

Efficiency and Safety of One-Way Streets

Students analyze the traffic flow efficiency and safety concerns of one-way streets. Students also research the roles/responsibilities of a city traffic engineer. For grades 6-12; DOK-3.

INTRODUCTION

Culminating Activity:

You are a traffic engineer working for a city that has many one-way streets. The City's mayor is concerned that the increased traffic flow one-way streets offer is negligible compared to the increased traffic collisions they create. She wants to convert the one-way streets back into two-way streets. Your job is to write the methodology section of a research plan for assessing the safety of the one-way streets in this community regarding their traffic efficiency.

Objectives (Students Will Be Able To...)

- Students will be able to analyze the impact of one-way streets on traffic safety.
- Students will be able to write the methodology section of an engineering plan.

ACTIVITIES IN THIS LESSON

Video Viewing

Hooks/Set

The lesson begins with the teacher showing students examples of one-way and two-way streets. As an elaboration cognitive strategy, the teacher discusses what is depicted in the images, especially with respect to the left-hand turn on red onto the one-way street. As an elaboration cognitive strategy, the teacher then shows a YouTube [video](#) "One-way streets" to inform students about what can happen if a driver encounters a one-way street and doesn't recognize it as such. During this time (and throughout the rest of the lesson), students complete a Metacog Log to self-monitor their confidence and concerns about the lesson as it unfolds.

Checking for Understanding & Engagement

- Describe the difference between the left and right traffic patterns.
- What mistake did the student driver almost make and why?

- Are you familiar with any examples of left-hand turns onto one-way streets in town?
- Which of the two traffic patterns would cause you to hesitate the most and why?
- Has something like this ever happened to you while riding in a car?
- What part of the video do you think the producer should have spent more time discussing?

Reading Activity

Other

This portion of the lesson involves the students reading the web pages "[The Case Against One-Way Streets](#)" and "[Two-Way Street Networks](#)." Students form into pair-shares to read the pages, with stronger readers paired with weaker readers to help overcome any reading subskill deficiencies.

Checking for Understanding & Engagement

- Summarize at least three benefits of one-way streets.
- Summarize at least three benefits of two-way streets.
- What is the issue that is undecided when it comes to which traffic flow pattern is better?
- How would you describe the difference between *trip-serving capacity* and *traffic flow rate*?
- Which sentences would you highlight to help remember the most important points of the articles?

Relevance Development

Lecture

The teacher gives rehearsal cognitive strategies to remind students of the importance of knowing the benefits and disadvantages of one-way streets (e.g., civil engineers that construct these roads must know). The teacher then tells students the culminating activity, which is to write a methodology section of a research plan. The teacher gives rehearsal cognitive strategies for the students to remember why it is important for them to know how to develop a research plan (e.g., many different types of careers have to write research plans for their work).

Checking for Understanding & Engagement

- What are the differences between one-way streets and two-way streets?
- Do you think one-way streets and two-way streets are equally safe or unsafe?

Student Writing

Guided Practice

The teacher describes the purpose of a research plan and provides students with a graphic organizer to show them how such a research plan is structured. Using the I Do, We Do, You Do method, the teacher uses a Think-Aloud to fill in the methodology section of the graphic organizer with one element related to what needs to be measured with respect to one-way vs two-streets and how this could be accomplished.

For example, “Traffic flow is mentioned in one of the web pages as a common measurement because it reveals how many cars can drive by a point during a certain time. So, one thing I want to include is the need to measure the traffic flow, which can be done by standing on the side of the road and counting cars. I will also need to define *traffic flow* for the reader because some may not understand what that means. Let me write all that in the methodology portion of the graphic organizer.”

Checking for Understanding & Engagement

- How did I decide on what to include in the methodology section?
- What else did I put in the methodology section and why?

The teacher then asks students to complete the rest of the methodology portion.

Checking for Understanding & Engagement

- What did you include in the methodology section and why?

To further check for understanding, the teacher checks each student’s graphic organizer to ensure the methodology section is complete and accurate. The teacher then collects and writes down the entries on the displayed graphic organizer, and then asks students to complete their own graphic organizers accordingly. The teacher then tells students that they will take the graphic organizer home and, using the information in it, complete the methodology section.

Career Exploration

Group Work

The teacher asks students to explore the transportation engineering career field using online searches. Students identify such features as the average salary and roles/responsibilities. Then, they research traits that make for effective engineers. They then self-evaluate their own traits to determine which areas align the most and least to the transportation engineering field.

Checking for Understanding & Engagement

- State three facts about the transportation engineering field.

- Who hires transportation engineers?
- How much do transportation engineers make each year?
- Does a transportation engineering field interest you?
- What is the one thing you would like/dislike about being a transportation engineer?

Homework

Independent Practice

As a homework assignment, students complete the methodology section using the information found in the graphic organizer. (They take home a paper copy of the graphic organizer even though it is accessible on the shared Google Drive.)

They are also asked to write the words *capacity* and *traffic* in complete sentences to reinforce vocabulary development with respect to spelling.

SUMMATIVE ASSESSMENT

Assessment Type: Writing Samples

Students turn in completed graphic organizers for grading. They then write the methodology section of a research plan as a homework exercise, which is scored by the teacher according to his or her own rubric.

Throughout the lesson, students monitor their own confidence through a Metacog Log (Walkup and Squire, p. 112), which the teacher peruses routinely.

Industries / Subjects / Grades

Industries / Pathways

- Transportation

Standards and Objectives

Standards

California English Common Core Standards

- **WHST.11-12.2b** Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
- **WHST.11-12.4** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- **WHST.11-12.9** Draw evidence from informational texts to support analysis, reflection, and research.

California's 2013 CTE Standards

- **CTE.T.KPAS.1.0** Academics
- **CTE.T.KPAS.2.4** Demonstrate elements of written and electronic communication such as accurate spelling, grammar, and format
- **CTE.T.KPAS.3.1** Identify personal interests, aptitudes, information, and skills necessary for informed career decision making
- **CTE.T.KPAS.3.4** Research the scope of career opportunities available and the requirements for education, training, certification, and licensure
- **CTE.T.KPAS.5.1** Identify and ask significant questions that clarify various points of view to solve problems
- **CTE.T.KPAS.5.4** Interpret information and draw conclusions, based on the best analysis, to make informed decisions

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