

Community Engagement Lab II: Mapping Animals of the World

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Introduction

English for Speakers of other Languages (ESL) at the elementary school level has focused on teaching students the aspects of English needed to communicate, participate in the classroom, read, and write. While many students are conversationally proficient in about 2 years (Cummins 1981, cited in Freeman and Freeman 1998, p. 137) English language learners (ELLs) lag behind their peers in academic language and content mastery and require four to eight years to develop this type of language (Collier 1989). Research shows that when students are engaged in meaningful academic content study they will learn the language they need to succeed (Freeman and Freeman, p. 138) and that students learn best when they are actively engaged in constructing knowledge (Piaget 1955). The practice of removing students from the mainstream classroom to teach them language while the rest of the class delves into captivating science or social studies content no longer makes sense. Thus Montgomery County Public Schools (Maryland) recently adopted a new set of English language standards (WIDA 2008) that align with the content areas, including science, rather than being specifically language based. ESL teachers must now teach content-based language, generally a positive trend, but there is very little curriculum in this area. As teachers we expect that positive learning will only come from intricate plans and preparations (Armstrong 1998, p. 56) which makes the idea of developing curriculum daunting. Armstrong, in his book Awakening Genius in the Classroom, points out that many of the recognized geniuses of the world were inspired by simple materials and experiences at early age (ibid.). Einstein was thrilled by a magnetic compass, Frank Lloyd Wright by playing with blocks, Kandinsky by a box of oil paints. The “Mapping Animals of the World” project embraced the idea of using simple materials (maps) to would allow students to construct meaning and language and inspire critical thinking. The project centers on creating a simple map of the world showing animal species and the continents on which they live. As a means of evaluating the project, two questions were posed:

- Will students gain an understanding of the diversity of animal species around the world after creating a map locating where animals live?
- Will students acquire academic English language skills and science content through a hands-on mapping project of animals around the world?

Seventeen ELLs in third through fifth grades engaged in this project during 6 class periods. These students had a very limited knowledge of maps, world geography and the diversity and habitat of animals. I predicted that students would increase their knowledge of the diversity of animal life around the world and would acquire English language skills and science content through this project.

Method

After an informal assessment of student knowledge of maps and geography at the beginning of the project it was clear that some background information and vocabulary would be needed before we could create a map. Several class periods were spent observing and studying maps, learning how to read maps, and learning vocabulary pertaining to maps. Students started to become familiar with map and geography vocabulary, and with a variety of different types of maps. We studied maps of the school, neighborhoods, our state, the United States, and the world. We played map games and drew simple maps.

The core of the project was to create interactive maps to allow students to visualize where animals live and then demonstrate their knowledge by moving images of animals onto the continents of the map. The maps were created using an interactive white board (Promethean board) and Activstudio software. The software allows for the creation of a “flipchart” that contains moveable images. The images can then be manipulated by students using a special pointer. An image of a world map of continents found on the ARKive website was used as the background for the map. Labels for the continents and photographs of “well known” animals (also from the ARKive site) were placed around the margins of the map. During one class period, students were asked to drag the continent labels and the animals into the correct position on the map. Three maps were completed, one by each class, and show a consensus agreement on the placement of the animals, as well as the labels of the continents, sometimes reached after much discussion (Figure 1).

After the first map was made, students picked one animal to research. Using ARKive and pebblego.com (a website with a more simple format and language), students found out the continent, country, and habitat of the animal.¹ They then presented this information to one another in small groups. The next class period, students created another interactive map showing where they thought the animals lived (Figure 2). The two maps were compared and the differences were analyzed to see how much knowledge students had gained (Figure 3).

¹ The research is ongoing and they will complete a final project to present to the class as well. The final project will include an individual map of the continent and habitat of the animal.

Results

Students worked in groups to place the animals in the correct place on their maps before they did research on animals and after they did research on animals. On the first map (Figure 1), 5 out of 12 animals were in the correct place. On the second map (Figure 2), 11 out of 12 animals were in the correct place. The charts in Figure 3 compare the number of correct vs. incorrect answers before and after the research.

