Traffic Counts and Signal Timing

THE CHALLENGE
Learn how to count traffic at an intersection and how that relates with signal timing and the operation of an intersection.

GRADE LEVEL
Elementary, Middle, and High School.

ACTIVITY DURATION
45-75 minutes or more, depending on the grade level.

MATERIALS
Counting boards or Counting App on IPhone or IPad.
Existing signal timing and phasing data, or if those are not available, stop watches.
Chart of traffic counts (on page 2).

SET UP
This activity requires a signalized intersection with some safe space off the road to observe the whole intersection.

ACTIVITY
1. Group the students.
2. Assign one counting board/App and stop watch to each group.
3. Learn how to use the counting board/App and stop watch.
4. Get familiar with the roadway approach configuration.
5. Assign each group with one approach.
6. In a group, some conduct traffic counts for all movements (vehicles, bicyclists, pedestrians) during a minimum of 30 minutes (among 6:30-9:00 a.m. or 3:30-6:00 p.m.) in 15-minute intervals, while others use the stop watch to collect signal timing and phasing data. Switch the task between students in a group every 15 minutes or less, depending on the number of people in a group.
7. Write down the counts for every 15-minute interval in the form (Note: only part of the form will be filled in, depending on the time and duration of the activity).
8. Calculate the total counts in each approach for the whole duration.

FOR DISCUSSION
Talk to students about how Traffic Counts data tracks traffic volume by the number of vehicles, bicycles, and pedestrians that cross a certain point of a street location.

Traffic counts are the number of vehicles, bicycles, and pedestrians that cross a certain point of a street location.

Discuss with students how traffic counts on each approach are associated with the length of the signal phases, e.g. the bigger the number of traffic counts, the longer the length of the Green Signal.

Discuss how the signal timing and phasing are determined based on the traffic volume.
**LEVEL OF DIFFICULTY**

**IMPORTANT:** It is crucial to have a conversation with the classroom teacher prior to performing the activity. This will aid in understanding the educational level of the class (regular, TAG, Advanced Placement) which will help determine the appropriate level of difficulty of the materials and items for discussion.

Increase difficulty by doing the following:

1. Let students draw a figure of the roadway approach configuration.
2. Let students decide how traffic should be counted in each group, and how to cover all the approaches by all the groups.
3. Let students make charts to record observations.
4. Increase the duration of the traffic counting time.
5. Include scientific method.
6. Add a product outcome (graphs, observations, charts, group presentations).

Decrease difficulty by doing the following:

1. Assign approaches among groups, and instruct how to count in each approach so all the traffic volumes are collected.
2. Provide pre-made charts for children to record observations.
3. Decrease the duration of the traffic counting time.
4. Switch tasks every 5 minutes for each student.
5. Only test one question, e.g. Do you have a longer Green time when you have a bigger total number of traffic counts in your approach and why?

**COUNT LOCATION**

**DATE OF DATA COLLECTION**

<table>
<thead>
<tr>
<th>Street Name</th>
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**TIME (am)**

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<td>6:30-6:45</td>
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**TIME (pm)**

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