



Hot Wheels Unplugged:

Driving Training for Emergency Medical Technician
Students



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Introduction/Overview

- Training Emergency Medical Technician (EMT) students to drive an emergency ambulance is an extremely resource intensive and logistically challenging task
- In August of 2021, the City and County of Honolulu partnered with a local community college to offer Emergency Medical Technician training
- Time and resources for drivers' training markedly decreased



Unplugged Activity

Following the unplugged computer science (CS) approach, “Hot Wheels” toy cars by were used by the EMT students to practice driving each course objective



Hot Wheels Unplugged Iteration #1

“Cones” printed on paper

Hot Wheels toy ambulances

Show what to do

Understand what to do

Practice!



Real World Practice on the Closed Course

- Practiced driving on the closed course
- Driving test on the closed course

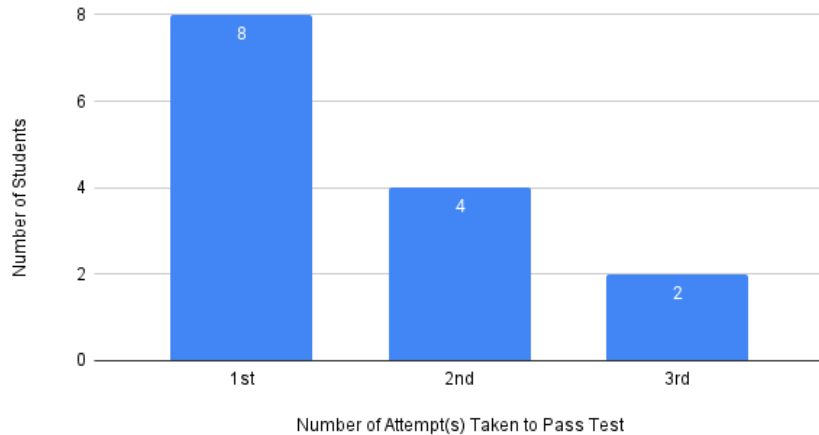


Closed Course Test Results - Hot Wheels #1

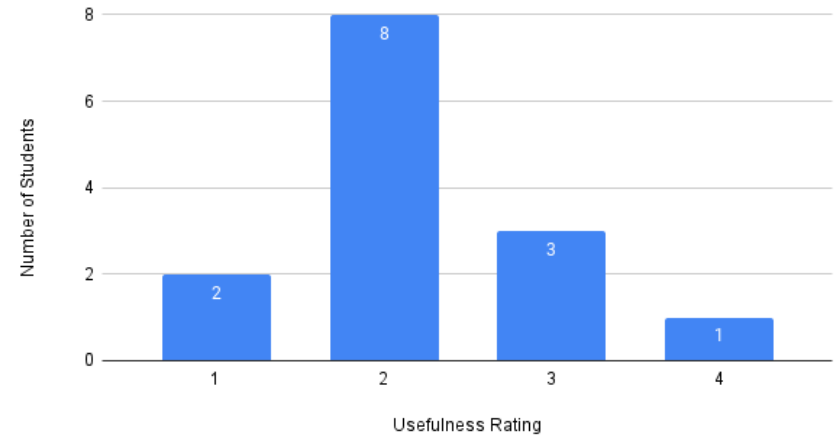
How did the students perform on their Closed Course driving test?

How useful did the students rate the Hot Wheels Unplugged #1?

Passing Attempt at Closed Course Testing



Hot Wheels Instruction Usefulness Rating for the Closed Course



Student Feedback from Hot Wheels Iteration #1

What was useful regarding the Hot Wheels instructions?

Hot wheels were **only effective at demonstrating the maneuvers we were expected to do**. It was not effective as practice. The hot wheels do not have turning wheels so it does not apply to the real world.

Being able to **visualize** what exactly needed to be done with the vehicle in regards to the cones.

Student Feedback from Hot Wheels Iteration #1

What could be improved regarding the Hot Wheels instruction?

