Diversity in Mathematics: Census Statistis in Utah

Summary

In this lesson plan students will use statistics from the past 150 years of census information to make predictions for future trends in Utah. This lesson plan focuses specifically on minorities and how their real life experiences are represented in census data.

Time Frame

6 class periods of 60 minutes each

Life Skills

Thinking & Reasoning, Social & Civic Responsibility, Systems Thinking

Materials

- Manila folder for each student
- "Your Cultural Eye" graphic organizer
- Teacher prepared family interview for modeling to students
- KWL chart for each student
- Copies of Prologue from each section of Missing Stories
- Overhead of "Normal Population Curves" with both positive and negative correlations
- Overhead of Table 4, pg 9, of Utah Minorities: The Story Told by 150 Years of Census Data
- Growth Curve chart from Table 4, pg 9 of Utah Minorities: The Story Told by 150 Years of Census Data
- Growth Curve chart of whites from Table 6, pg 12 of Utah Minorities: The Story Told by 150 Years of Census Data
- Rulers
- Markers
- Chart paper

Background for Teachers

Teachers should review the material in Missing Stories and Utah Minorities to have an understanding of the experiences of minorities in Utah and how these relationship are depicted in census data. This will help teachers better understand the relationship between individual experience and social statistics.

Student Prior Knowledge

Students should have a good understanding of ratios, percentages, graphing, and how to work with statistical evidence. This lesson plan will increase their skills in these areas.

Intended Learning Outcomes

- Students will enhance their skills of reading graphs and charts
- Students will learn how to interpret statistical data and make correlations between statistics and social issues
- Students will make personal connections to historical information

Instructional Procedures

Day One
Individual Activity

Each student will fill out a KWL Chart (Know-Want to Know-Learned) tracking what they know about immigration and migration in Utah (In the "W" part--What I want to learn--students should formulate three (3) questions they have about immigration/migration to Utah.

Distribute a folder to each student. Have them file their KWL chart in the folder. Teachers should distribute and collect the folder each class period.

Class Discussion

As a class, discuss the students' charts, what they know and what they want to know about immigration in Utah. This discussion might (most likely) focus on the dominant, Mormon Pioneer immigration in Utah. Students have studied this in their Utah History class. Be sure to encourage students to think about other minority groups. Have them think about the groups they have seen on television, if they do not have personal knowledge.

Group Activity

Divide the class into eight (equal) groups. Assign each group a different culture (represented in <u>Missing Stories</u>). Students will then become *Instant Experts* on their prologue (to the section they are assigned), and will present this information to the class.

Class Presentation

Each group will present the information on their community to the class. Students should be encouraged to ask their classmates questions, and each group should be ready/able to answer questions.

Group Discussion

In small groups, have the students to discuss--in their groups--their own family stories of immigration. Students who know their own stories will be encouraged to share them. If students do not know their family stories, they should listen to the shared stories of other students, and then formulate questions to ask their parents about their family stories. Students who do know their family story should take the time to think of other questions they might have (more specific/in depth) for their parents/relatives.

Homework Assignment

Each student will write at least three (3) interview questions to ask their parents/guardians/relatives about their own family immigration and experience in Utah. At home, students will interview their families about their immigration experiences. Students will then write up the story(ies) they learn. Explain that you also have done this assignment, and will share what you have learned in the next class period (this will serve as a useful example for the students). Give the students two class periods to work on their assignment. They should begin the interview as soon as possible so they have some information to bring to the next class period.

<u>Day Two</u>

Start the class by doing a dramatic reading from one story in <u>Missing Stories</u>, focusing on the importance of being counted and valued. Then share part of your own story (with your family), modeling for the students some things you learned about your family and yourself. Using the information collected from your own story (teacher's), model for the students how to fill out the " <u>Your Cultural Eye</u>" graphic organizer.

Individual Activity

Recalling their family interviews and based upon the stories they wrote/are writing, students will fill out the "Your Cultural Eye" graphic organizer. Students will file these in their folder.