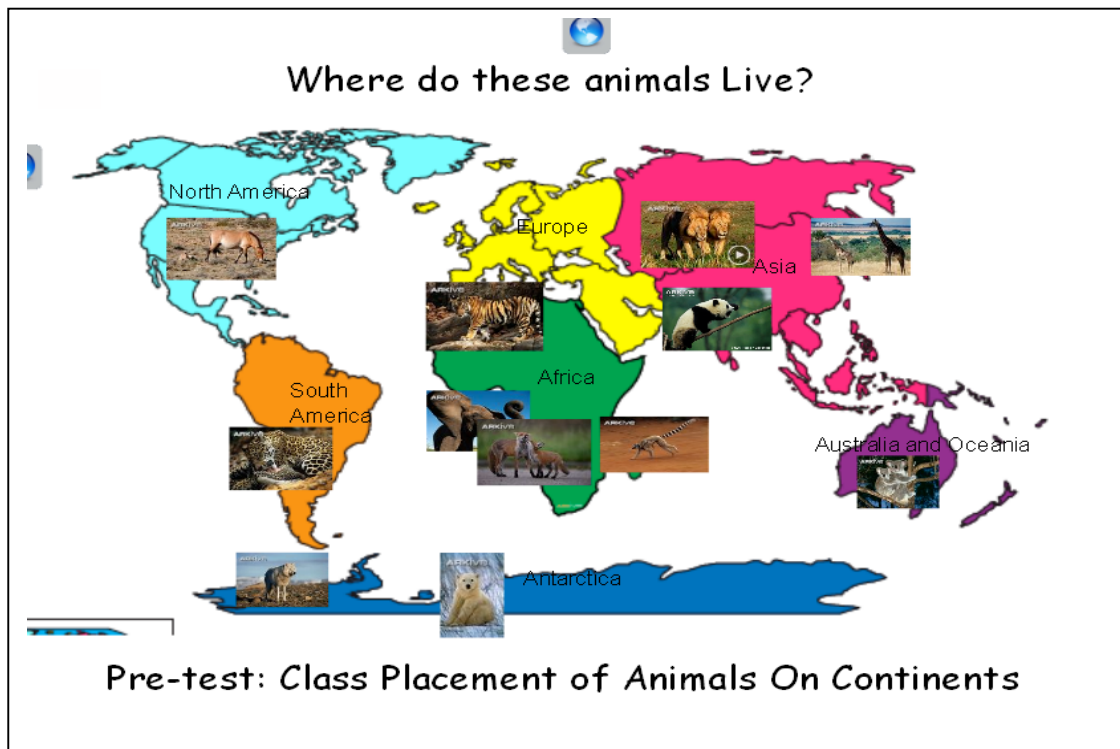
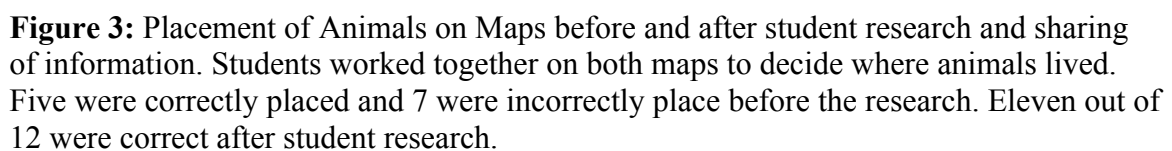


Figure 1: This map shows the placement of animals on the continents by students in my “advanced” ESL class at the beginning of the project. This map was created in a 40 minute class period and represents consensus among students. Some animals were moved several times before all students agreed on their placement. Other class maps had fewer correct placements. Note: original map is about 4 feet by 6 feet.

Figure 2: This map was created by the same advanced ESL class at the end of the unit of student research on these animals. Each student first created their own map on the computer as part of their research. Then students worked together at the Promethean board to create this one. Most animals are now in the correct geographic area.



Discussion

The maps made in this project demonstrate a fairly narrow expansion of student knowledge: they show that they learned where some animals live in the world. This is really the only change in knowledge that can be specifically documented. As their teacher, I can also tell you that they learned how to read maps, how to use interactive maps online, the variety of different landscapes animals can inhabit, and started to envision the diversity of animal life. The ARKive website contains thousands of photographs and descriptions of animals. Students spent several hours exploring this website. Though I was tempted to have them use only the more simple site for their research (because the language was much less complex), they kept returning to the more compelling ARKive site. This suggests that these ELLs can comprehend complex content when it is presented in a meaningful way.

Did students gain an understanding of the diversity of animal species around the world after creating a map locating where animals live? Many students used the world map on ARKive to find their home country and look through the hundreds of animals that live there. It was enlightening for students to see how rich and diverse animal life is throughout the planet. While there is no definitive quantitative data, I observed that students changed their ideas about where animals live in more ways than recognizing that a polar bear does not live in Antarctica. They began to understand the complexity and diversity of animal life.

Did students acquire academic English language skills and science content through a hands-on mapping project of animals around the world? This project to date fails to elucidate this point. A pre-test was given to students to assess their knowledge of vocabulary and content, but in retrospect, it was not a very effective instrument, so it was not given as a post assessment. Learning is not always linear and concise, and in this case, the pre/post assesment didn't lend itself to assessing student growth. It is clear to me as a teacher that students did gain content knowledge and language; but a more holistic assessment needs to be developed to measure this.

Some of the activities begun for this project have not yet been completed. Students will complete their research projects and share their information in a variety of ways. Some are using the Promethean board software to create their presentations, some are making Power Point presentations or posters, some are using a template I gave them to record information and pictures. They will also create one large map on the wall outside of our classroom that will include all the elements of maps and geography they have learned. As students work through these activities I will be able to gauge their level of growth as well.

Maps are visual representations of the world and can serve as a “scaffold” to learning. Students can understand a map such as the ones we created here without needing to know all the language involved. I have learned from this project that sometimes teaching is at its best when our students interactive with simple and engaging materials (as Armstrong, 1998, suggested). Perhaps this will bring out their genius!

Conclusion

The scope of this project changed a lot from inception to completion. The original idea was to somehow use maps to help students identify with their place in their community. One idea was to map the local watershed which would align with the fourth grade science curriculum (MCPS 2006) and focus on science content language needed for success in that class. While I did use some ideas from this guide, it became clear pretty quickly that this was more than we could do in the allotted time, so the focus was changed: we would research animals from students' new country, the United States, and their home countries, Eritrea, Bangladesh, Norway, Spain, Haiti, etc. However, when we went to the map to start to discuss this project, I realized that students didn't know basic geography. For example, there was a lot of confusion between continents and countries. So, I narrowed the scope further, to focus on learning the continents and researching animals from different continents. The animals on the original map were put there with the idea that this would be a warm-up activity and then we would move on to talk about more obscure animals. But as it was clear that most students knew little about these animals, I decided to focus on them. In the end, students expanded their knowledge regarding those animals in 2 class periods of researching and sharing data. They integrated that knowledge especially well, I believe, because they were engaged in an authentic content based activity.

References

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