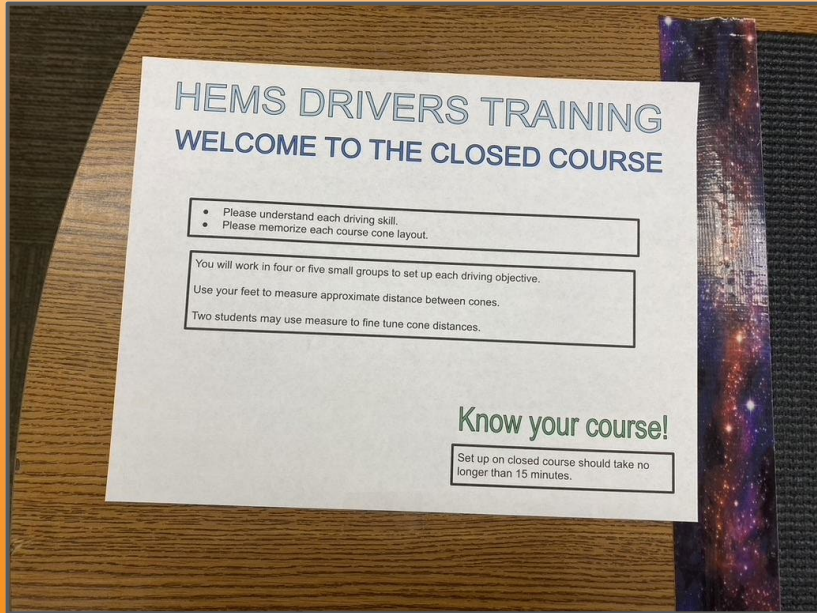
Getting wheels that pivot as well so the car can maneuver as if it were actually doing the course and not drifting. Also, making the paper to scale with the hot wheels

12 out of 15 students commented that they wanted more “realism” in the form of wheels that turned and had traction on the course map.

The hot wheels **do not have turning wheels** so it **does not apply to the real world.**

I think doing it once or twice before each driving practice would be beneficial but **doing it over and over again was a bit useless**

Hot Wheels Unplugged Squid Game Iteration #2



Description of Iteration #2 (cont'd)

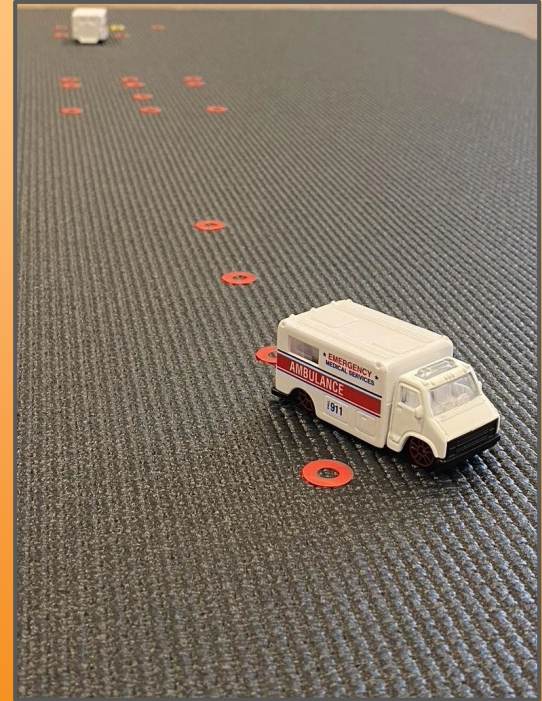
Reverse Serpentine



Reverse the ambulance through the serpentine course on both the passenger and driver side