Class Activity

Place on an overhead of a normal population curve with positive correlation. Talk about population growth. Put up the overhead of a normal population curve with a negative correlation. Briefly discuss what might cause a population to decrease.

Group Work

In the groups the students worked with the class period before, have them discuss the diverse populations they are aware of that have decreased, or even disappeared (e.g. endangered species,

the dodo bird, Native Indians, etc). Have students brainstorm ideas about why those populations are in trouble.

Class Discussion

Discuss the results of the group discussion. On a piece of poster paper, create a processing grid to record the information from the discussion (Species, Reason for Decline, Result--endangered/extinct).

Day Three

Begin class by reading a story from the Ute Community section of Missing Stories.

Show the class the overhead of Table 4, Page 9 from Utah Minorities. Focus on the missing numbers of native American's in the first several census taken in Utah. Students will discuss why there is no data for those years.

Supplement the class discussion by reading to the class, pgs. 9-10 from (Utah Minorities).

Discussing the fact that there were an estimated 20,000 Indians in Utah when the Mormon Pioneers arrived. Discuss with the class the accuracy of the census information, using the information in Utah Minorities as support material.

Group Activity

Divide the students into smaller groups (4-5) and give each group a large piece of paper. Each group will chart the information from Table 4 Utah Minorities, each group should work with a different graph format (i.e. bar graph, histogram, line graph, pictograph, etc.). When each group has completed their graph they will present their work to the class, discussing the process of creating their graph and the information contained on the graph.

Class Discussion

As a class, discuss the pros and cons of using each style of graph. Be sure the class answers the following questions:

When is one preferable over another?

Which graph style worked best for this assignment?

Day Four

Read to the class another story from Missing Stories. For this section, Ruby Black's story is useful (but any of the stories will work). When reading the story, focus on what is currently happening to the youth of the particular community and the concerns of the elders for the future.

Class Activity

Show the class an overhead of the normal population curve. Then show the class the prepared growth curves for whites and Native Americans (on an overhead). Compare the normal growth curve to both the white and Native American curves. Have a brief discussion with the class so it is clear they understand the information they are working with. Divide the class into smaller groups for an extended conversation.

Group Activity

Have the students discuss the data and draw conclusions about the possible reasons for the difference between populations and growth curves. Have one student in the group act as the "group recorder" and take notes on the group discussion. Have each group also make predictions about what will happen to each population (white and Native America) in the future. Once the group has completed their discussion, they should graph their findings, based on the notes they produced. The group should produce a graphic representation to illustrate their conclusions (the group should choose the graph style they believe is best suited to their findings).

Group Presentation

Each group will present their graph to the class, discussing their findings as well as the reason they used the particular style of graph.

Day Five and Six

This portion of the lesson plan is designed as a review of the material covered over the past four

days. Students are asked to make connections between the statistics they have read about/discussed and how these figures relate to what is happening in their own community/communities.

Group Activity

Each group should be given one article to read (from a local newspaper) that focuses on diversity and census or population data (see list of readings--" diversity articles"). Each group should become "instant experts" on their article. Each group should prepare a summary of the article along with a graphic representation of the information.

This activity should be divided into two parts. Students should be given 45 minutes to read their article and prepare a report/graph. Depending on the skill level of the class, more or less time might be needed.

Group Presentation

Each group will present the findings from their article and the graphic representation of the material.

Bibliography

Kelen, L. and Hallet Stone, E. (2000). Missing Stories: An Oral History of Ethnic Minority Groups in Utah. Utah State University Press, Logan, UT.

Meeks, L.L & Austin, C.J. (2002). "Teaching Students to Self Assess". Literacy in the Secondary English Classroom: Teaching the Way Kids Learn. Allyn & Bacon.

Prelich, P. (2002). Utah Minorities: The Story Told by 150 Years of Census Data. University of Utah.

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