Westbury High School

Science Department Lesson Plan A merger of Madeline Hunter's Lesson Cycle and the 5-E Method of Instruction

Strategies, key concepts or questions

Теа	icher: C. Williams	Subject: Physics	
Dat	e: 03/23 - 03/27/2015	Lesson: Electrostatics	£ Electric Force
	LESSON OBJECTIVE: What will your students be a	ble to do by the end of the class	?
	Students will <u>investigate</u> electrical and magnetic Students will <u>calculate</u> the electric force between between electric and magnetic forces in everyda	objects and investigate the r	
Defining Success	 ESSENTIAL UNDERSTANDING/GUIDING QUESTION 1. What are charges? 2. What is electric current? 3. How does energy change in electric circuits? 4. What is OHM's Law? 5. How are power, circuit, potential difference and the second seco	?	related?
	STANDARDS ADDRESSED: TEKS, ELPs and CCF	:S's.	MISCELLANEOUS INFORMATION
			Marzano's

	SS AND SUPPORTING STANDARDS	Collaborative
S PHYS.5	C Describe and calculate how the magnitude of the electrical force between two objects depends on their charges and the distance between them.	Grouping
S PHYS.5	D Identify examples of electric and magnetic forces in nature.	Making
S PHYS.5	G Investigate and describe the relationship between electric and magnetic fields in applications such as generators, motors, and transformers.	hypothesizes
S PHYS.5	E Characterize materials as conductors or insulators based on their electrical properties.	How do I measure physical quantities
® PHYS.5	F Design, construct, and calculate in terms of current through, potential difference across, resistance of, and power used by electric circuit elements connected in both series and parallel combinations.	to be able to calculate the distance traveled, displacement,
PROCES	S SKILLS	speed and velocity
	3 Communicate and apply scientific information extracted from various sources such as current events, news reports, published journal articles and marketing materials.	of a moving object?
B PHYS.30	C Draw inferences based on data related to promotional materials for products and services.	
	 Express and interpret relationships symbolically in accordance with accepted theories to make predictions and solve problems mathematically including problems requiring proportional reasoning and graphical vector addition. Design and implement investigative procedures including making observations, 	
	asking well-defined questions, formulating testable hypotheses, identifying variables, selecting appropriate equipment and technology, and evaluating numerical answers for reasonableness.	
® PHYS.2F	Demonstrate the use of course apparatus, equipment, techniques, and procedures.	
	Use a wide variety of additional course apparatuses, equipment, techniques, materials, and procedures as appropriate.	
	I Make measurements with accuracy and precision and record data using scientific notation and International System (SI) units.	
© РПТЭ.2.	Organize and evaluate data and make inferences from data including the use of tables, charts, and graphs.	
® PHYS.21	Communicate valid conclusions supported by the data through various methods such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports.	
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	IPATORY SET: (<i>ENGAGE</i>): A "hook" to get the students interest and on. (A question, picture, 2-3 minute long video clip, a demonstration).	MATERIAL
M/T:	Do Now (Connected to previous homework - designed to engage	HUB
	incoming students quickly with today's academic content.)	 Resource
W/Th:	Do Now (Connected to previous homework - designed to engage	Activities
	incoming students quickly with today's academic content.)	SmartBoard™
Fr:	Do Now (Connected to previous homework - designed to engage	
	incoming students quickly with today's academic content.)	Meter sticks
	Checks for Understanding	Stopwatches
Oral /	Written Debrief Connect Correct Collect Student Leadership	Masking tape
TEAC	HING/INSTRUCTIONAL PROCESS: (EXPLORE/EXPLAIN): Provide	
studer	ts with a common experience (Labs, hands on activities). Debrief	Graph paper
	v, teach concept.	
M/T:	Activity - Students begin to explore essential question (In pairs, triads	Camera
	and quads, students debrief/teach concept facilitated by	Tennis ball
	teacher)	
W/Th:	Activity - Students begin to explore essential question (In pairs, triads	Logger Pro™
	and quads, students debrief/teach concept facilitated by	
_	teacher)	PPT
Fr:	Activity - Students begin to explore essential question (In pairs, triads	
	and quads, students debrief/teach concept facilitated by	Whiteboards
-	teacher)	
	Checks for Understanding	Dry Erase Marke
Oral /	Written Debrief Guiding / Essential Student Leadership	
	Questions	
	D PRACTICE AND MONITORING: (EXPLAIN). Interactive discussions	
	en teacher and students. Guide/help students as they solve problems	
and/or	answer questions. Clarify misconceptions and check for understanding.	
M/T:	Mini Lesson – Interactive Teacher-Student open discussion (facilitated	
	by multimedia, worksheets, and educational technology	
	tools) that validates student knowledge and skill and	
	uncovers and clarifies misconceptions and	
	misunderstandings. (Prepares students to produce	
	products)	
W/Th:	Mini Lesson – Interactive Teacher-Student open discussion	
	(facilitated by multimedia, worksheets, and educational	
	technology tools) that validates student knowledge and	
	skill and uncovers and clarifies misconceptions and	
	misunderstandings. (Prepares students to produce	
-	products)	
Fr:	Mini Lesson – Interactive Teacher-Student open discussion (facilitated	
	by, multimedia. worksheets, and educational	
	technology tools) that validates student knowledge and	
	skill and uncovers and clarifies misconceptions and	
	misunderstandings. (Prepares students to produce	
	products)	
INDEF	ENDENT PRACTICE: (<i>ELABORATE</i>) Students apply the information	
	d in the Explain to answer questions or solve problems.	

