

ANNEXURE - I
PERSONAL DATA SHEET

Name of the Student :
Age :
Gender :
Class :
School :
Medium :
Type of Disability : VI/LV

Signature of the Investigator

14. மின்மூலம் ஒன்றின் ஒரு முனையிலிருந்து மற்றொரு முனைக்கு
பாயும் _____ பாதை மின்சுற்று எனப்படும்
அ) எலக்ட்ரான்கள் ஆ) புரோட்டான்கள் இ) பக்க இணைப்பு
15. திரவங்கள் மின்சாரத்தை
அ) கடத்தும் ஆ) கடத்தாது இ) குறையும்

ANNEXURE - IV

TEMPERATURE MEASUREMENT EXPERIMENT

Group I (VI-VIII)

Name of the Student:

Grade:

School:

Name of the Experiment: Comparing Temperature of the Ice Cube, Normal Water & Boiling Water

S.No	Particulars	Mark	Total Mark
1.	List the items		4
	Beaker 3	½	
	Bunsen Burner	½	
	Tripod Stand	½	
	Wire Gauze	½	
	Ice Cube	½	
	Water	½	
	Thermometer /Temperature Sensor	½	
	Record Note book	½	
2.	Identify the items		4
	Beaker 3	½	
	Bunsen Burner	½	
	Tripod Stand	½	
	Wire Gauze	½	
	Ice Cube	½	
	Water	½	
	Thermometer /Temperature Sensor	½	
	Record Note book	½	
3.	Set the Apparatus		9
	Does the student Fill Beaker 1 with Ice cubes	1	
	Does the student Fill Beaker 2 with normal water	1	
	Does the student Fill beaker 3 also with normal water	1	
	Does the Student set the Burner	1	
	Does the Student Set the Tripod Stand	1	
	Does the Student Place the wire Gauze on the Tripod stand	1	
	Does the student place the Beaker 3 with water on the stand?	1	
	Does the student keep the Temperature Sensor Device ready?	1	
Does the student the record book ready?	1		
4.	Performing the Experiment		8
	Does the student find the temperature of Ice cube with thermometer/Temperature Sensor?	2	
	Does the student find the temperature of Normal water in the beaker 2 with thermometer/Temperature Sensor?	2	
	Does the student turn on the Burner and oil the water?	1	
	Does the Student find out the temperature of boiling water in Beaker 3 with thermometer/Temperature Sensor?	2	
	Does the student record the reading in note book & Compare	1	
Total Score			25

ANNEXURE - V

ACID & BASE DETECTION EXPERIMENT

Group I (VI-VIII)

Name of the Student:

Grade:

School:

Name of the Experiment:
using

Find the nature of the solution- Acid /Base

litmus Paper

S.No	Particulars	Mark	Total Mark
1.	List the materials		4
	Test Tubes (4 nos)	½	
	Blue Litmus Paper	½	
	Red Litmus Paper	½	
	Sample Liquid – Vinegar	½	
	Sample Liquid – Limewater	½	
	Liquid Filler	½	
	Test Tube Holder	½	
	Record Notebook &/Sensor Device	½	
2.	Identify the materials		4
	Test Tubes (4 nos)	½	
	Blue Litmus Paper	½	
	Red Litmus Paper	½	
	Sample Liquid – Vinegar	½	
	Sample Liquid – Limewater	½	
	Liquid Filler	½	
	Test Tube Holder	½	
	Record Notebook &/Sensor Device	½	
3.	Set the Apparatus		6
	Does the student take 2 ml sample liquid- Vingar in liquid filler and pour in Test tube 1 ?	1	
	Does the student place the test tube 1 in Test tube holder ?	1	
	Does the student take 2 ml sample liquid Limewater in liquid filler and pour in Test tube 2?	1	
	Does the student place the test tube 2 in Test tube holder	1	
	Does the student be Ready with Litmus papers ?	1	
	Does the student be ready with Record &/ Set up Sensor Device?	1	

