Republic of the Philippines
Department of Education
Region VII-Central Visayas
DIVISION OF CEBU PROVINCE
Sudlon, Lahug, Cebu City

Office of the Schools Division Superintendent

November 3, 2021

DIVISION MEMORANDUM
No. 470 , s. 2021

GAD-BASED FACE TO FACE DIVISION TRAINING-WORKSHOP OF SUB- OFFICES AND ISLAND CLUSTER DISTRICT TRAINERS IN SECONDARY ON THE PROPER USE, HANDLING AND CARE OF SCIENCE EQUIPMENT AND APPARATUSES

To: Assistant Schools Division Superintendents
Chief, CID
Public Schools District Supervisors/OICs

1. This Office announces the conduct of the **GAD-Based Face to Face Division Training-Workshop of Sub-Offices and Island Cluster District Trainers in Secondary on the Proper Use, Handling and Care of Science Equipment and Apparatuses** on November 15, 16, 17,18 & 19, 2021 (Day 0 to Day 4) at Ecotech Center, Sudlon, Lahug, Cebu City.

2. The conduct of this training aims to equip the science teacher-participants with the knowledge and skills in the proper use, handling and care of the delivered packages of science equipment, materials and apparatuses.(Pls. see attached matrix)

3. This training requires all the participants (trainers, teachers, staff and nurses) to come on Day 0 to undergo the Anti-Gen test before the start and after the training or on Day 4, packed dinner will be served. There should be strict observance of IATF/Health standards and protocols. The trainers and participants have to wear masks and face shields during the session and not allowed to go out the vicinity with-in the duration of the training to ensure the safety of the participants from COVID19.

4. Required to attend are selected secondary teachers with majors in **Earth Science, Biology, Chemistry and Physics** per sub-office and island cluster municipalities preferably undergone first dose vaccination/full vaccination the better, and capable of conducting the echo-training in the respective cluster districts/municipalities per sub-office where the district belongs and four nurses from the division office to strictly monitor the health status of the participants and the implementation of standard health protocols while the training is going on. These teachers are expected to conduct the echo training in the respective cluster districts per sub-office/Island cluster where their districts belong adhering the IATF protocol and health standards to ensure safety as required.

Hereto attached is the list of districts by sub-office and island clusters with the number of participant (Pls. see enclosure "A")

5. PSDSs/ Central School Principals are requested to facilitate the selection of the participants to attend by Sub-Office and by Island Cluster District. The participants are to bring the identified science equipment, materials and apparatuses. (Pls. see enclosure "B"). It is suggested that the assignment of science equipment/apparatuses and materials will be distributed for the division of labor and responsibility of the safekeeping.

6. This Memorandum serves as **Travel Authority** of the participants, staff, nurses and Education Program Supervisor in Science. Traveling expenses of the participants from the field, shall be chargeable against local school MOOE Funds, while the Anti-Gen Tests, meals, accommodation, materials, and the venue and other related expenditures shall be chargeable against Division GAD Funds, subject to their availability and the usual accounting and auditing rules and regulations

7. Immediate dissemination of and compliance with this Memorandum is directed.

MARILYN S. ANDALES EdD, CESO V
Schools Division Superintendent

Address: DepEd Cebu Province, IPHO Bldg., Sudlon, Lahug, Cebu City
Telephone Nos.: 032-2556405
Email Address: cebu.province@deped.gov.ph ; depedcebuprovince@yahoo.com
Website: www.depedcebuprovince.com

GAD-BASED DIVISION TRAINING-WORKSHOP OF SUB-OFFICES AND ISLAND CLUSTER DISTRICT TRAINERS IN SECONDARY ON THE PROPER USE, HANDLING AND CARE OF SCIENCE EQUIPMENT AND APPARATUSES

DATE: NOVEMBER 15 TO 19, 2021 (Day 0 to Day 4)

