

## **Carrying Capacity Case Study**

The purpose of this activity is to learn and understand the principles of carrying capacity and limiting factors. By the end of this hypothetical case study, students will be able to show understanding over these major principles. Please read the case and the instructions that follow.

### *The Case:*

Rock Hills High School is a small school located in North-Central Kansas. Rock Hills USD 107 was founded as a district in the fall of 2006. The school has seen some change in the past few years, including the Junior High coming up to the high school building in the fall of 2012, and the appointment of a new 6-12 Principal in the building. The atmosphere at Rock Hills is positive, and the student body is a great group of students who genuinely work hard to become strong and knowledgeable citizens.

It has come to the attention of the school board that Mankato, the town in which Rock Hills USD 107 is located, is expected to grow significantly in the course of the next year. With a slow trickle of students entering the building over the course of this school year, the majority of new students will arrive over the summer and will start school the following school year. At the beginning of the next school year, there will be 500 new students at Rock Hills USD 107 in the Junior/Senior High School.

### *The Assignment:*

In groups, you will carry out a differentiated group project which focuses on the issues Rock Hills USD 107 will face when this new group of students enters the building. There will be several planning committees that will coordinate building improvements and the necessary changes that will take place.

### *The Big Ideas:*

The big ideas for this activity center around carrying capacity and density-dependent limiting factors. Most of the content for this activity needs to be tied into those major ideas for full-credit on the assignment. Be able to understand what carrying capacity and density-dependent limiting factors are in order to successfully complete this project.

### *The Planning Committees:*

The following groups will be assembled to come up with a solution to the increased size of the student body at Rock Hills Junior/Senior High School:

#### Building Committee

This group will be in charge of designing add-ons to the building. You will determine the size of the classrooms to be built, where they will be built at, a diagram for the new facilities, etc. Include any changes needed to the lunchroom, gym, bathrooms, etc. All adjustments must be tied into the big ideas of carrying capacity and limiting factors, and those big ideas must be mentioned in your presentation.

#### Food, Water, and Maintenance Committee

This group will be in charge of meal planning for the added number of students. You will be required to plan out how to best order breakfast/lunches and serve meals. You will also need to plan how to re-route water pipes, install drinking fountains, etc. All adjustments must be tied into the big ideas of carrying capacity and limiting factors, and those big ideas must be mentioned in your presentation.

#### Environmental Committee

This group will be in charge of planning how any school addition will affect wildlife resources around the school facilities. What animals will be affected? How? What will be done to minimize damage to wildlife species? How will you monitor the area to comply with water and waste emission restrictions? All adjustments must be tied into the big ideas of carrying capacity and limiting factors, and those big ideas must be mentioned in your presentation.

#### Parking/Bus Route Committee

This group will be in charge of designing new parking lots for faculty and students, as well as planning out everything transportation-related for the students. Up to two thirds of the new students will not be able to drive themselves to school. All adjustments must be tied into the big ideas of carrying capacity and limiting factors, and those big ideas must be mentioned in your presentation.

### Logistics Committee

This group will be in charge of logistics. How many new teachers will need to be hired? What changes will need to be made to sports teams, and why? What are new school policies that must take effect? Technology uses .... computers and such .... will there be more technological access for new students? What new clubs or sports will be introduced, if any? What are some negative impacts to think about with the new students entering the building? All adjustments must be tied into the big ideas of carrying capacity and limiting factors, and those big ideas must be mentioned in your presentation.

### *After your Committees Meet:*

Give an oral presentation over what decisions/policies were made in the case and why you made them. Discuss and relate to carrying capacity and limiting factors. Your oral presentation must include input from all group members to receive full credit. Your presentation must show a clear understanding of the big ideas in order to receive full credit. You must turn in a written copy of your plan(s) in each committee to receive full credit.

## Grading Rubric

### Committee Content:

*The content within the group links to the big ideas of carrying capacity and limiting factors, and students show a clear and obvious understanding of those big ideas through all of their work* +12

*There are links to the big ideas in the group, and understanding is present in some of their group materials* +6

*There is no link to the big ideas of carrying capacity and limiting factors present in group work* +0

### Supporting Materials:

*The group has a supporting visual for their part in the case study, as well as a written plan detailing the changes that will be made within the case study* +10

*The group is missing either a supporting visual or the written plan for the case study* +5

*The group is missing both the supporting visual and the written plan for the case study* +0

### Classroom Presentation

*Each member of the speaking group has a spoken part and delivers the spoken part to the class. The group members are professional in their delivery of their verbal content* +10

*Not all members of the group participate, and/or there is a lack of professionalism within the presentation* +5

*There is little participation in the group and an obvious lack of preparedness/professionalism* +0

**Total Points Available: +32**