S.No	Particulars	Mark	Total Mark
4.	Performing the Experiment		
	Does the student take blue Litmus - Check for Colour of the litmus paper with Sensor Device	½	11
	Does the student take the test tube 1 and Dip the Blue litmus in it	½	
	Does the student check for any colour Changes in Blue litmus with Sensor Device(Red colour)	1	
	Does the student record the reading in note book	½	
	Does the student take Red litmus (Check for litmus colour with Sensor device	½	
	Does the student dip in to the liquid in Test tube 1	½	
	Does the student check for any colour changes in Blue litmus with Sensor Device(No changes)	1	
	Does the student record the reading in note book	½	
	Does the student take Blue Litmus - Check for Colour of the litmus paper with Sensor Device	½	
	Does the student take the test tube 2 and Dip the Blue litmus in it	½	
	Does the student check for any colour Changes in Blue litmus with Sensor Device(No changes)	1	
	Does the student record the reading in note book	½	
	Does the student take Red litmus (Check for litmus colour with Sensor device	½	
	Does the student dip in to the liquid in Test tube 2	½	
	Does the student check for any colour Changes in Blue litmus with Sensor Device(Red will Change into Blue Colour)	1	
	Does the student record the reading in note book	½	
	Does the student find and write Acid or Base	1	
Total Amount			25

ANNEXURE - VI
LIGHT DETECTION EXPERIMENT
Group I (VI-VIII)

Name of the Student:

Grade:

School:

Name of the Experiment: Light Detection Experiment

S.No	Particulars	Mark	Total Marks
1.	List the items		3
	Wires 2	1	
	Battery 1	$\frac{1}{2}$	
	Bulb 1	$\frac{1}{2}$	
	Switch	$\frac{1}{2}$	
	Science Lab Talking Device	$\frac{1}{2}$	
2.	Identification of the items		3
	Wires 2	1	
	Battery 1	$\frac{1}{2}$	
	Bulb 1	$\frac{1}{2}$	
	Switch	$\frac{1}{2}$	
	Science Lab Talking Device	$\frac{1}{2}$	
3.	Set the Apparatus		5
	Does the student place the Bulb at down centre of the circuit?	1	
	Does the student place the switch right to the bulb?	1	
	Does the student place the battery at left to the circuit?	1	
	Does the student place at right side of the circuit?	1	
	Does the student connect the SLTD with power supply?	1	
4.	Performing the Experiment		17
	Take wire 1 and connect (-) terminal of the bulb	2	
	Connect the other end of the wire 1 with switch	2	
	Take wire 2 and connect the other port of the switch	2	
	Connect the other end of the wire 2 with (-) terminal of the battery	2	
	Take wire 3 and connect (+) terminal of the battery	2	
	Connect the other end of the wire3 with bulb	2	
	On the switch	1	
	Place current sensor probe near the Bulb	1	
	Operate the SLTD Current Sensor with push button	2	
	Listen light is on or off	1	
	Total Marks		

ANNEXURE - VII
TEMPERATURE MELTING POINT OF WAX
Group II (IX-X)

Name of the Student:

Grade:

School:

Name of the Experiment: **Melting Point of Wax Experiment**

S.No	Particulars	Mark	Total Marks
1.	List the items		5
	Beaker	½	
	Burner	½	
	Tripod Stand	½	
	Boling Tube	½	
	Wire Gauze	½	
	Stand and Clamp	½	
	Candle Wax	½	
	Bowl of Sand	½	
	Talking Stop Watch	½	
	Science Lab Talking Device	½	
2.	Identification of the items		5
	Beaker	½	
	Burner	½	
	Tripod Stand	½	
	Boling Tube	½	
	Wire Gauze	½	
	Stand and Clamp	½	
	Candle Wax	½	
	Bowl of Sand	½	
	Talking Stop Watch	½	
	Science Lab Talking Device	½	
3.	Set the Apparatus		8
	Does the Student set the Burner?	1	
	Does the Student Set the Tripod Stand?	1	
	Does the Student Place the wire Gauze on the Tripod stand?	1	

S.No	Particulars	Mark	Total Marks
	Does the student place beaker with water on the Stand?	1	
	Does the Student fix boiling tube with stand and clamp?	1	
	Does the Student put the candle wax in to the boiling tube?	1	
	Does the student connect the SLTD device and be ready?	2	
4.	Performing the Experiment		
	Does the student note the beginning reading of the temperature using SLTD?	2	12
	Does the student on the burner & Melt the wax in warm water bath?	2	
	Does the student note the temperature when wax melted entirely?	2	
	Does the student remove the boiling tube from bath and pour the candle into the bowl of sand?	2	
	Does the student record the temperature for each 30 sec using SLTD Stop watch/ Talking Stop watch?	2	
	Does the student find out the same time for constant temperature at which liquid and solid are present?	2	
Total Marks			30

ANNEXURE - VIII
ACID & BASE DETECTION
Group II (IX-X)