VENUE: Ecotech Center, Lahug, Cebu City

Day/Time	8:00-8:30	8:00-10:00	10:00-12:00	12:00-1:00	1:00-3:00	3:00-5:00
Day 1	Opening Program	Plenary 1 Overview of Activities Laboratory safety, management Measurement and Significant Figures	Plenary 2 Organization Stationing of Brought Materials per Domain per room	LUNCH BREAK	Split Session 1 I-Landforms, Volcanoes II- Compound Microscope cleaning and repair III-Proper Chemical Storage IV-Free Fall and Air Resistance, Free Fall Using Strobe	Split Session 2 I- Motion I-Uniform Motion II-The Compound Microscope III-Measurements; Mystic Layers IV-Faraday's Law of Induction
DAY 2	Management of learning	Split Session 3 I-Motion II-Accelerated Motion II- Observing Leaf Stomata III-Operation and Application of the Bunsen Burner IV-Ohm's Law	Split Session 4 I-Motion III-Free Fall Motion II- Plant and Animal Cells III-Flame Test; Heat Conductivity of Metals IV- Electric Currents and Magnetic Fields		Split Session 5 I-Measuring Voltages in Series/Parallel II-Plasmolysis on Plant Cells III-High and Low Pressure, Conductivity of Substances IV-Newton's 3 laws of motion	Split Session 6 I-Measuring Currents in Series/Parallel II-Exploring Lichens, Yeast Budding III-Charles' Law; Diffusion of Gases Avogadro's Law IV-Newton's 3 laws of motion
DAY 3	Management of learning	Split Session 7 I-Electronic Pocket Scale, Hand Lens II-Plant Chromatography III-Preparation of Solutions IV-Friction, Pulleys, Lever	Split Session 8 I-Measuring Time, Distance, Volume II- CO_2 and Photosynthesis Sunlight and Photosynthesis III-Acid base Titration; Acids, Bases, and pH (Part I) IV-Electric generator, motor, transformer		Split Session 9 I-Thermocline Apparatus, Desk Lamp II-The macromolecules of Life III-Acids, Bases, and pH (Part II) Osmosis IV-Ripple Tank, slinky	Split Session 10 I-Telescope Assembly II-Osmosis in Potato III-Molecular Modelling, VSEPR Inorganic/Organic, Atomic Structure of the First Ten Elements IV-Focal length of lenses and mirrors
DAY 4	Management of learning	Split Session 11 I-Telescope Adjustment II-Enzyme Assay III-Types of Chemical Reactions; Heat of Fusion IV-Diffraction Grating, halogen lamp	Split Session 12 I-Telescope Troubleshooting II-Animal Tissues III-Basic Distillation; Electrolysis IV-Sound Resonance		Split Session 13 Basic troubleshooting of malfunctioning equipment, Basic repair and maintenance	Plenary 3 Evaluation Clearing house CLOSING PROGRAM

GROUPS:

I - Earth and Space and Junior High Physics
II - Biology
III-Chemistry
IV-Physics

Enclosure A

GAD-Based Division Training-Workshop of Sub-Offices and Island Cluster District Trainers in Secondary on the Proper Use, Handling and Care of Science Equipment & Apparatuses

Date: November 15, 16, 17, 18 & 19, 2021 (Day 0 to 4)

