Bed, Breakfast, and Biases

An Identity and Perspectives project
A Humanities, Math & Science, and Performing Arts Collaboration
Corey Clark, Kristen Voss, and Fernando Vega
Spring 2017

How can we define our identities scientifically? What are the components of culture? How does bias and perspective affect one's place in society? How are perspectives and biases altered based on geographical region?

Project Inspiration- Airbnb is an online marketplace that allows residents to rent their property as a vacation rental. The organization hosts over 1.5 million listings in 191 countries world wide. They are one of the fastest growing ways for families, couples, and friends to plan a vacation, but many questions regarding the accountability and equity of the process have been raised in recent years. There is seemingly no way to regulate why a host accepts or rejects possible renters, and a growing number of users are reporting racism and inequities in who can and cannot book certain listings.

Project Overview- Our project will take our students on a journey into looking at their own identities in Math/Science by analyzing third-party ancestry DNA tests through Family Tree DNA to examine their genetics and how their genetics relate to those in other geographical locations. Students will explore the background of who they are through understanding genetics, heredity, and DNA, as well as through mathematical explorations. Throughout this, students will study how their identity is perceived by the world around them, and how their perceived identity affects how they are treated and viewed. Lastly, students will explore how location and geography also changes our perceived identity. (Being African American in Southern California vs. South Carolina can be a very different experience.) In addition to race, our project will also delve into questioning perceptions of value based on gender, body image, and religion. The content will be taught through labs, articles, field experiences, socratic seminars, guest speakers, videos, music, novels, etc.

Social experiment- The social experiment seeks to test the team's possible theories on the content learned by running a social experiment focused on examining possible inequities within the Airbnb model. Students will be managing teacher- and volunteer-created profiles on the Airbnb platform. Each of the profiles will match the largest races listed in the US census, differing body images, gender, religion, etc. Students will attempt to inquire about possible listings within the database as different users to compare whether or not the rumors of inequities in the organization may be true and whether their perceived identity is assigned a certain value or worth to those looking at their profiles. Student will be running 4 sets of tests, as they will be doing the experiments based on regions of the U.S.: western, southern, central, and northeastern. Airbnb has recently
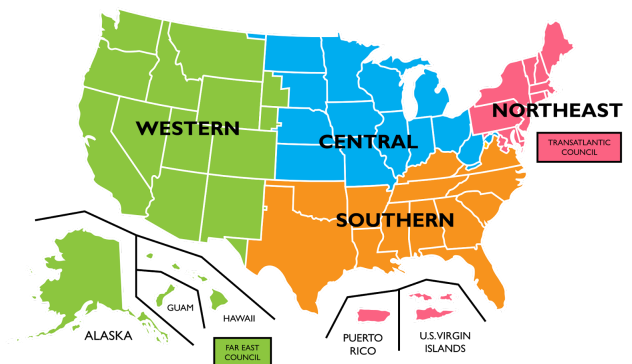
published a 4-point-plan to address these inequities, and we will be investigating whether or not these seem to be working.

Products- All students will be asked to examine the Airbnb data to create a possible alternative profiling system for the website that would be more equitable. They will all propose their ideas to the Airbnb. In groups, some students will either be: synthesizing their data from the DNA test to create genetic and geographic art pieces, creating an art piece where they represent and visually change an iconic image from a region tested in the social experiment using plastic overlay sheets over the canvas that adds an image of equity or inequity to represent what they observed in that round of tests, creating and sewing toys and dolls giving representation to underrepresented populations within society, *or* working with Performing arts to conduct empathy interviews with people in surrounding communities who have experienced injustices and turning those interviews into powerfully performed monologues. Together these products will show a cohesive, in depth look into the process of the project.

Primary Common Core State Standards Addressed			
Humanities Standards:	**Math Standards:**	**NGSS Science Standards:**	**Performing Arts Standards:**

Humanities Standards:

CCSS.ELA-LITERACY.RL.7.1
Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

CCSS.ELA-LITERACY.RL.7.2
Determine a theme or central idea of a text and analyze its development over the course of the text; provide an objective summary of the text.

CCSS.ELA-LITERACY.RL.7.3
Analyze how particular elements of a story or drama interact.

CCSS.ELA-LITERACY.RL.7.6
Analyze how an author develops and contrasts the points of view of different characters or narrators in a text.