Name of the Student:

Grade:

School:

Name of the Experiment : Find out the nature of

S.No	Particulars	Mark	Total Mark
1.	List the items		4
	Test Tubes(4 nos)	½	
	Blue Litmus Paper	½	
	Red Litmus Paper	½	
	Phenolphthalein indicator	½	
	Sample Liquid - Hydrochloric	½	
	Sample Liquid Sodium Hydroxide	½	
	Liquid Filler &/ Test Tube Holder	½	
	Record Note &SLTD	½	
2.	Identify the items		4
	Test Tubes(4 nos)	½	
	Blue Litmus Paper	½	
	Red Litmus Paper	½	
	Phenolphthalein indicator	½	
	Sample Liquid - Hydrochloric	½	
	Sample Liquid Sodium Hydroxide	½	
	Liquid Filler &/ Test Tube Holder	½	
	Record Note &SLTD	½	
3.	Set the Apparatus		7
	Does the student take 2 ml sample liquid- Hydrochloric in liquid filler and pour in Test tube 1?	1	
	Does the student place the test tube 1 in Test tube holder?	1	
	Does the student take 2 ml sample liquid- Sodium Hydroxide in liquid filler and pour in Test tube 2?	1	
	Does the student place the test tube 2 in Test tube holder?	1	
	Does the student ready with Litmus papers?	1	
	Does the student ready with Phenolphthalein indicator?		
	Does the student ready with Record & Set up SLTD?	1	
4.	Performing the Experiment		15
	Does the student take Blue Litmus -Check for Colour of the litmus paper with Senor Device	½	
	Does the student take the test tube 1 and Dip the Blue	½	

S.No	Particulars	Mark	Total Mark
	litmus in it		
	Does the student check for any colour Changes in Blue litmus with Sensor Device(Red colour)	1	
	Does the student record the reading in note book	½	
	Does the student take Red litmus (Check for litmus colour with Sensor device)	½	
	Does the student dip in to the liquid in Test tube 1	½	
	Does the student check for any colour Changes in Blue litmus with Sensor Device (No changes)	1	
	Does the student record the reading in note book	½	
	Does the student take Phenolphthalein indicator & check for colour with Sensor Device	½	
	Does the student dip in sample liquid in test tube 1	½	
	Does the student check for any Colour Changes in Phenolphthalein indicator (No changes - Colourless)	1	
	Does the student record the reading in note book	½	
	Does the student take Blue Litmus - Check for Colour of the litmus paper with Sensor Device	½	
	Does the student take the test tube 2 and Dip the Blue litmus in it	½	
	Does the student check for any colour Changes in Blue litmus with Sensor Device(No changes)	1	
	Does the student record the reading in note book	½	
	Does the student take Red litmus (Check for litmus colour with Sensor device)	½	
	Does the student dip in to the liquid in Test tube 2	½	
	Does the student check for any colour Changes in Blue litmus with Sensor Device (Red will Change into Blue Colour)	1	
	Does the student record the reading in note book	½	
	Does the student take Phenolphthalein indicator & check for colour with Sensor Device	½	
	Does the student dip in sample liquid in test tube 2	½	
	Does the student check for any Colour Changes in Phenolphthalein indicator (Change to pink colour)	1	
	Does the student record the reading in note book	½	
Total Score			30

ANNEXURE - IX
MEASURING CURRENT AMMETER EXPERIMENT
Group II (IX-X)

Name of the Student: _____ **Grade:** _____ **School:** _____
Name of the Experiment: **Measuring Current Ammeter Experiment**

S.No	Particulars	Mark	Total Marks
1.	List the items		4
	Wires 4	1½	
	Battery 1	½	
	Bulb 1	½	
	Switch	½	
	Ammeter with SLTD	½	
	Record Note	½	
2.	Identification of the items		4
	Beaker	½	
	Wires 4	1½	
	Battery 1	½	
	Bulb 1	½	
	Switch	½	
	Ammeter with SLTD	½	
	Record Note	½	
3.	Set the Apparatus		7
	Does the student place the Bulb at down centre of the circuit?	1	
	Does the student place the switch left to the bulb?	1	
	Does the student place the battery at top centre of the circuit?	1	
	Does the student place the inbuilt Ammeter connection in SLTD at right side of the circuit?	1	
	Does the student connect the SLTD with power supply?	1	
	Does the student place the Bulb at down centre of the circuit?	1	
Does the student place the switch left to the bulb?	2		
4.	Performing the Experiment		15
	Take wire 1 and connect (-) terminal of the bulb	2	
	Connect the other end of the wire 1 with (-) terminal of Ammeter port in SLTD	2	
	Take wire 2 and connect in (+) terminal of the bulb	2	
	Connect the other end of the wire 2 with switch	2	
	Take wire 3 and connect the other port of the switch	2	
	Connect the other end of the wire 3 with (-) terminal of the battery	2	
	On the switch	1	
	Operate the SLTD Ammeter Sensor with push button	1	
	Listen to the Measurement of current Ex. 6 Amp	1	
Total Marks			30

