**Lesson Plan Subject: Math and Science** (9th-12th grades)

**Lesson Focus:** Pedestrian Traffic **Time:** 30 min for intro and activity

 20 min for competition

**Guiding Question, Course/Grade Level Expectations, and SPI’s**  are included for 6th, 7th, and 8th grade Math and Science, Physical Science, Biology, Physics, Algebra 1, Algebra 2, and Geometry. (**See the** **Standards Tab.)**

**Materials:** Stopwatch or timer

 Graph paper

**Preparing the lesson:**

1. Divide students into small groups. (4-5 students)

2. Give stopwatch or timer to each group.

**Teaching the Lesson:**

Discussion:

1. When designing a roadway, motorists who fall into the 85th percentile are considered the “design model.” That means that only 15% of the motorists that use the roadway would be considered more hazardous. The population that cannot be considered in design are those drivers, who are intoxicated. The 85th percentile are basically young, inexperienced drivers or elderly.
2. When designing a roadway, you must also consider pedestrian and bicycle traffic. What are 4 types of pedestrians to consider?

ANS: Adults, Children, Handicapped, Elderly

 Activity 1:

* In your teams, use the tiles on the floor to measure in ft/sec the average pace that a person in each of these categories would walk. To do this, have a member of your team walk 10 ft like the average adult and time the event. Repeat, while walking as a child, then handicapped, then elderly.
* Record your times in ft/sec.
* Construct a bar graph of your data in ascending order.
* Record your data on the spreadsheet displayed on the board, overhead, or computer projector.

Sample data sheet:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Team** | **Adult** | **Elderly** | **Disabled** | **Child** |
| Clueless | 3.3 | 0.7 | 0.8 | 2.0 |
| Blue Monkeys | 2.7 | 1.0 | 1.2 | 1.7 |
| Red Raptors | 2.0 | 1.4 | 1.1 | 3.3 |
| Polo | 4.0 | 1.0 | 1.2 | 3.3 |
| Blue Eagles | 3.3 | 0.6 | 1.3 | 2.0 |
| Red Gorillas | 2.1 | 0.5 | 2.0 | 2.9 |
| Teacher group | 2.5 | 1.0 | 1.0 | 1.4 |

Discussion:

1. There are standards that the industry uses for these groups.

They are as follows:

* Adult 4.00
* Wheelchair 3.55
* Walker
* Elderly 2.8
* Children (generally more than adult, but varies by age)
1. Compare each group’s estimations to the standards.
2. Discuss pedestrian signals: Walking Man, Flashing Walking Man, Hand, Countdown signals

**Closing Activity:**

**Journal Writing:** Have students reflect on their method(s) of problem solving and communicating. How could they have improved their methods, communication, and accuracy?

**Extension:**  Continue with “Traffic Calming” Activity