Venue: DepEd Ecotech Center, Sudlon, Lahug, Cebu City

NO.	DISTRICT	NAME OF PSDS	NO. OF PARTICIPANTS
		SAN FERNANDO SUB-OFFICE	
1	MINGLANILLA I	DANILO MANGUILIMOTAN	8
2	MINGLANILLA II	IVO VILLORDON	
3	SAN FERNANDO I	JOEL UMBAY	
4	SAN FERNANDO II	JOEL UMBAY	
5	SIBONGA	JOSEPHINE DIAPANA - OIC	
		BADIAN SUB-OFFICE	
6	GINATILAN	VICENTE TOLOMIA	16
7	MALABUYOC	ROMEO MEJIA	
8	ALEGRIA	VICTORIANO BORLA	
9	BADIAN	MINERVA ZOZOBRADO	
10	MOALBOAL	DELIA ALOCILLO	
11	ALCANTARA	ELIZABETH ARMAMENTO	
12	RONDA	ARTUDIO LUMAPAY	
13	DUMANJUG I	EDUARDO LASALA	
14	DUMANJUG II	PATERNO DANDAN	
		DALAGUETE SUB-OFFICE	
15	ARGAO I	IMELDA GEALON	16
16	ARGAO II	JENELYN CRASTE	
17	DALAGUETE I	CECILIA CARTILLA	
18	DALAGUETE II	EDUARDO LUMAYAG	
19	ALCOY	WILLIE ADONAY	
20	BOLJOON	CELIETA YABO	
21	OSLOB	JOSE GLENN NIERE	
22	SANTANDER	ELIAS CONCHA	
23	SAMBOAN	ROMEO MEJIA	
		BALAMBAN SUB-OFFICE	
24	BARILI I	GLADYS BALAGTAS	16
25	BARILI II	CLOVER REDULA	
26	ALOGUINSAN	MARYBEL REVILLA	
27	PINAMUNGAJAN I	FLORENCIA LABANG	
28	PINAMUNGAJAN II	CATALINA AVILA	
29	BALAMBAN I	NENITA JARALVE - OIC	
30	BALAMBAN II	ELI CARMELOTES	
31	ASTURIAS NORTH	JOEL BUROG	
32	ASTURIAS SOUTH	CRISTOPHER PIODOS	
33	TUBURAN I	LORNA SOCO	
34	TUBURAN II	LORNA SOCO	
		LILOAN SUB-OFFICE	
35	BORBON	OMEGA SOL	
36	SOGOD	BELEN PUGOY	

37	CATMON	GLICERIO CAMONGAY	16
38	CARMEN	RICHARD ACASO	
39	COMPOSTELA	SAMUEL PONCE	
40	LILOAN	PRISCILLA CACANOG	
41	CONSOLACION I	REMEDIOS LUPO	
42	CONSOLACION II	RAUL JUMAO-AS	
43	CORDOVA	ARNULFO COMPUESTO	
MEDELLIN SUB-OFFICE			
44	TABUELAN	TONY APLACADOR	12
45	SAN REMIGIO I	LANI ARCILLA	
46	SAN REMIGIO II	OSCAR PESTANO JR.	
47	DAANBANTAYAN I	VIRGINIA JUBIAR	
48	DAANBANTAYAN II	EVA CASINILLO	
49	MEDELLIN	NENITA ABELLO	
50	TABOGON	ROWENA BRIAN	
CAMOTES ISLAND CLUSTER			
51	SAN FRANCISCO	EDWINA CAMPOMAYOR	4
52	TUDELA	MERCEDITA ARQUILLANO	
53	PORO	ABBIE BARNES	
54	PILAR	ELEONOR OMOLON	
BANTAYAN ISLAND CLUSTER			
55	SANTA FE	CLEOFE PAPANGO	4
56	BANTAYAN I	CHLOE GARRUCHA	
57	BANTAYAN II	ANNABELLE ALOB	
58	MADRIDEJOS	VICTORIA SANTILLAN	
TOTAL NO. OF PARTICIPANTS			**92**

July 13, 2021

Republic of the Philippines
DEPARTMENT OF EDUCATION
Bureau of Learning Resources
Ecotech Compound, Sudlon, Lahug, Cebu City

LIST OF EQUIPMENT AND CONSUMABLES FOR CEBU PROVINCE HIGH SCHOOL TEACHERS' TRAINING LIVING THINGS AND THEIR ENVIRONMENT DOMAIN