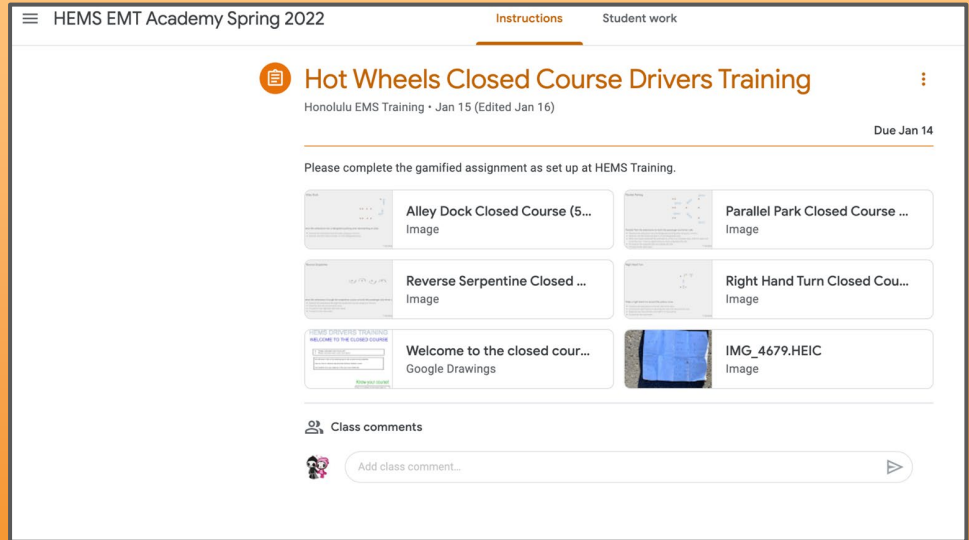
- Reverse the ambulance through the serpentine course using your mirrors.
- Pivot the rear tire around each cone.
- Proceed to the opposite side and repeat.
- Proceed to the next event.

HEMS DRIVER TRAINING PROGRAM
CLOSED-COURSE OBJECTIVES



Also Presented Asynchronously

- Closed Course Objectives were also presented in Google Classroom
- Opportunity for the students to have more time to review the content of the instruction



The screenshot shows a Google Classroom interface for the course 'HEMS EMT Academy Spring 2022'. The assignment is titled 'Hot Wheels Closed Course Drivers Training' and is due on Jan 14. The assignment description states: 'Please complete the gamified assignment as set up at HEMS Training.' Below the description, there are six assignment items, each with a thumbnail image and a title:

- Alley Dock Closed Course (5... Image
- Parallel Park Closed Course ... Image
- Reverse Serpentine Closed ... Image
- Right Hand Turn Closed Cou... Image
- Welcome to the closed cour... Google Drawings
- IMG_4679.HEIC Image

At the bottom, there is a 'Class comments' section with a text input field labeled 'Add class comment...' and a submit button.

Welcome to the Hot Wheels Squid Game!

- Three teams
- Set up cones for course
- Learning each driving objective station
- Competition



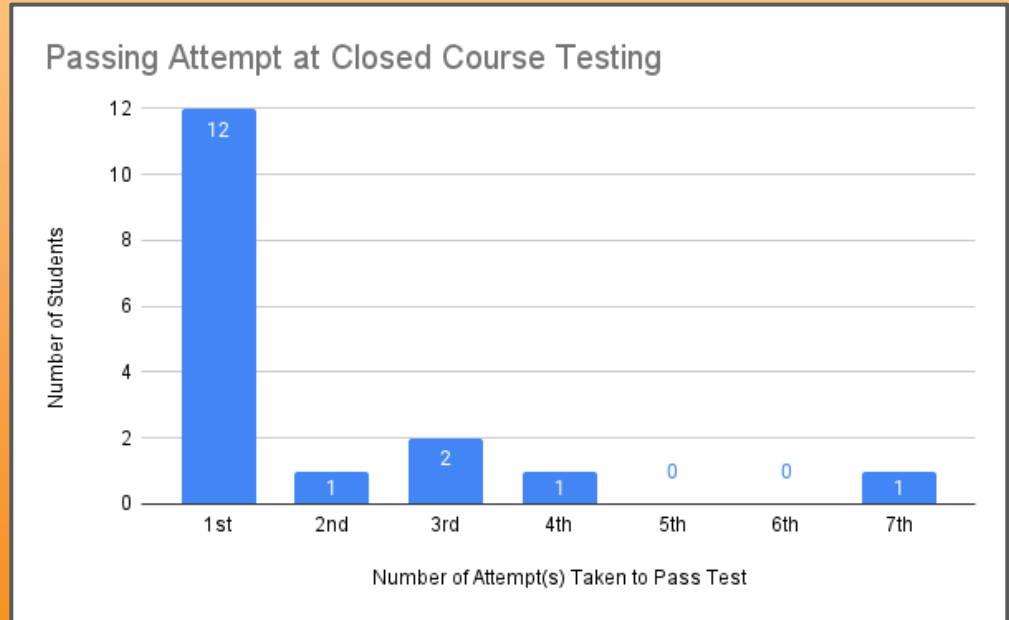
Prizes, Non-Prizes and The Macarena!

