rewritten as one bar. There can never be more than four dots and three bars in one place (i.e. number 19).  
Four bars are always traded for one dot in the next highest place. Maya numbers were written in vertical columns, with the lowest value place at the bottom, and higher value places stacked on top as high as necessary. Examples below.



3. In their Mathematics notebooks, or other, have students use the Mayan symbols for numbers Arabic numbers 1-20.

4. Hand out the "Mayan Math" worksheet and have students work out the equations. First they should use the manipulatives: toothpick and beans, then they should draw those representations on their worksheets.

**Evaluation:**

Discuss the following questions with your students.

1. Breaking a number code can be difficult. Archaeologists had to speculate, then check to see if they were right. What if they are wrong? What else might the symbols of dots, bars, and shells mean?

2. Why would writing large numbers be easier in Maya math than in Arabic numbers?

3. The Mayan base 20 system probably came from using fingers and toes for counting. Some archeologists feel that the 'shell' represented a closed fist for the concept of zero. Today, we use the numeral 0. What else would be a good symbol?

**Follow-Up:**

Prepare slides or other visuals of Mayan stelae and have students decipher the numbers that are found. You might ask them what the numbers refer to. This activity could also be used as a primer mini-lesson before beginning the activity.

3. Life on a Plantation   
  
Many thanks to **Debbie Shosteck** for contributing this lesson!

**Objectives:**

* Students will compare life on a plantation in Guatemala with life on a plantation in the Southeast U.S. during slavery.
* Students will discuss their opinions about the roles of American companies in Guatemala.
* Students will write a story in the first person depicting a day in the life of a Guatemalan campesino.

**Introduction**:  
Use the fact sheet, historical information, and the excerpts from Guatemala: False Hope, False Freedom to familiarize yourself with life on a plantation in Guatemala. Make sure your students have knowledge of working conditions for African-Americans during slavery. In the lesson, students define what a plantation is, compare plantation life in Guatemala with plantation life during slavery in the U.S., discuss difficult questions about the roles of American companies in Guatemala, and write a story in the first person depicting a day in the life of a Guatemalan campesino. The goal of the lesson is to relate to students that the working conditions for many Guatemalans today are similar to the practice of slavery which was outlawed in the U.S. over a hundred years ago.  
  
**Materials**  
False Hope, False Freedom:  
["Slave Labor"](http://www.worldtrek.org/odyssey/teachers/slave.html)["The Luxury of a Cough"](http://www.worldtrek.org/odyssey/teachers/luxury.html)  
[Historical Information](http://www.worldtrek.org/odyssey/teachers/guathist.html)[Guatemala Fact Sheet and Terms](http://www.worldtrek.org/odyssey/teachers/guatfacts.html)  
[Chart](http://www.worldtrek.org/odyssey/teachers/chart.html) - For students to fill in  
[Answer Chart](http://www.worldtrek.org/odyssey/teachers/answerchart.html) - Your easy reference for answers  
  
  
**Lesson:**  
Write the word "plantation" on an overhead/blackboard and ask the students to write down all of the words, phrases, or ideas that they associate with it. Encourage them to brainstorm rather than write down complete sentences.   
(5 minutes)   
  
As a whole class, make a mind map of the students' results.   
(10 minutes)   
  
Ask the students if they think that plantations still exist. Introduce the idea that plantations still do exist in Guatemala. Most are owned by large U.S. companies such as Chiquita and Dole. Workers on these plantations, mostly indigenous peasants, are treated similarly to how slaves were treated in the U.S. Have students read the excerpts "Slave Labor" and "The Luxury of a Cough" from Guatemala: False Hope, False Freedom.  
(20-30 minutes)   
  
Have students complete the chart comparing Guatemalan and U.S. plantations. As resources, they can use the readings and whatever background information you have provided them from the Guatemala fact sheet and historical background.   
(15 minutes)   
  
Divide the class into groups of four. Designate a facilitator and recorder in each group. Ask the students to discuss the following questions and to write a position statement for each question. Have them write in a on a piece of butcher paper.  
  
1. Does buying a Chiquita banana mean that you support treating workers like slaves?  
  
2. Why are American companies allowed to have working conditions on their plantations in Guatemala that are not allowed in the U.S.?   
  
(30 minutes)  
  
**Closure:**  
Let each group share their position statements. Facilitate any discussion around the issues.   
(20 minutes)   
  
**For homework**, have the students use the excerpts from Guatemala: False Hope, False Freedom to write a story in the first person describing a day in the life of a someone their age who lives on a Guatemalan plantation.  
  
**Extensions:**  
Write letters to large fruit or coffee companies that have plantations in Guatemala. Ask them about working conditions, wages, pesticide use, etc. 

4: The U.S. and the 1954 Coup - Can You Alter History?   
  
Many thanks to **Debbie Shosteck** for contributing this lesson!

**Introduction**:  
Use the information provided to familiarize yourself and your class with the circumstances surrounding the CIA-backed coup of the Arbenz government. This lesson is in **two parts**.  
The **first** requires that students be assigned roles to reenact the takeover of Arbenz.  
In the **second** part, students take on the same or different roles and meet together at a negotiating table. All of the players must come up with a diplomatic alternative to overthrowing Arbenz. The goal is to decide on a solution that all parties can live with.   
  
**Objectives**:

* Students will role play the CIA-backed coup of the Arbenz government in 1954.
* Students will develop and discuss diplomatic alternatives to the coup.

