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| **Lesson Plan:** |

**Prior learning and thinking:** Students have experienced what constant speed and "speeding up" feels like but they haven't put these concepts into scientific terminology. The basic mathematical concept they may have seen is the idea of a rate with no direction attached.

**Learning objectives**

The purpose of this first lesson is to tap into student's intuition of physics. The inquiry question looks at the concept of space and time. The goal is to have students decouple position from time.

**Big Ideas**

1. Describe, interpret, calculate, experiment, and graph relationships between displacement, velocity, and acceleration given a storyline

**PLOs**

**C6** explain the relationship of displacement and time interval to velocity for objects in uniform motion

**Skills developed to meet development goals**

1. Critical thinking skills
2. Collaborative skills

**Material and equipment needed**

- Class list

- Inquiry handout

- Goal setting sheet

- Self-directed learning rubric

- Relay race rules

**Assessment Plan:**

**Formative -** Inquiry questions discussed in class and worksheet handed in this class or next class

**Hook and Introduction**

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| **Time** | **Activity** | **Teaching notes** | **Assessment** |
| 15 min | * Introduction to class and the structure of the classes * Social expectations | * Introduce teacher candidate, learning outcomes, lesson structures, and assessment * They get sticky notes before class and can write expectations and stick on a poster sheet during/after class * Hand out goal setting sheet on skill development * Introduce their self-directed learning rubric that students for students to use as their own learning tool | * Goal setting handout - assessing own strengths, weaknesses, and steps to improve - self directed learning begins |

**Development**

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| **Time** | **Activity** | **Teaching notes** | **Assessment** |
| 10 min | * Video on relay races | * Show students the video: https://www.youtube.com/watch?v=nt38AsO7eXQ * Ask students to pay attention to the handovers * Brainstorm what did they noticed: handing over technique, second person started running before the baton was passed, they all passed the baton before a specific line | * Discussion about what they noticed |
| 50 min | * Group work: inquiry | * Hand students *The Physics of a relay race* and 4 x 100m Relay handoff package * Have students to work in groups of 3-4 * They have this time to brainstorm some ideas before they try this outside on their own time * Announce that they will have 20 mins max to work on it next class | * Walk around and check out what students are doing |

**Closure**

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| **Time** | **Activity** | **Teaching notes** | **Assessment** |
| 5 min | * Check in with the class | Ask the class how the groups are thinking through the problem. Check if they have any questions at this point. Make sure the class knows what to hand in for next class: Groups hand in 1 form with all their names at the end of next class. Their sheet should contain detailed step-by-step process how the baton exchange happens. If they wish, they can even try their plan, record their score, and see how close they are in reality. | **HWK**  1) Students will need to finish most of the proposal by the next class because they only get 20 mins to work on in. |