

The Fresno State Transportation Challenge

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Christian Wandeler
Steve Hart



High school P example of Phase 4: Presentation of the modern transportation concept in a 3D computer model

The Fresno State Transportation Challenge (FSTC) uses an action civics approach to support K–12 students in developing transportation related projects that have a positive impact on the community and raise student awareness of transportation related careers. The focus was on two high schools. One school focused on the topic of active mobility, specifically on biking, addressing the challenge of how to get more students to bike to school. The other school combined the transportation challenge with an economic vitalization project. The students were asked to develop a modern transportation concept.

Study Methods

The authors' research design consisted of an illustrative case study approach. The data sources are notes from preparation of sessions, notes from the actual sessions with the students, and the work of the students such as research, discussions, drafts, and final presentations. A multi-phase

design/engineering thinking process was used.

- Phase 0. Explore what is transportation and modes of transportation. For example, how do students get to school?
- Phase 1. Identify the problem and presentation of challenges. Example: how many walk? Conduct a walkability audit, conduct a safety audit.
- Phase 2. Explore, research and ideate solutions: what can we do? Design and create: what have others done? how can it be solved.
- Phase 3. Design and create solutions, then test and improve.
- Phase 4. Action: present and exchange with others resulting in civic action.

Increasing Biking to School at High School R

Students at high school R focused on the challenge of how to increase biking to school. The process spanned

eight weeks, with weekly one hour-long instructional blocks and independent project working time in between. The process began with a kickoff session with an expert speaker from the community creating a meaningful case for learning and building students' knowledge about transportation related topics and careers. Next, students did research and designed a survey to question their school community about issues around biking to school. Students analyzed this data to get a better understanding of the situation and then ideated and designed an action plan to come up with solutions. This was again complemented by a guest speaker from the community. This particular guest speaker developed the active transportation concept for the headquarters of Apple in Cupertino. As a culmination student presented about their research, their solution and action plan. In a virtual showcase they got feedback from university students and faculty. Lastly, the students came up with an action: an organized a bike to school day after the end of the project. The goal is to make this sustainable and the idea is to found a bike to school club to develop a culture that promotes biking to school.

A student asked in a meeting, "Where can I learn more about transportation careers? I had no idea this existed."

Integration Transportation Challenge with an Economic Development Project

In high school P the project followed an innovative new format and was integrated into an existing economic vitalization project. They were asked to develop ideas of how to revitalize a certain area of their city. For the transportation challenge the students were asked to also develop a modern transportation concept. The teams designed a virtual model of the city area and proposed how transportation could be redesigned. For example, one team built a new baseball stadium and developed a concept around electric buses to get people to the area, complemented with a fleet of shared electric scooters for transportation within the area. Another team developed a whole pedestrian zone with bike drive throughs for stores.

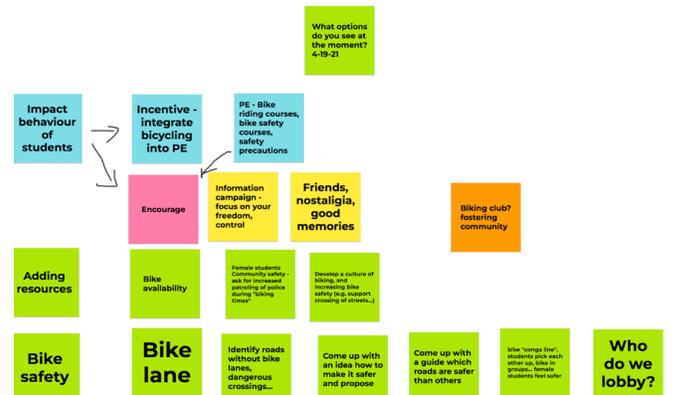


Figure 1. High school R example of Phase 3: design and create solutions, test and improve

Policy/Practice Recommendations

Projects like the Transportation Challenge effectively engage K–12 students in transportation related topics and connect them to university resources. The topic of transportation is so diverse and flexible that it is easily compatible with projects that happen already in schools. Guest speakers that work in the domain are an effective way to broaden student's awareness of careers and allow them to directly ask questions about the career pathways and how they might be able to pursue them.

About the Authors

Dr. Christian Wandeler is an associate professor in research methods and statistics at California State University, Fresno.

Dr. Steven Hart is a full professor in the Department of Literacy, Early, Bilingual and Special Education at California State University, Fresno.

To Learn More

For more details about the study, download the full report at transweb.sjsu.edu/research/2009



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