HANDS-ON ACTIVITIES	CG CODE	EQUIPMENT (GOOD FOR 6 GROUPS of 7 participants)			MATERIALS TO BE BROUGHT BY THE TEACHER	CONSUMABLES		
1. The Compound Microscope Cleaning and Repair								
2. The Compound Microscope	S7LT-IIa-1; b-2	30	units	Compound Microscope	3 pcs Texbooks/Reference books	12	rolls	Tissue Paper
3. Plant and Animal Cells	S7LT-IId-4	12	sets	Dissecting Set with pan	1 pc Ruler	1	pack	Toothpick, pointed
4. Plasmolysis on Plant Cells	S7LT-IId-4	12	pcs	Graduated cylinder, 10 mL.	1 pc Pencil	3	bot	Denatured alcohol
5. Observing Leaf Stomata	S9LT-Ig-j-31	12	pcs	Graduated cylinder, 100 mL.	1 set Precision Tools (Flat & cross screw drivers)	6	bot	Ethyl alcohol, 100 mL
6. Yeast Budding	S7LT-IIg-7	6	units	Triple beam balance	4 pages Old newspaper	6	bot	Distilled water, 1 Liter
7. Exploring Lichens	S7LT-IIh-10	72	pcs	Test tube, 16 x 150mm		6	pcs	Brown paper (supot)
8. Plant Chromatography	STEM_BIO11/12 -Ia-c-2 STEM_BIO11/12 -IIa-j-3	24	pcs	Rubber stoppers for test tube		1	can	Evaporated milk, small
9. CO2 and Photosynthesis	S9LT-Ig-j-31	6	pcs	Test tube brush		1	pc	Margarine, small pack
10. Sunlight and Photosynthesis	S9LT-Ig-j-31	6	pairs	Petri dishes	**Per group requirement:**	6	pcs	Soda cracker
11. Osmosis in Potato	STEM_BIO11/12 -Ig-h-13	6	sets	Mortar and Pestle	*1. Rheo discolor (Bangkabangkahan)- Day 2*	6	rolls	Masking tape, 1/2" width
12. The Macromolecules of Life	STEM_BIO11/12 -Ii-j-15	6	pcs	Hand lens	2. Any terrestrial plant w small leaves - Day 2	3	bxs	Match, small
13. Enzyme Assay (Amylase on Starch)	STEM_BIO11/12 -Ii-j-19	12	pcs	Beaker, 250 mL	3. Lichens specimen - Day 2	2	sheet	Filter paper, 24" x 24"
14. Animal Tissues	STEM_BIO11/12 -Ia-c-4	6	pcs	Funnel	4. Leaves of different colors (10g/group) - Day 3	1	pack	Salad cups with cover, small, 25's/pk
		24	pcs	Beral Pipette (and or Medicine dropper)	5. 2 pcs empty mineral water bottle - Day 3	12	sachet	Powder detergent

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HANDS-ON ACTIVITIES	CG CODE	EQUIPMENT (GOOD FOR 6 GROUPS of 7 participants)	MATERIALS TO BE BROUGHT BY THE TEACHER	CONSUMABLES
		6 pcs Alcohol Thermometer		1 pack Chewing gum
Mam Juv, are these equipment delivered		6 pcs Test tube rack		12 pcs Cloth rag
to your schools? If so, I can include them		12 pcs Stand Support*		8 bxs Glass slide, 72's/box
during the training:		6 pcs Stand Base*		8 bxs Glass Cover slips, 100's/box
		6 pcs Stand rod, 500 mm*		250 grams Table sugar
Animal and Plant Cell Models	S7LT-IId-4	6 pcs Stand rod, 250 mm*		500 grams Table salt
Mitosis and Meiosis	S8LT-IVd-16	6 pcs Universal clamp*		6 pack Cotton buds, 100 tips
Human Torso, big	S8LT-IVa-13	6 pcs Universal bosshead*		6 booklets Lens paper, 100's
	S9LT-Ia-b-26	6 pcs Wire gauze		18 pcs Plastic transparent cups
	S10LT-IIIa-33	6 pcs Tripod		18 pcs Rubber band
	S11/12LT-IIIa-j-21	12 pcs Stirring rod		24 pcs Plastic transparent bags
		6 sets Cork Borer		6 pcs Marking pen, black
		12 pcs Goggles		12 pairs Surgical gloves
				1 pack Trash bag, medium size, 10's
		* from Scikit Basic		**6 boxes Crayons, 8's**
				6 pcs Carbon paper
				3 packs Baker's Yeast, 5 g
Joy's assignment:				
1 sht Letter "e" in acetate				**Per "On the day" requirement**
enough Metal pellets or coins				6 pcs Onion bulb, very red (Day 2)
50 pcs Lens opener				6 pc Bread (Day 3)
12 pcs Drinking straw				6 pcs Potato (Day 3)
1 sachet Cooking Oil				12 pcs Fresh chicken wings (Day 4)
Prepared by:				
JOCELYN D. GARCIANO				
Science Research Specialist II				

Living Things & their Environment.