**Materials**:  
[Background Information for Students](http://www.worldtrek.org/odyssey/teachers/coupback.html)  
[Role Play Cards](http://www.worldtrek.org/odyssey/teachers/couproles.html)  
  
**Lesson:  
Part 1:** Ask the students to use a dictionary to define "coup d'état" and write down their ideas about why a coup d'état might occur.   
(15 minutes)  
  
Discuss students' ideas in class. Explain that they will be learning about the circumstances surrounding a U.S.-backed coup in Guatemala.   
(10 minutes)  
  
Through a lecture or reading assignment, introduce students to the issue. Make sure they understand the Red Scare and why land reform and union organizing can be labeled as communist. Previous background information on communism would be helpful.   
(30 minutes)  
  
Divide students into groups of six. Assign roles and hand out role-play cards. Each student in the group of 6 should have a different role.   
(5 minutes)   
  
Have students read their cards and write a short outline of their position. The outline should include their characters' goals, actions, consequences for their actions, and a list of allies. This can be done for homework. Encourage students to work with students from other groups who have their same role.  
(20 minutes)  
  
Have each group write a skit that includes all of the characters. Give the students artistic freedom to express the ideas of the issue in a convincing format. Encourage students to work in pairs or groups of three to write specific scenes and make props. Part of this can be done as homework.  
(60-90 minutes)  
  
Have students act out skits for class. Consider presenting skits to other classes, parents, etc.  
(60 minutes)  
  
**Part 2:** Now that the students are familiar with the history of the situation, ask them to write down three ways they think the coup could have been prevented.   
(5 minutes)  
  
Present them with their task:  
They are to rewrite history. Rather than the U.S. backing a coup to overthrow the Arbenz government, all of the parties involved are to sit down at a negotiating table to resolve the problem. Their goal is to come up with an agreement that is workable for everyone. To start, divide students into groups of six. They can stay in the same groups, or you can rearrange them into different groups. Assign roles within groups or have students chose roles that they would like. With extra students, assign a facilitator and scribe for each group. Each group needs to create a visual aid to explain each party's demands and their compromises.  
(60 minutes)  
  
Each group presents the compromise that they created.   
(30 minutes)  
  
**Closure**:  
Discuss as a class what was hard about negotiating, what went well, and what did not. Make connections to students' own lives.   
  
**Extension Lessons:**

* Conflict resolution
* Why does the U.S., a country that prides itself on democratic ideals,promote non-democratic leaders in other countries? Is there inconsistency in this?
* Communism; McCarthy era
* Different forms of government

5. What Forces Lead People to Abuse or Degrade the Environment?   
  
Many thanks to **Debbie Shosteck** for contributing this lesson!

**Objectives:**  
Students will compare the forces that lead to deforestation in the Maya Biosphere Reserve (Guatemala) and the Headwaters Forest (California).   
  
  
**Materials**:  
["Guatemala Struggles to Protect Mayan Rainforest from Invaders"](http://128.83.142.37/project/sdrp/mayan.html)   
by John Burnett, National Public Radio   
  
["Headwaters Deal Draws Praise and Criticism: U.S. Officials Happy, Environmentalists Not"](http://www.sfgate.com/cgi-bin/article.cgi?file=/chronicle/archive/1998/09/02/MN27773.DTL)  
by Alex Barnum, San Francisco Chronicle Staff Writer   
  
  
[Headwaters questions](http://www.worldtrek.org/odyssey/teachers/envquestionshead.html)  
  
[Guatemala questions](http://www.worldtrek.org/odyssey/teachers/envquestionsguat.html)  
  
["Discussion Questions"](http://www.worldtrek.org/odyssey/teachers/envquestionsdisc.html)   
  
  
**Introduction:**  
In this lesson, students will compare the forces that lead to deforestation in two different parts of the world. Through reading articles on the World Wide Web (which you can download and copy for them if you prefer), answering questions on the material in the articles, and discussing their findings with one another, students will analyze the markedly different economic forces in a developing country vs. the U.S. that lead to environmental degradation.   
  
Half of the class will read a San Francisco Chronicle article by Alex Barnum entitled "Headwaters Deal Draws Praise and Criticism: U.S. Officials Happy, Environmentalists Not." The other half of the class will read an article by John Burnett of National Public Radio entitled "Guatemala Struggles to Protect Mayan Rainforest from Invaders." After reading the articles that they were assigned, students will meet in groups of 4 (one pair having read one article and the other pair having read the other) to compare their findings.  
  
In addition to these two articles, other resources on the Web for these issues are:  
<http://ceres.ca.gov/cra/headwaters/>  
<http://www.ciesin.org/TG/LU/deforest.html>  
<http://www.palco.com/hforest.htm>  
<http://www.iwec.org/facts.htm>  
<http://128.83.142.37/project/sdrp/peace.html>  
<http://www.headwatersforest.org/ef/about_hw-ef.html>  
  
  
**Lesson:**  
Ask the students to brainstorm on the the question: "What forces lead people to abuse or degrade the environment?"   
(10 minutes)  
  
Discuss students' ideas in class. Explain to them that they will be looking at how these forces might differ in different parts of the world.  
(10 minutes)  
  
Divide the class in half. Assign the Headwaters article to one half of the class and the Guatemala article to other half. With students working in pairs, have them read the article assigned to them and answer the questions. [[Headwaters questions](http://www.worldtrek.org/odyssey/teachers/envquestionshead.html),[Guatemala questions](http://www.worldtrek.org/odyssey/teachers/envquestionsguat.html)](Essays can be done for homework).   
(30 minutes)  
  
After students have finished reading and answering the questions, have them work with a pair that read the other article to discuss the ["Discussion Questions."](http://www.worldtrek.org/odyssey/teachers/envquestionsdisc.html)   
(15 minutes)  
  
**Closure**:   
Ask groups to share what they discussed. Summarize that the economic forces that lead people to degrade the environment can differ dramatically in different geographic regions.   
(15 minutes)