W/Th:	Student Product - Students apply knowledge and skills to an authentic task. (In pairs, triads and quads, students support each others learning – products are informally/formally assessed by teacher) Student Product - Students apply knowledge and skills to an authentic task. (In pairs, triads and quads, students support each others learning – products are	
Fr:	Student Product - Students apply knowledge and skills to an authentic task. (In pairs, triads and quads, students support each others learning.	
EVAL	UATE: Assess student mastery. (Quizzes, Lab Reports, Unit tests)	
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M/T:	Assessment - Students products are assessed for mastery informally and formally by teacher (Completion of activity sheet, presentation, and/or exit ticket)	
	and formally by teacher (Completion of activity sheet,	

Westbury High School Science Department Lesson Plan

A merger of Madeline Hunter's Lesson Cycle and the 5-E Method of Instruction

Subject: Physics

Teacher: C. Williams **Date:** 03/30 -04/03/2015

Defining Success

5 Lesson: Electric Force & Magnetism

LESSON OBJECTIVE: What will your students be able to do by the end of the class?

The focus of this unit is on investigating characteristics and behaviors of longitudinal waves such as sound waves.

ESSENTIAL UNDERSTANDING / GUIDING QUESTIONS:

- 1. What are charges?
- 2. What is electric current?
- 3. How does energy change in electric circuits?
- 4. What is OHM's Law?
- 5. How are power, circuit, potential difference and resistance mathematically related?

STANDARDS ADDRESSED: TEKS, ELPs and CCRS's.