4 (6)

NOTE: PSDSs/LEAD SECONDARY SCHOOL PRINCIPALs ARE REQUESTED TO FACILITATE IN IDENTIFYING THE PARTICIPANTS BY SUB-OFFICE/ ISLAND CLUSTER DISTRICTS TO MEET THE REQUIRED NO. OF PARTICIPANTS FOR SECONDARY, DIVISIBLE BY 4 (WITH MAJORS IN EARTH SCIENCE, BIOLOGY, CHEMISTRY AND PHYSICS) TO ATTEND THE TRAINING.PLS. TAKE NOTE OF THE TOTAL NO, OF PARTICIPANTS PER SUB-OFFICE/CLUSTER. EACH SUB-OFFICE AND EACH ISLAND CLUSTER DISTRICT NEED TO ASSIGN DITRICTS TO BRING THE SCIENCE EQUIPMENT/MATERIALS FOR THE DIVISION OF LABOR. THANK YOU !

PHYSICS MATERIALS/EQUIPMENT TO BRING GOOD FOR 1 GROUP

Several materials are repeated in different activities. Only pick once but select the activity that requires the most quantity. Example the item spring balance appears in FRICTION as 1-spring balance. It also appears in NEWTON'S THIRD LAW as 2-spring balance. You will pick the 2-spring balance. They are the same spring balance in the activities that require them.

However, since there are 5 groups that will need the spring balance you will multiply 2 spring balance by 5. That makes 10 spring balance.

Free Fall and Air Resistance

1 vacuum tube
1 stopwatch
1 manual vacuum pump
1 one peso or five peso coin
1 object to simulate feather (strip of paper 2 cm x 5 cm cut into feather form)

Free Fall and Strobe

1 stroboscope unit
1 digital meter with frequency counter (if stroboscope unit does not have frequency display)
1 digital camera (phone or dedicated)
1 meter tape
1 tennis ball
1 PC (desktop or laptop)
1 dark room

Faraday's Law of Induction

1 spool magnet wire
2 wooden blocks
1 galvanometer
2 bar magnets

Ohm's Law

1 fix resistor, 1000 ohms
2 multi meter, digital
3 dry cells, 1.5 volts, size D
1 potentiometer
3 dry cell holders
7 wire connectors

Electric Currents and magnetic Fields

2 meters magnet wire
2 banana-alligator clip connectors, black
2 dry cells, 1.5 volts, size D w/ holders
2 banana-alligator clip connector, red
6 magnetic compass
1 bulb w/holder
1 insulated copper wire #14, 10 cm long
3 wooden blocks
1 switch
1 acetate, A4 size

Newton's First Law of Motion

2 stand bases
2 rails (rods undersized on ends)
1 leveling pad
1 dynamics cart w/o spring
1 stopper wheel
1 crochet string, 1 m long
1 bar modeling clay

Newton's Second Law of Motion

1 dynamics cart (w/o spring)
1 electronic digital stopwatch
2 stand bases
2 rails (rods undersized on ends)
1 leveling pad
1 stopper wheel
5 disk masses, 50 grams each
5 ring masses, 3 grams each
1 string, approx. 80 cm long
1 meter tape
1 piece modeling clay (friction clay)
1 single pan balance
1 piece plastic hose, 2 meters

Newton's Third Law of Motion

2 spring balances, (combination of 5 N and 10 N or both 5 N or both 10 N)

1`-9.5 mm x 250 mm rod

2 multi clamps

Momentum

2 stand bases
1 leveling pad
2 rails (rods undersized on ends)
2 dynamics carts (Cart 1-with spring; Cart 2-without spring)
5 - 50-g cylindrical masses
1 stand rod, 9.5 mm x 250 mm
1 plastic hammer
1 hose level

Factors Influencing Friction Force

1 spring balance, 5 N or 10 N
1 friction board
1 friction block
2 hooked masses, 250 g

