Woodcrest JHS 8th Grade Science Data Protocol

District: CVUSD	**School Site: Woodcrest JHS**
Course: Science 8	**Content Area: Unit 1 – Lesson 1 Describing Forces**

ESSENTIAL Standard

Working towards the accomplishment of:

By the end of the Unit, 60% of students will achieve complete mastery of MS-PS2-2.

MS-PS2-2: Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.

LEARNING TARGETS FOR PROFICIENCY

In this lesson, students will be able to:

- Students will be able to construct an explanation using reasoning that motion is a change in position relative to a reference frame.
- Students will be able to describe how balanced and unbalanced forces affect the motion of an object.

SMART GOAL

60% of students will achieve complete mastery of this standard. 100% of students who do not achieve complete mastery of this standard will MINIMUMLY be able to:

- 60% of students will be able to show mastery of LT1 and LT2 by the end of the Lesson.

SEQUENTIAL LEARNING PLAN

Days Allotted	I Can Statement…
Approx. 3 Days	I can construct an explanation that motion is a change in position relative to a reference frame.
Approx. 4 Days	I can describe how balanced and unbalanced forces affect the motion of an object.

ASSESSMENT

Mastery will be demonstrated through:

Students will demonstrate their mastery through a Microsoft Forms CFA.

REMEDIATION	ENRICHMENT
Students not demonstrating mastery will: • Students will be given additional guidance and practice for the LT that they did not meet. • LT #1:	**Students demonstrating mastery will:** • Students who demonstrated mastery of LT 1 **AND** LT2 will work in Minecraft to create a scene(s) that show the following: ○ 2 examples of balanced forces

○ If student scores a 2 or lower for LT 1, students will watch 1 EdPuzzle with direct instruction in "Live Mode" ○ Students will go through "Reference Frames" Remediation (6 PPT Slides using GIFs) ○ Students will do error analysis on their quiz. • LT #2: ○ If student scores a 2 or lower for LT 2, students will watch 1 EdPuzzle. ○ After watching video, students will complete "Learning Target #2 Remediation" assignment. Will review force problems as a class. ○ Students will do error analysis on their quiz.	○ 2 examples of unbalanced forces ○ 2 examples of using a reference frame to show motion or no motion ○ Students will use the book and quill or screenshots to explain their scenes and upload to One Note.

Based on the data, how does data differ classroom to classroom? (Here's what …)

- Looking at my data, it was clear that my Honors students did much better with 100% of the students meeting both Learning Targets.
- Looking at my General ED classes (Periods 1, 2, 3, and 5) the percentages of students meeting LT 1 and LT 2 were all similar. No major discrepancies. The data for each period can be found below – ***prior to retake:***
  - Period 1 → **LT #1** - 8 students (21%) and 30 students (79%) – **LT #2** – 12 students (32%) and 26 students (68%)
  - Period 2 → **LT #1** – 10 students (34%) and 19 students (66%) – **LT #2** – 6 students (21%) and 23 students (79%)
  - Period 3 → **LT #1** – 8 students (24%) and 26 students (76%) – LT #2 – 8 students (24%) and 26 students (76%)
  - Period 5 → **LT #1** – 9 students (27%) and 24 students (73%) – LT #2 – 7 students (21%) and 26 students (79%)
- **After the retake:**
  - Period 1 → **LT #1** - 2 students (5%) and 36 students (95%) – **LT #2** – 7 students (18%) and 31 students (82%)
  - Period 2 → **LT #1** – 2 students (7%) and 27 students (93%) – **LT #2** – 1 student (3%) and 28 students (97%)
  - Period 3 → **LT #1** – 4 students (12%) and 30 students (88%) – LT #2 – 2 students (6%) and 32 students (94%)
  - Period 5 → **LT #1** – 1 students (3%) and 32 students (97%) – LT #2 – 3 students (9%) and 30 students (91%)
- Overall, all of my classes experienced an increase in students who met LT #1 and #2. Providing two additional days did help students

What skill deficiencies do we see? (Common Errors, more time, how to provide additional support)

- When looking at the overall results, while many students met LT #1, only ~50% of students answered #4 on the CFA correct.
    - This was a common error because there was not many questions introduced to the class in that format. **Next year, students need to be introduced to this format type using sentence structures to help them construct their explanations.**
    - Students will complete the "Reference Frames" Remediation assignment prior to completing the CFA to allow for my practice.
    - During the relative motion portion of the lesson, get students up out of their seats and walking so they can physically see the reference frames they choose help determine motion/no motion.
- When looking at the results of LT #2, question #6 was the most answered incorrectly.
- With the 1st CFA and 2nd CFA, I used the same photo of the three scenarios with the dog, instead of posting all three just screen shot the one that I am referring to. Caused a lot of confusion amongst students.
- Students who had increased absences also struggled in meeting their LT's for this Lesson.
    - There was a lack of time and importance on "Types of Forces" – this is due to being out for 2 sub days. A lot of the focus was on adding and subtracting forces for students to be able to describe the motion of an object.
    - Place more emphasis on how "gravity" and "normal force" – **ADD NORMAL FORCE TO THE VOABULARY FOR NEXT YEAR.**
- Another deficiency I noticed was that students confuse force arrows pointing at the same object as the same direction.
- I was not able to jump ahead of the usual misconceptions due to my sub days – Thursday, 9/16 and Friday, 9/17.

What are the implications of this information? Which instructional strategies helped students learn? What skills did the proficient students demonstrate in their work that set their work apart? (So what?)

- Strategies that helped students understand LT #1:
    - GIF's were a HUGE help in understanding relative motion and reference frames. Look at using GIF's as a Warm Up at the beginning of each period to help out with meeting LT #1.
    - Students who met this Learning Target had a clear understanding of that reference frames help determine if **distance** is changing between two objects.
    - For my SpED students, utilize them getting up and walking around campus/classroom to allow them to identify reference frames.
- Strategies that helped students understand LT #1:
    - Practice, practice, practice.
    - Using Mentimeter to gauge where we are at as a class.
    - The "I do, We do, You do" method when it comes to being able add/subtract forces.
    - Creating a table for students to refer to what to do with same direction and opposite direction forces.

So, what's the plan? (Now what? Who? What? When?)

- Moving forward, I want to continue using these Learning Targets as Warmups for future lessons to make sure students retain the information. Doing this will allow for those students who did not meet the Learning Targets to still have the practice to prepare them for state tests.
- Adjust and make changes for next school year.
- Celebrate those who improved on meeting the Learning Targets for Lesson 1 using the CFA Retake.