ANNEXURE - X
MEASURING ELECTRIC POTENTIAL VOLTMETER EXPERIMENT
Group II (IX-X)

Name of the Student:

Grade:

School:

Name of the Experiment: Measuring Electric Potential Voltmeter Experiment

S.No	Particulars	Mark	Total Marks
1.	List the items		4
	Wires 4	1½	
	Battery 1	½	
	Bulb 1	½	
	Switch	½	
	Volt meter with SLTD	½	
	Record Note	½	
2.	Identification of the items		4
	Wires 4	½	
	Battery 1	1½	
	Bulb 1	½	
	Switch	½	
	Voltmeter with SLTD	½	
	Record Note	½	
3.	Set the Apparatus		7
	Does the student place the Bulb at down centre of the circuit ?	1	
	Does the student place the switch left to the bulb?	1	
	Does the student place the battery at top centre of the circuit?	1	
	Does the student place the inbuilt Volt connection in SLTD at right side of the circuit?	1	
	Does the student connect the SLTD with power supply?	1	
	Does the student place the Bulb at down centre of the circuit?	1	
	Does the student place the switch left to the bulb?	1	
4.	Performing the Experiment		15
	Does the student take wire 1 and connect (-) terminal of the bulb?	2	
	Does the student connect the other end of the wire 1 with (-) terminal of Volt meter port in SLTD	2	

S.No	Particulars	Mark	Total Marks
	Does the student take wire 2 and connect in (-) terminal of the bulb	2	
	Does the student connect the other end of the wire 2 with (-) terminal of the Battery	2	
	Does the student take wire 3 and connect (+) terminal of the battery	2	
	Does the student connect the other end of the wire 3 with (+) terminal of the bulb	2	
	Does the student connect wire 4 in (+) terminal of the bulb	1	
	Does the student connect the other end of wire 4 with (+) volt meter terminal of SLTD	1	
	Does the student operate the SLTD Voltmeter Sensor with push button	1	
	Does the student listen to the Measurement of volt Ex. 6 Volt	1	
Total Marks			30

ANNEXURE - XI
CHECKLIST FOR VALIDITY OF THE DEVICE- SPECIAL
EDUCATORS

Name of the Teacher:

I. Features of the Device

S.No	Particulars	4	3	2	1
1.	Size of the device is explorable within hands				
2.	The device without sharp edges or rough surface				
3.	The controls are easily distinguishable by touch				
4.	The device is with clear Braille labels				
5.	The device is with clear Large print labels				
6.	Volume range of the device is appropriate/ sufficient				
7.	Language option key is easily operable				
8.	Sensor input ports of the device are safe to touch				
9.	The device is portable				
10.	Visually Impaired student charge the device easily				

II. Usability of the Device

S.No	Particulars	4	3	2	1
1.	Device can detect colour changes of litmus paper experiment				
2.	Device can detect colour changes of a liquid in a glass				
3.	Device can accurately measure weight ranges from 0-1 kg				
4.	Device can accurately detect the light at any distance				
5.	The temperature sensor accurately measure on any surface				
6.	Temperature sensor is waterproof				
7.	The device allows independent Voltmeter circuit connection				
8.	The device allows independent Ammeter circuit connection				
9.	The device allows self-experimentation of Physical science experiments				
10.	The device allows self-experimentation of Biological science experiments				

III. Accessibility

S.No	Particulars	4	3	2	1
1.	The device display real time data				
2.	The device read out real time data				
3.	The data collected by the device can be imported to any computer/laptop				
4.	The device can access data in both Tamil/English language				
5.	The device voice out Start and Stop menu				

4 - Strongly Agree 3 - Agree 2 - Disagree 1 - Strongly Disagree

ANNEXURE - XII
CHECKLIST FOR VALIDITY OF THE DEVICE - VISUALLY
IMPAIRED

Name of the Student:

Class:

School:

I. Features of the Device

S.No	Particulars	4	3	2	1
1.	Size of the device is exportable within hands				
2.	The device without sharp edges or rough surface				
3.	The controls are easily distinguishable by touch				
4.	The device is with clear Braille/Large Print labels				
5.	Volume range of the device is appropriate/ sufficient				
6.	Language option key is easily operable				
7.	Tamil/English Language output is understandable				
7.	Sensor input ports of the device are safe to touch				
8.	The device is portable				
10.	Visually Impaired student charge the device easily				

II. Usability of the Device


S.No	Particulars	4	3	2	1
1.	Device can detect colour changes of litmus paper experiment				
2.	Device can accurately measure weight ranges from 0-1 kg				
3.	Device can accurately detect the light at any distance				
4.	The temperature sensor accurately measure on any surface				
5.	The device allows independent Ammeter/ Volte meter circuit connection				

4 - Strongly Agree**3 - Agree****2 - Disagree****1 - Strongly Disagree**

ANNEXURE - XIII
INSTITUTIONAL HUMAN ETHICAL COMMITTEE CLEARANCE
CERTIFICATE

DUPLICATE COPY

INSTITUTIONAL HUMAN ETHICS COMMITTEE

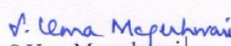



Avinashilingam Institute for Home Science and Higher Education for Women
Seek and Ye Shall Find

Avinashilingam

Institute for Home Science and Higher Education for Women
Decemed to be University Under category 'A' By MHRD, (Estd. u/s 3 of UGC Act 1956)
Re Accredited with 'A' Grade By NAAC, Recognised by UGC Under Section 12 B
Coimbatore - 641043, Tamil Nadu, India

27th November 2019

<p>Chairman Dr. S. Ramalingam Principal, PSG Institute of Medical Sciences & Research, Coimbatore</p> <p>Member Secretary Dr.S.Uma Mageshwari Professor, Dean Student Affairs, Department of Food Service Management & Dietetics</p> <p>Members Dr.P.R.Padma Mr. K.Arulmoli (Legal Expert) Dr.Subhashini K. Sripathi Dr.A. Saraswathy Ms.D.Kavitha Dr.S. Muthulakshmi Dr.G.Victoria Naomi Dr. Judith Justin Dr.AnithaSubash</p>	<p>To Ms. M.Revathi Department of Special Education Avinashilingam Institute for Home Science and Higher Education for Women Coimbatore – 641 043</p> <p>Dear M.Revathi,</p> <p>Ref: Your presentation of the proposal No. IHEC/18-19/SPCL EDU/06 entitled “Adaption of Science Laboratory Experiments for Children with Visual Impairment” to the IHEC on 30.09.19</p> <p>The Institutional Human Ethics Committee of our University hereby grants approval to your research proposal No. IHEC/18-19/SPCL EDU/06 entitled “Adaption of Science Laboratory Experiments for Children with Visual Impairment” submitted and presented by you. The Approval number for the same is AUW/IHEC-18- 19/SPCLEDU/FHP-06.</p> <p>We wish you all the best in your research endeavours.</p> <p style="text-align: right;">Regards,  Dr.S.Uma Mageshwari Member Secretary</p> <div style="text-align: center;">  </div>
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ANNEXURE - XIV

PLAGIARISM REPORT



Avinashilingam Institute for Home Science and Higher Education for Women
(Deemed to be University under Category 'A' by MHRD, Estd. u/s 3 of UGC Act 1956)
Re-accredited with 'A+' Grade by NAAC. Recognised by UGC Under Section 12 B
Coimbatore - 641 043., Tamil Nadu, India

PLAGIARISM CHECK REPORT (THESES)

1.	Name of the Research Scholar	Revathi M
2.	Roll No. and Year of Registration	17PHSEP003, 2017
3.	Department	Special Education
4.	Name of the Research Guide	Dr. G. Victoria Naomi
5.	Title of the Thesis / Dissertation	Development of Science Lab Talking Device (SLTD) and its Effectiveness for Laboratory Experiment for Students with Visual Impairment
6.	Similarity Content (%) Identified	7% (Excluding Review of Literature)
7.	Software Used	Turnitin
8.	Date of Verification	29/07/2021

Checked by :


29/7/21
Information Scientist


Research Scholar


29.07.21
Assistant Librarian


29.7.21
Research Guide

Date: 29-07-2021