Pulleys

1 stand base
2 stand supports
1 multi clamp
1 stand rod, 12.7 x 1000 mm
1 stand rod, 9.5 x 250 mm
1 stand rod, 9.5 x 500 mm
1 meter tape
2 double pulleys
1 spring balance, 5N
2 hooked masses, 500 g
2 pcs string (thick), 2 m

Lever Principle

1 stand base
2 stand support
1 stand rod, 500mm
1 stand rod, 250mm
1 multiclamp
1 lever beam
1 beam axle
1 spring balance, 5N or 10 N
1 hooked mass, 250 g–Experiment A
1 hooked mass, 500 g–Experiment B

The Electric Generator and Motor

1 motor/generator model
4 dry cells, 1.5 volts, size D
1 bulb with holder
2 connecting wires
4 dry cell holders, size D
DC voltmeter

The Electric Transformer Principle

1 dry cell, 1.5 V, size D
1 set of coils (750, 1500 turns)
5 connecting wires
1 dry cell holder, size D
1 set U-I iron core
1 switch
1 bulb with holder

Step-up versus Step-down Transformer

1 AC-DC power supply (1 unit is to be shared by 5 groups)
1 set of coils (750, 1500 turns)
7 connecting wires (any color)
1 terminal board
2 multi meter, digital
1 knife switch

Properties of Transverse Waves

ripple tank set

1 ruler/meter stick

Focal Length of a Convex Lens

1 double convex lens

1 scientific/graphing calculator

1 optical bench set *(1 meter scale, 1 pair support, 1 screen with holder, 1 lens holder, 1candle with holder)*

Focal Length of a Concave Mirror

1 concave mirror

1 30-cm ruler

1 scientific/graphing calculator

1 optical bench set (*1 meter scale, 1 pair support, 1 screen w/holder, 1 lens/mirror holder, 1 candle w/holder*)

Diffraction of Light

1 diffraction grating set

(1 single slit, 1 double slit, 1-50 lines/mm grating, 1-100 lines/mm grating, 1-300 lines/mm grating, 1-600 lines/mm grating)

1 laser light

1 meter stick

1 white screen (your white wall will do as screen)

Standing Waves and Speed of Sound in Air (DRAFT)

1 resonance tube with pair of stands

1 sound signal generator

2 connecting wires (banana type)

1 variable power supply

1 meter tape

1 loudspeaker

1 laboratory alcohol thermometer (to be borrowed from chemistry class)

List of Materials for Matter (Elementary & HS)

Item Number	Item Name	Quantity
1	Joy detergent, liquid, blue	1 bottle
2	Salt	¼ kilo
3	Kerosene	1/2 L
4	Glycerine	1 L
5	Ethyl alcohol, lab grade	2 L
6	Cooking oil	1 L
7	Eggs , hard boiled	6
8	Denatured alcohol	5 bottles
9	Filter paper	6 sheets
10	Kalburo	¼ kilo
11	Balloons, 5 colors	10
12	Ammonium hydroxide	1 L
13	Cotton buds, 25 tips	1 pack
14	Hydrochloric acid	1 L
15	Stick candles, smallest, red	5 pc
16	Sugar	1/2 kilo
17	Red cabbage	1pc
18	Coffee, brown, Kopiko	3 sachets
19	Medicine droppers, 10 mL	10 pc
20	Masking tape, 1"	2 rolls
21	Matches	5 pc
22	Plastic spoons, smallest	10 pc
23	Glass tubing, 6 mm	5 pc
24	Battery, 9V	5 pc
25	Vinegar, Datu Puti, small	1 sachet
26	Sprite	1 can
27	Toothpaste, white	1 sachet
28	Pentel pen	5 pc
29	Baking Soda,454g	1 box
30	Distilled water, Willkins/Absolute	2 L
31	Potassium chloride	100g
32	Potassium Iodide	100g
33	Vinegar, Datu Puti	1L
34	Hydrogen peroxide, 10 volumes, small	1 bottle

Prepared by:

MARIA TITA V. VALENZONA