Lesson Plan Template

Grade: 9th

Subject: Physical Science

Materials:

Technology Needed:

Instructional Strategies:

- Direct instruction
- Guided practice
- Socratic Seminar
- Learning Centers
- Lecture
- Technology integration
- Other (list)
- Peer teaching/collaboration/ cooperative learning
- Visuals/Graphic organizers
- PBL
- Discussion/Debate
- Modeling

Guided Practices and Concrete Application:

- Large group activity
- Independent activity
- Pairing/collaboration
- Simulations/Scenarios
- Other (list)
- Hands-on
- Technology integration
- Imitation/Repeat/Mimic

Explain:

Standard(s)

Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration. HS-PS2-1

Objective(s)

- **Know** what acceleration is and the three ways you can accelerate
- Be able to **interpret** an acceleration graph
- **Solve** an acceleration problem
- **Understand** the basics of centripetal acceleration

Bloom's Taxonomy Cognitive Level Know, Understand, Apply

Differentiation

Below Proficiency:
Ability to work in groups for assistance with problems

Above Proficiency:
Give them problems on centripetal acceleration to practice on

Approaching/Emerging Proficiency:
Worksheets and example problems will help reinforce information

Modalities/Learning Preferences:
Visual (graphs, equation circle)

Classroom Management- (grouping(s), movement/transitions, etc.)
Students may work in groups of 2-3 to complete acceleration example problems – transition will take place after we do an example together as a class

Behavior Expectations- (systems, strategies, procedures specific to the lesson, rules and expectations, etc.)
Students will maintain respect when working together

Minutes	Procedures
	Set-up/Prep: Have an acceleration power point up on the board Write velocity problem up on the board for them to do as a bell work type of problem Have chrome books out ready to use
5	**Engage: (opening activity/ anticipatory Set – access prior learning / stimulate interest /generate questions, etc.)** • Give students time to do velocity bell work question • Briefly introduce acceleration and then have students come up with examples on their own • Ask engaging questions: Can you think of an example of something changing speed?
10	**Explain: (concepts, procedures, vocabulary, etc.)** • Begin with what is acceleration? (change in velocity over time) talk about what that means • What are the three ways we can accelerate? • Give them the equation for acceleration (make sure they know the difference SI unit compared to velocity). – Where does the unit m/s^2 come from? (change in V = m/s and that is over s, so it is m/s/s or m/s^2) • Introduce the acceleration "circle" and equation • Put an acceleration graph on the board and go through what each section of the graph means (label the different slopes for what they are) – **Q: what is the difference between an acceleration graph and a velocity graph?**
	Explore: (independent, concrete practice/application with relevant learning task -connections from content to real-life experiences, reflective questions- probing or clarifying questions)

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10	• Do an example problem together – (give them a chance to try and then go over together) • Do simulation to show graphing in motion • Have students to graphing activity on their own
6	**Review (wrap up and transition to next activity):** • Introduce centripetal acceleration • Have students do a final example problem on their own (give 2 minutes)

Formative Assessment: (linked to objectives) **Progress monitoring throughout lesson- clarifying questions, check-in strategies, etc.** • Entrance and exit slip • Walk around while they work on problems and make sure they are understanding what is going on – ask questions **Consideration for Back-up Plan:** Use the white board if PowerPoint doesn't work Back up activity if more time:	**Summative Assessment (linked back to objectives)** **End of lesson:** **If applicable- overall unit, chapter, concept, etc.:**

Reflection (What went well? What did the students learn? How do you know? What changes would you make?):

I felt this lesson was one of the better ones I have taught so far. The students seemed fairly engaged, especially towards the beginning when I was able to ask some discussion questions. If I could do this again, I would try and have a physical example of acceleration to show the students, or allow them some work time with partner to give them a chance to get up and move around. Based on the exit slip answers, a lot of the students were able to grasp the concepts I wanted them to during the class period, which was to answer an acceleration questions, and give me an example of centripetal acceleration. It was a shortened class (only 29 minutes), so I did not have time to include everything that I wanted to, but now I know ways to condense material effectively for times when I might have another short lesson.