- Judged on both time and accuracy
- Small prizes such as extra 15 minutes for lunch or an extra turn on the fun high speed driving course
- One “fun” non-prize of the losing group having to sing and dance



Closed Course Test Results - Hot Wheels #2

Out of 17 students, 12 passed the closed course driving test on the 1st attempt.

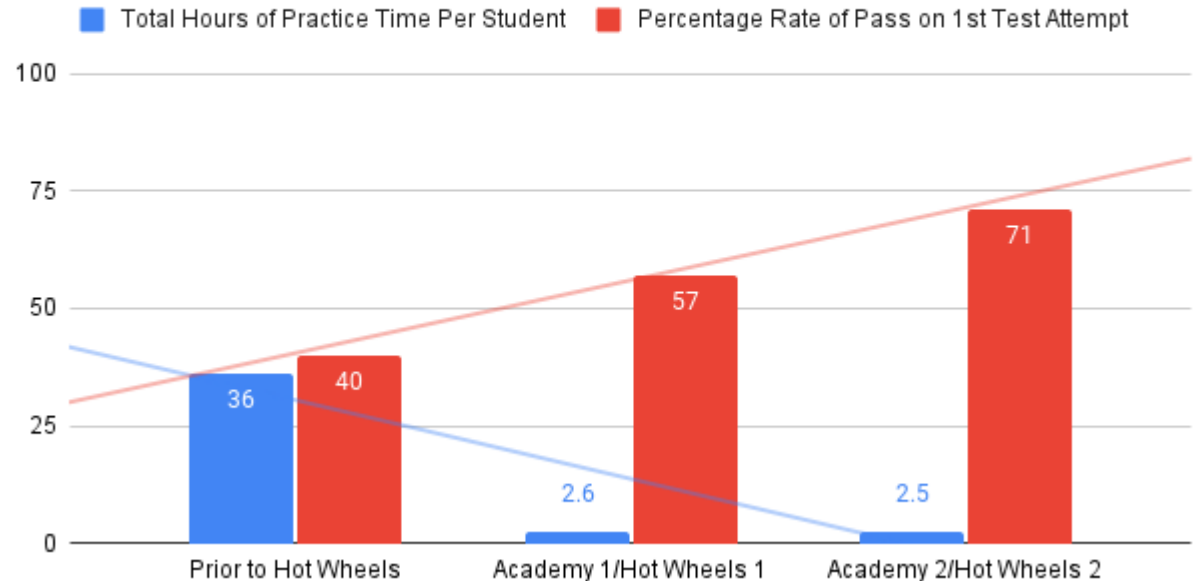


n=17

Comparison/Results

- Identical Closed Course set up.
- Markedly less practice drive time per student.
- Only change is in how the objectives were presented.

Total Hours of Practice Time Per Student and Percentage Rate of Pass on 1st Test Attempt



Lessons Learned

- Hot Wheels Unplugged provided important basic closed course driving objectives very well.
- Learning can still be effectively designed with very little resources.
- There can be novel ways to engage learners and create realism in low tech virtual instruction.
- Intentionally designed low tech “virtual reality” instruction actually improved real world driving assessment performance.
- Consider using unplugged activities as pre-training/visualization exercise

Conclusion

Unplugged activities ideal:

- for locations without computers/electricity/ internet access
- when learners' dislike technology
- as pre-training/visualization - [visualization & action interconnected](#)



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