

How Do Planners and Engineers Make Cities Safe?

INTRODUCTION

Objective/Learning Targets:

- Introduce students to concepts of safe roadway design: traffic control, engineering, urban planning, etc.
- Encourage students to see how creativity can be used in field of transportation.

RESOURCES

Materials:

- Masking tape or chalk to create a street grid on the floor/ground.
- Six destination signs (store, doctor, school, home, friend's house, and park, or others of your choosing). These can simply be paper laid on the ground or could stand up on easels.
- Stop/go signs (or red and green paper) for "police officers" to use when directing traffic.

Setup: This activity requires setup time. Create a large street grid on the floor that's large enough to allow all students to travel freely, but not so large that students never encounter crowding. (For a group of 20-30 students this grid might be approximately 10'x20'). Outline the streets with tape or chalk, keeping them 2-3' wide (again, wide enough for students to pass each other but narrow enough to create some crowding).

Place your destination signs throughout the grid. You might wish to purposely place some destinations near or far from each other; nearness will create congested areas while distance will require students to travel further across the grid.

Time: 30-45 minutes

Age: Grades 2-6

ACTIVITY/PROCESS



1. Split students into three groups and ask each group to travel between two assigned destinations:

- Friend to store
- Home to school
- Doctor to park

Students may travel any route and do not all need to travel as a group. After students have made their trip, ask them to return to their original destination using a different route. Then allow them to travel anywhere they want to for a few minutes.

2. Regather the group and have everyone sit for the next few minutes. Ask the students to reflect on their travel:

- Was there anything challenging about your route?
- Did the roads get crowded?
- Did anyone take a longer route to avoid crowded spots?
- Did you run into other people?
- How did your collisions affect other people on the road?

3. Introduce students to basic principles of transportation safety.

Lots of different people play a role in making our cities safe and convenient to travel. Transportation planners try to design transportation systems that will help us. They think about where stores, roads, trains, and other parts of the city will go. They study how and where people travel, and try to make it easier and safer.

Ask students to suggest ways that planners might change our city, such as:

- Creating or widening roads
- Putting the destinations in different places

Engineers think about the details of our transportation system. They design the roads

themselves, thinking about things such as size, signage, safety, and environmental impacts.

Invite students to name ways that engineers might make our city safer, such as:

- Adding traffic controls like stop signs or lights
- Adding signage to encourage specific routes

Both of these careers, along with others in transportation, require a lot of creativity and problem-solving skills. You often encounter a lot of challenges that you have to overcome. For instance, maybe you know that your city really needs a bridge, but there's no money to build it. You have to find a way to get the money or solve the problem with something less expensive than a bridge. Or perhaps your school is in a bad location and it's really hard for people to travel to it. You can't just move the school or move everyone's houses. You may need to be creative about finding other solutions.

The creative process and the engineering process both have things in common. One is that you do a lot of experimenting to see what will work. For instance, engineers and researchers have sections of road that have different kinds of pavement, paint, or even roadside plants. We can test these sections to see how different materials stand up to traffic and weather. Sometimes we can test on the computer, as well. Planners use really elaborate software programs to test things like traffic patterns. They can see how a change in our road or transit networks will affect other places within the network.

We don't have computers or real roads here today, but we can still test solutions just like engineers and planners do.

4. Test the changes students suggested earlier.

For each test, allow students to first travel to their original assigned destination, and then travel anywhere they want to. The goal will be to travel directly, without running into other people or experiencing overcrowded spots. After each test, do a short debrief about what worked and what didn't.

Changes to test could include:

- Moving destinations
- Adding more roads
- Adding traffic controls (have some students serve as “police officers” with stop/go signs to control traffic)
- Closing roads or prohibiting turns at certain intersections

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- Making some roads one-way
- Creating lanes to keep travelers to the right side of the street in each direction

CONCLUSION

Reflect on what students learned.

- What were most successful changes we made to the road system? What didn't work?
- What about today's lesson required creativity?
- Did anything surprise you?
- What is one thing you learned today?