MISCELLANEOUS INFORMATION Marzano's Strategies, key concepts or questions

 S PHYS.5C Describe and calculate how the magnitude of the electrical force between two objects depends on their charges and the distance between them. S PHYS.5D Identify examples of electric and magnetic forces in nature. S PHYS.5G Investigate and describe the relationship between electric and magnetic fields in applications such as generators, motors, and transformers. S PHYS.5E Characterize materials as conductors or insulators based on their electrical properties. R PHYS.5F Design, construct, and calculate in terms of current through, potential difference across, resistance of, and power used by electric circuit elements 	Collaborative Grouping Making hypothesizes How do I measure physical quantities to be able to calculate the distance traveled,
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fields in applications such as generators, motors, and transformers. S PHYS.5E Characterize materials as conductors or insulators based on their electrical properties. R PHYS.5F Design, construct, and calculate in terms of current through, potential	hypothesizes How do I measure physical quantities to be able to calculate the distance
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PHYS.5F Design, construct, and calculate in terms of current through, potential	be able to calculate the distance
	the distance
difference across, resistance of, and power used by electric circuit elements	
	Travelen
connected in both series and parallel combinations.	displacement, speed
	and velocity of a
PROCESS SKILLS	moving object?
B PHYS.3B Communicate and apply scientific information extracted from various sources	
such as current events, news reports, published journal articles and marketing materials.	
PHYS.3C Draw inferences based on data related to promotional materials for products and services.	
PHYS.3F Express and interpret relationships symbolically in accordance with accepted theories to make predictions and solve problems mathematically including	
problems requiring proportional reasoning and graphical vector addition.	
PHYS.2E Design and implement investigative procedures including making observations, asking well-defined questions, formulating testable	
hypotheses, identifying variables, selecting appropriate equipment and	
technology, and evaluating numerical answers for reasonableness.	
PHYS.2F Demonstrate the use of course apparatus, equipment, techniques, and procedures.	
PHYS.2G Use a wide variety of additional course apparatuses, equipment, techniques, materials, and procedures as appropriate.	
PHYS.2H Make measurements with accuracy and precision and record data using scientific notation and International System (SI) units.	
PHYS.2J Organize and evaluate data and make inferences from data including the use of tables, charts, and graphs.	
BPHYS.2K Communicate valid conclusions supported by the data through various	
methods such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports.	
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M/T:	Do Now (Connec	ted to previous homework	- designed to engage	HUB
		g students quickly with toda		Resource
W/Th:		cted to previous homework		Activities
		ng students quickly with tod)
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	incontin		ay o acadonno contont.	Stopwatches
		Checks for Understandi	na	
Oral	/ Written Debrief	Connect Correct Collec	<u> </u>	Masking tape
		ONAL PROCESS: (EXPL		de Graphi paper
		experience (Labs, hands o	on activities). Debrief	Camera
	y, teach concept.			
M/T:		ts begin to explore essentia		lds Logger Pro™
		ads, students debrief/teach	concept facilitated by	
	teacher	/		Multimedia
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		ads, students debrief/teach	concept facilitated by	Whiteboards
_	teacher	,		
Fr:		ts begin to explore essentia		ads Dry Erase Marke
		ads, students debrief/teach	concept facilitated by	
	teachei	r)		
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Oral /	/Written Debrief	Guiding / Essential	ng Student Leaders	hip
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Westbury High School Science Department Lesson Plan

A merger of Madeline Hunter's Lesson Cycle and the 5-E Method of Instruction

Subject: Physics

Teacher: C. Williams **Date:** 04/06 - 10/2015

Defining Success

Lesson: Electric Circuits

LESSON OBJECTIVE: What will your students be able to do by the end of the class?

Students will design, construct, and analyze series and parallel circuits using calculations for potential difference, resistance, and power by electric circuit elements.

ESSENTIAL UNDERSTANDING / GUIDING QUESTIONS:

1. What are the characteristics of series and parallel circuits?

- 2. How are currents, potential differences and equivalent resistances in series circuits related?
- 3. How are currents, potential differences and equivalent resistances in parallel circuits related?

STANDARDS ADDRESSED: TEKS, ELPs and CCRS's.

MISCELLANEOUS INFORMATION Marzano's Strategies, key concepts or questions

 READINESS AND SUPPORTING STANDARDS SECUTION OF ADDARDS SECUTION OF 	Collaborative Grouping
 PHYS.5F Design, construct, and calculate in terms of current through, potential difference across, resistance of, and power used by electric circuit elements 	Making hypothesizes
connected in both series and parallel combinations. PROCESS SKILLS	How do I measure
PHYS.2E Design and implement investigative procedures including making observations, asking well-defined questions, formulating testable hypotheses, identifying variables, selecting appropriate equipment and technology, and evaluating numerical answers for reasonableness.	physical quantities to be able to calculate the distance traveled,
 PHYS.2F Demonstrate the use of course apparatus, equipment, techniques, and procedures. PHYS.2G Use a wide variety of additional course apparatuses, equipment, techniques, 	displacement, speed and velocity of a moving object?
materials, and procedures as appropriate. PHYS.2H Make measurements with accuracy and precision and record data using scientific notation and International System (SI) units.	
 PHYS.2J Organize and evaluate data and make inferences from data including the use of tables, charts, and graphs. PHYS.2K Communicate valid conclusions supported by the data through various 	
methods such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports.	

