E-LAB
IN
INSTITUTE OF TECHNICAL EDUCATION (ITE)

Chua Wee Seng

Ong Chao Xiang

In times of unforeseen events

2014

2010 Fire at Dover Campus

2009 H1N1 Outbreak

2003 SARS Outbreak

Monday, May 26, 2014

THE STRAITS TIMES / Singapore

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Haze this year 'could be worse' than last year's record haze

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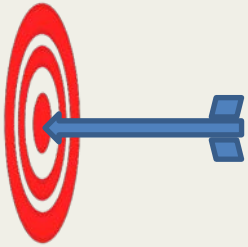
3776 1340 0 6

Two ladies walk alongside the Marina Bay on a hazy day at 1.20pm on June 21, 2013. If you thought last June's record haze was bad, be prepared for it to get even worse this year. -- ST FILE PHOTO: ALPHONSUS CHERN

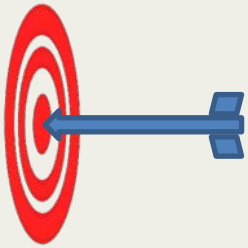
BY DAVID EE

If you thought last June's record haze was bad, be prepared for it to get even worse this

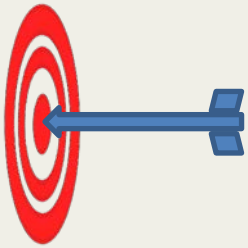
PROJECT OBJECTIVES



Offer opportunities for distance learning / remote learning, anywhere anytime



Solve the problems of laboratory shortage



Allow auto-marking with feedback features and generate class or individual report

When the campus is closed…

Students need to stay at home

Self-learn via the E-learning system

myConnexion

Only theoretical lesson in our E-learning system

Applied Study in Polytechnics and ITE Review (ASPIRE)

The ASPIRE Committee recommends that the Polytechnics and ITE:

- Increase their use of online learning to make it easier for individuals to learn anywhere and anytime
  - Learning no longer needs to confine to a specific place or time
  - Online learning can reduce travel time and allow CET students to learn flexibly based on their work and family schedules
- Online learning can enhance learning for individuals
  - Online modules can cover both skill-refresher and skill deepening content that support both graduates and students

