Multimodal Transportation Planning: Traveling around Town

THE CHALLENGE

Develop a plan to improve the multimodal transportation network in a fictional town by:

- Learning about the fictional town’s transportation problems and needs.
- Identifying and measuring gaps in the transportation network.
- Selecting solutions from the Transportation Toolbox.
- Calculating the cost of the solutions.
- Deciding what solutions to include in this year’s plan, (without going over the town’s transportation budget).

GRADE LEVEL

Middle School. (Easily modifiable for other grade levels)

ACTIVITY DURATION

Approximately 10 to 15 minute introduction, 15 to 20 minute activity, followed by a 5 to 10 minute discussion.

MATERIALS

Printed copies of the attached Activity Maps (11”x17”) and the Activity Packet (8½”x11”). (One per team/pair)
Colored pencils/ Regular pencils/ Erasers.

SET UP

This activity requires table space that is big enough to hold the medium-sized (11”x17”) maps.

Definition/Key Words

Transportation Planners:
Plan Transportation Networks
That Move People and Goods
From Point A to Point B
Safely and Quickly

Multimodal Transportation Planners think about how communities should build and improve the many different types of transportation network features like roads, sidewalks, bike lanes, bus routes, trails, train tracks, and more!

ACTIVITY

Provide a brief introduction to multimodal transportation planning: the meaning of the terms ‘multimodal’ and ‘transportation network,’ the overarching goals of transportation planners, the network features associated with each mode, and examples of how to identify and fill-in gaps in the network (see the attached Powerpoint Presentation for inspiration on what to include and how to describe).

Introduce the activity (see page one of the attached Activity Packet). This includes orienting the students to the maps (i.e. how do they read it… what does the legend, scale, and north arrow mean and how can they use them to work through the activity).

Split the students into small pairs/teams (ideally, 2-3 kids max) to complete the activity. Pass out the maps and packets.

Either read the transportation problems out loud as a group (to help clarify what the problems are describing) or have the pairs/teams read them independently.

During the activity, walk around the pairs/teams to answer questions and provide hints as needed.

Encourage the students to track their problems and solutions using the packet ‘Brainstorming Gaps and Solutions’ worksheet.

After 15 to 20 minutes, ask some of the students to present their solutions to the group. Close with a group discussion.
FOR DISCUSSION

Ask the students why they chose the problems they did and how they determined and selected their solutions to the problems.

Discuss any challenges they may have had during the activity. For example, not having enough budget to do everything they initially wanted to do, not being sure what the community would want based on their current information, having to prioritize one mode over another, working within an existing system, etc.

Specifically discuss how their solutions will impact the community members’ daily lives.

LEVEL OF DIFFICULTY

IMPORTANT: It is crucial to have a conversation with the classroom teacher/group leader prior to performing the activity. This will aid in understanding the educational level of the class/group, which will help determine the appropriate level of difficulty of the materials and items for discussion. For example, regular classes vs. gifted & talented or AP classes.

Increase difficulty by:

1. Increasing the number of problems to solve within the given budget.
2. Making it local. Use Google Maps to have students look-up their own neighborhood, city, or town aerial map and research their local transit system map.
3. Raising the level of questioning. This could include a discussion about transportation planning equity and/or how changes in their design could impact the residents of the town.
4. Increasing the planning timeline. Have students create a three-year, staged transportation improvement plan for the town, using the same budget every year. Ask them to try to include the most important projects first.
5. Starting from scratch. Ask the students to think about how they would design the town and its transportation network differently, if they could start over with a ‘blank slate’ before the town was first built.
6. Incorporating modal speed. Ask students to calculate the travel times for the same travel routes/paths on different modes. Assume the following average speeds:
   a. Walking = 4 MPH
   b. Biking = 12 MPH
   c. Car/Vehicle = 35 MPH
   d. Bus = 20 MPH (slower to take stop delays into account)
   e. Train = 17 MPH (light rail), = 60 MPH (passenger rail)

Decrease difficulty by:

1. Decreasing the number of problems to solve within the given budget.
2. Asking students to simply identify and measure some or all of the gaps in the transportation network.
3. Asking students to draw a travel path from one location to another (i.e. neighborhood one to school, neighborhood three to the grocery store) and create a story about a person’s travel trip.
4. Having students draw their own towns and transportation networks on the ‘blank’ activity map.
Activity 1: Multimodal Transportation Planner

Maria Martinez, the Mayor of Tinseltown, USA, has asked you to help her create a plan to improve the transportation network in her town.

**Your Task: Create a Multimodal Transportation Plan for Tinseltown**

- **Step 1:** Pick one or two problems to solve from the “Tinseltown Transportation Problems” List.
- **Step 2:** Find the gaps in network that relate to those problems. Measure them, if applicable.
- **Step 3:** Find solutions from Transportation Toolbox. Calculate how much it would cost to solve your two problems.
- **Step 4:** Decide how much you want to do with the money you have budgeted.
- **Step 5:** Be ready to describe how your solutions will impact a community member’s everyday life.
What is Multimodal Transportation?

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<th>-modal</th>
<th>Transportation</th>
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| • more than one  
• many  
• different | • methods  
• forms  
• types | • travel from one place to another  
• movement of people and goods |

Multimodal Transportation
• many different methods of traveling from one place to another  
• Examples: car, bus, bike, walking, train, airplane, boat... and more!

What does a multimodal transportation planner do?

As a multimodal transportation planner, you help to create plans for how communities should build and improve the many different types of transportation network features like roads, trails, bus routes, sidewalks, and more!
Tinseltoon Transportation Problems

1. Town people are very worried that kids in Neighborhoods 1 and 2 are having trouble walking and biking safely to the local school.

2. Many people in Neighborhood 1 have no car and need to be able to walk, bike, or take the bus to work, school, and the grocery store.

3. People in Neighborhood 3 want a more direct driving route to the grocery store and to the local school.

4. People in Neighborhoods 4 and 5 are upset that there is only one road to the grocery store because this means there is lots of traffic.

5. People want to be able to walk to their local parks.
# Brainstorming Gaps and Solutions

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<th>Solutions</th>
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Your Transportation Toolbox

- **$$$$$ Solutions**
  - Build a Train Station (Total)
  - Build a Train Track (per 300 ft)

- **$$ Solutions**
  - Pave a Dirt Road (per 300 ft)
  - Build a Trail/Path (per 300 ft)
  - Build a Sidewalk (per 300 ft)

- **$$$ Solutions**
  - Build a Road (per 300 ft)
  - New Bus Route (Total)

- **$ Solutions**
  - Build a Crosswalk (per 300 ft)
  - Add a Bike Lane (per 300 ft)
  - Move a Bus Route (Total)
  - Build a Bus Stop (Total)
Your Budget = $20

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*Tip: Cross off each dollar as you use it in your budget*
For Example:

Building 900 FT of new road would cost:

New Roads cost: $$$ for 300 FT

900 FT ÷ 300 FT = 3

3 × $$$ = $$$ $$$ $$$ = (9 dollar symbols)

You would cross off 9 of the $ dollar symbols from your budget. This would leave you:

20 – 9 = 11 dollar symbols

To plan for other solutions.