CCSS.ELA-LITERACY.RL.7.10
By the end of the year, read and comprehend literature, including stories, dramas, and poems, in the grades 6-8 text complexity band proficiently, with scaffolding as needed at the high end of the range.

CCSS.ELA-LITERACY.W.7.1.A
Introduce claim(s), acknowledge alternate or opposing claims, and organize the reasons and evidence logically.

CCSS.ELA-LITERACY.W.7.1.B
Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text.

CCSS.ELA-LITERACY.W.7.2.C
Use appropriate transitions to create cohesion and clarify the relationships among ideas and concepts.

CCSS.ELA-LITERACY.W.7.3.C
Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another.

CCSS.ELA-LITERACY.W.7.4
Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

CCSS.ELA-LITERACY.W.7.5
With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.

CCSS.ELA-LITERACY.W.7.6
Use technology, including the Internet, to produce and publish writing and link to and cite sources as well as to interact and collaborate with others, including linking to and citing sources.

CCSS.ELA-LITERACY.L.7.3
Use knowledge of language and its conventions when writing, speaking, reading, or listening.

CCSS.ELA-LITERACY.SL.7.1
Engage effectively in a range of collaborative discussions with diverse partners on grade 7 topics, texts, and issues, building on others' ideas and expressing their own clearly.

Math Standards:

7.RP.3
Use proportional relationships to solve multistep ratio and percent problems.

7.NS.3
Solve real-world and mathematical problems involving the four operations with rational numbers.

Statistics and Probability - Use random sampling to draw inferences about a population
7.SP.1
Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.

7.SP.2
Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.

Statistics and Probability - Draw informal comparative inferences about two populations.
7.SP.3.
Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.

7.SP.4
Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.

7.SP.6
Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.
a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.
b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.

7.SP.8
Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.
a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.
b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event.
c. Design and use a simulation to generate frequencies for compound events.

NGSS Science Standards:

MS-LS1-2 LS1.A: Structure and Function
Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell.

MS-LS3-1 LS3.A: Inheritance of Traits
Genes are located in the chromosomes of cells, with each chromosome pair containing two variants of each of many distinct genes. Each distinct gene chiefly controls the production of specific proteins, which in turn affects the traits of the individual.

MS-LS3-1 LS3.B: Variation of Traits
In addition to variations that arise from sexual reproduction, genetic information can be altered because of mutations. Though rare, mutations may result in changes to the structure and function of proteins. Some changes are beneficial, others are harmful, and some neutral to the organism.

MS-LS3-2 LS3.A: Inheritance of Traits
Variations of inherited traits between parent and offspring arise from genetic differences that result from the subset of chromosomes (and therefore genes) inherited.

MS-LS4-1 LS4.A: Evidence of Common Ancestry and Diversity
The collection of fossils and their placement in chronological order (e.g., through the location of the sedimentary layers in which they are found or through radioactive dating) is known as the fossil record.

MS-LS4-6 LS4.C: Adaptation
Adaptation by natural selection acting over generations is one important process by which species change over time in response to changes in environmental conditions. Traits that support successful survival and reproduction in the new environment become more common; those that do not become less common. Thus, the distribution of traits in a population changes.

MS-ESS1-4 ESS1.C: The History of Planet Earth
The geologic time scale interpreted from rock strata provides a way to organize Earth's history. Analyses of rock strata and the fossil record provide only relative dates, not an absolute scale.

MS-ESS2-3 ESS2.B: Plate Tectonics and Large-Scale System Interactions
Maps of ancient land and water patterns, based on investigations of rocks and fossils, make clear how Earth's plates have moved great distances, collided, and spread apart.

Science & Engineering Practices
SEP.1: Asking Questions & Defining Problems
SEP.2: Developing & Using Models
SEP.4: Analyzing & Interpreting Data
SEP.5: Using Mathematics & Computational Thinking
SEP.6: Construction Explanations
SEP.7: Engaging in Argument from Evidence
SEP.8: Obtaining, Evaluating, & Communicating Information

Cross Cutting Concepts
CCC.1: Patterns
CCC.2: Cause & Effect
CCC.3: Scale, Proportion, & Quantity
CCC.4: Systems & System Models

		CCC.6: Structure & Function CCC.7: Stability & Change	