allentic	IPATORY SET: (<i>ENGAGE</i>): A "hook" to get the students interest and on. (A question, picture, 2-3 minute long video clip, a demonstration).	MATERIAL
M/T :	Do Now (Connected to previous homework - designed to engage incoming	SmartBoard™
	students quickly with today's academic content.)	Constant veloo
w/in:	Do Now (Connected to previous homework - designed to engage incoming	cars (Tumble
-	students quickly with today's academic content.)	Buggies)
Fr:	Do Now (Connected to previous homework - designed to engage incoming	
	students quickly with today's academic content.)	Meter sticks
	Checks for Understanding	Stopwatches
Oral /	Written Debrief Connect Correct Collect Student Leadership	-
TEAC	HING/INSTRUCTIONAL PROCESS: (EXPLORE/EXPLAIN): Provide	Masking tape
	ts with a common experience (Labs, hands on activities). Debrief activity,	
	concept.	Graph paper
	Activity - Students begin to explore essential question (In pairs, triads and	Comoro
	quads, students debrief/teach concept facilitated by teacher)	Camera
W/Th·	Activity - Students begin to explore essential question (In pairs, triads and	Tennis ball
•••	quads, students debrief/teach concept facilitated by teacher)	
Fr:	Activity - Students begin to explore essential question (In pairs, triads and	Logger Pro™
	quads, students debrief/teach concept facilitated by teacher)	
		PPT
	Checks for Understanding	
Orol /	Written Debrief Guiding / Essential Questions Student Leadership	Whiteboards
	ED PRACTICE AND MONITORING: (EXPLAIN). Interactive discussions	Dry Erase
	en teacher and students. Guide/help students as they solve problems and/or	Marker
	r questions. Clarify misconceptions and check for understanding.	
M/T:	Mini Lesson – Interactive Teacher-Student open discussion (facilitated by	
		Launcher
	multimedia, worksheets, and educational technology tools)	Launcher Water Balloo
	multimedia, worksheets, and educational technology tools)	Water Balloo
	multimedia, worksheets, and educational technology tools) that validates student knowledge and skill and uncovers and	Water Balloo
	multimedia, worksheets, and educational technology tools) that validates student knowledge and skill and uncovers and clarifies misconceptions and misunderstandings. (Prepares	Launcher Water Balloo Tape Measure
W/Th:	multimedia, worksheets, and educational technology tools) that validates student knowledge and skill and uncovers and clarifies misconceptions and misunderstandings. (Prepares students to produce products)	Water Balloo
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M/T:	11 7 5	
	task. (In pairs, triads and quads, students support each	
	others learning – products are informally/formally	
	assessed by teacher)	
W/Th:	Student Product - Students apply knowledge and skills to an authentic	
	task. (In pairs, triads and quads, students support each	
	others learning – products are informally/formally	
	assessed by teacher)	
Fr:	Student Product - Students apply knowledge and skills to an authentic	
	task. (In pairs, triads and quads, students support each	
	others learning.	
	others learning.	
EVAL	UATE: Assess student mastery (Quizzes Lab Reports Unit tests)	
EVAL	UATE: Assess student mastery. (Quizzes, Lab Reports, Unit tests)	
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EVAL M/T:	Assessment - Students products are assessed for mastery informally and	
	Assessment - Students products are assessed for mastery informally and formally by teacher (Completion of activity sheet,	
M/T :	Assessment - Students products are assessed for mastery informally and formally by teacher (Completion of activity sheet, presentation, and/or exit ticket)	
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