ASPIRE

Master Plan for ICT in Education

Stage I

Stage II

Stage III

THE ICT CONNECTION
By Teachers, For Teachers

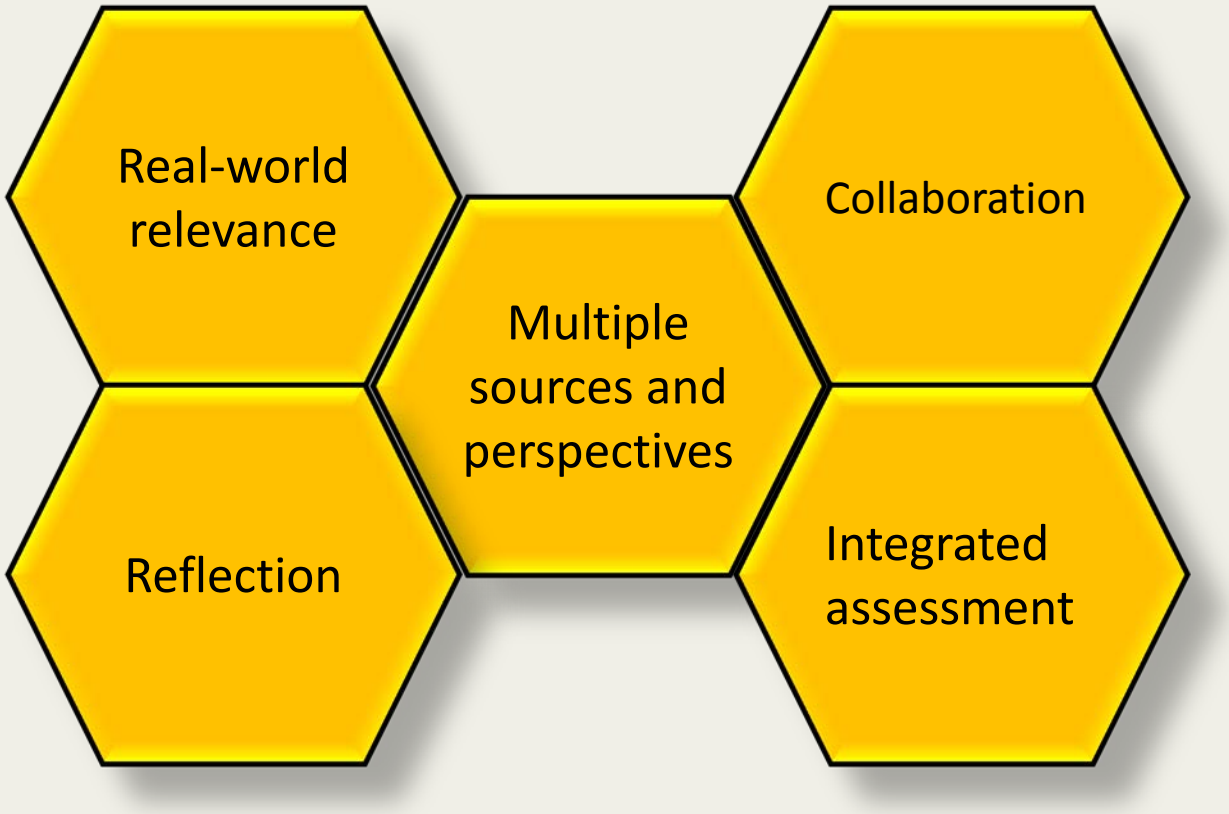
Ministry of Education
SINGAPORE

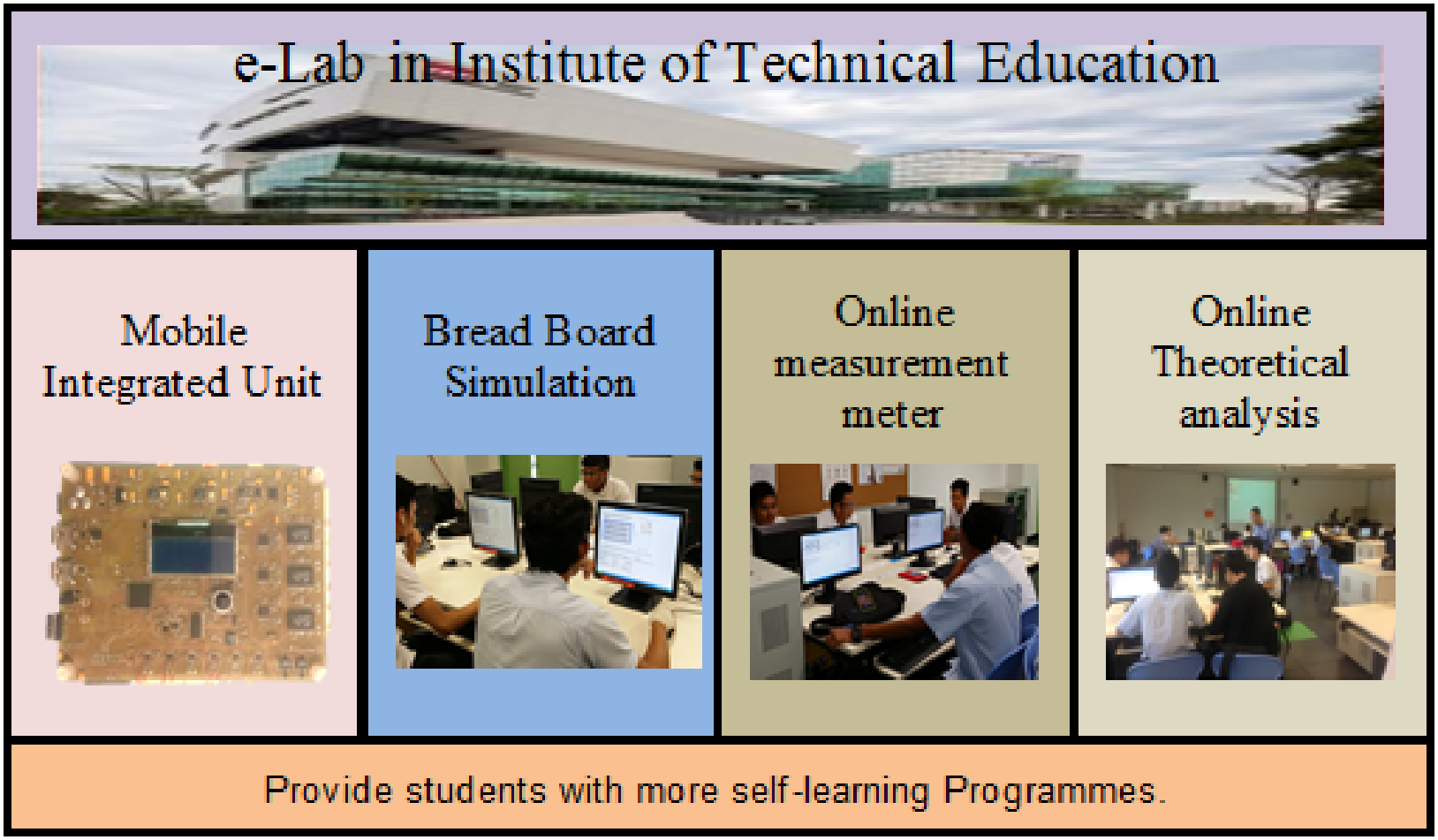
Third Masterplan for ICT in Education

The Ministry of Education has developed the third Masterplan for ICT in Education (2009 – 2014). The third Masterplan (mp3) continues the vision of the first and second Masterplans to ***enrich and transform the learning environments of our students*** and equip them with the critical competencies and dispositions to succeed in a knowledge economy.

- With reference to the paper on Authentic Learning for 21st Century by Maryilyn M. Lombardi
- Authentic learning may be more important than ever in a rapidly changing world, where the half-life of information is short and individuals can expect to progress through multiple careers.

Five of the Ten attributes of the Design Elements





Our design of e-Lab matches five attributes of the design elements.

Design Elements	E-Lab Design
Real-world relevance	**Online simulation** for bread boarding was created for students to practice critical skills needed for circuit wiring.
Multiple sources and perspectives	Students have to **identify the relevant components** to be placed on the simulation board.
Collaboration	The online experiment provides **auto marking feature** and provide multiple attempts for the students to do. Students starts to collaborate and discuss during their second or third attempt.
