Transportation Trends and Technologies

THE CHALLENGE

This project allows students to conduct online research to learn more about a topic of interest related to transportation trends and technologies and to further educate an audience of their peers. The final product for this project is a group presentation to an audience that may include other students, teachers, and/or parents. A rubric is provided to guide development of the presentation.

GRADE LEVEL

High School

ACTIVITY DURATION

This research project requires that students are assigned (or select) a topic to pursue, and then develop a presentation through web-based research to showcase a transportation trend or technology. It is expected that student teams will require 60-90 minutes to complete this activity (after topic selection).

MATERIALS

Students will require computers with internet access and access to presentation development software.

SET UP

For this project, students should be assigned to teams of 2-4 students to develop their research projects.

ACTIVITY

1. Choose one of the following transportation trends/technologies for your research project:
   a. Connected Vehicles
   b. Autonomous Vehicles
   c. Hyperloop
   d. Positive Train Control
   e. Biologistics (cold chain technologies, sensors, innovative packaging)
   f. ‘Uber’ for trucking
   g. Technological innovations in transportation for people with disabilities
   h. Alternative fuels/vehicles (ex. Innovations in diesel engines; hybrid technologies; etc.)
   i. Innovations in e-commerce
   j. Smart Cities
   k. Amazon ‘Beehive’
   l. Another topic of your choosing (must be approved by instructor)

2. Prepare a 5-7 minute presentation that provides the following information about your topic and ‘sells’ the trend to your audience (why should they be excited about this?):
   a. A detailed description of the trend/technology so that someone completely unfamiliar with this topic will be able to understand what it is.
   b. Identify the advantages and disadvantages of this
trend/technology from the following perspectives:
   i. Safety
   ii. Efficiency
   iii. Environmental impact
   iv. Cost
   v. Access/connectivity
c. Explain any policy or regulatory requirements or considerations related to this trend/technology.
d. Identify career pathways for someone interested in working in this area (i.e., what kinds of jobs are available, what kinds of skills are required, what kinds of professionals are needed?)
e. Conclude with key challenges or areas of research that are currently being pursued for your trend/technology and how solving these problems might impact our society in the future. (And why transportation professionals are so important!)

FOR DISCUSSION
Additional resources that may help with decisions regarding topics include:

Association of American Railroads Positive Train Control: https://www.aar.org/policy/positive-train-control

Connected Vehicle Basics (USDOT ITS Joint Program Office):
https://www.its.dot.gov/cv_basics/index.htm

Hyperloop Transportation Technologies:
http://hyperlooptransp.com/#!/

United States Department of Transportation Intelligent Transportation Systems:
http://www.its.dot.gov

Uber Freight
https://freight.uber.com

LEVEL OF DIFFICULTY
IMPORTANT: This project is suitable for high school students who are familiar with research concepts and developing research reports/presentations.

Increase difficulty by:
   1. Requiring a team research paper in addition to a team presentation.
   2. Requiring an individual presentation/paper.
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<thead>
<tr>
<th>SCORE</th>
<th>Professionalism</th>
<th>Excellent (5)</th>
<th>Good (3)</th>
<th>Needs Improvement (1)</th>
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</thead>
<tbody>
<tr>
<td>Team Composure</td>
<td>All team members make eye contact with audience, avoid unnecessary movement, speak clearly and project voices</td>
<td>Most team members make eye contact with audience, avoid unnecessary movement, speak clearly and project voices</td>
<td>Many team members avoid eye contact with audience, are distracting with movements, and it is difficult to hear them when they speak</td>
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</tr>
<tr>
<td>Slide Presentation</td>
<td>All slides are clear and easy to read-contrasting colors are used, font is legible, text on each slide is limited, pictures are used where appropriate</td>
<td>Most slides are clear and easy to read-contrasting colors are used, font is legible, text on each slide is limited, pictures are used where appropriate</td>
<td>Slides are difficult to read because of lack of contrasting colors, illegible fonts, too much text on a slide, pictures that do not support statements</td>
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<table>
<thead>
<tr>
<th>Technical Content</th>
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<tbody>
<tr>
<td>Detailed description of the trend/technology provided</td>
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<tr>
<td>Advantages and disadvantages presented</td>
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<tr>
<td>Policy</td>
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<td>Link to career</td>
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<td>Conclusion</td>
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<tr>
<td>Knowledge of Topic</td>
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<tr>
<td>TOTAL</td>
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