Reflection	**Conclusion questions** are designed to facilitate student's reflection. Auto marking feature is provided so that students will know if their reflection is moving towards the correct direction.
Integrated assessment	At the end of the experiment, **overall marks** will be given to provide a feedback on how well the student has done for the experiment.

Singapore Educational trend

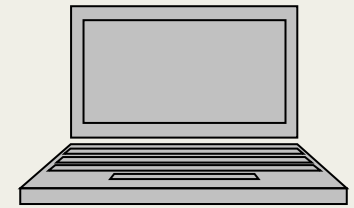
- Also, quoting our Minister of Education Singapore by Mr Heng Swee Keat at the International Conference of Teaching and Learning with Technology (iCTLT) on April 9 2014, he said that
  - **Assessment for learning is one area that we are looking at.** There are emerging **technologies** that can **diagnose students' mastery of concepts**, or recommend the most useful digital resources. We can better **cater to individual students' learning style, pace and interest.** ICT can enable teachers to improve teaching and learning, and we can **help every child to succeed.**
- e-Lab is an online experiment with auto-marking feature with fast feedback.

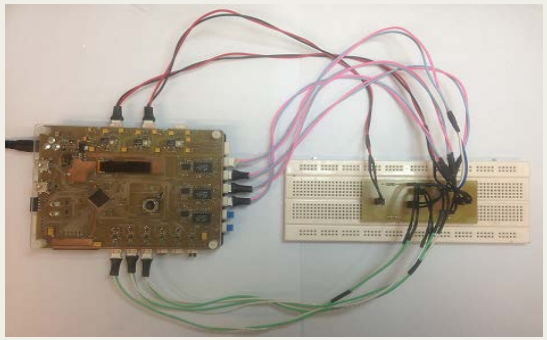
Overview of online practical experiment

Server @ ITE CW

Internet
Or
Intranet

Remote Users





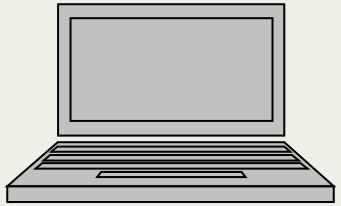
Take Real-time voltage and current measurement

Display real-time voltage and current

Overview of online practical experiment

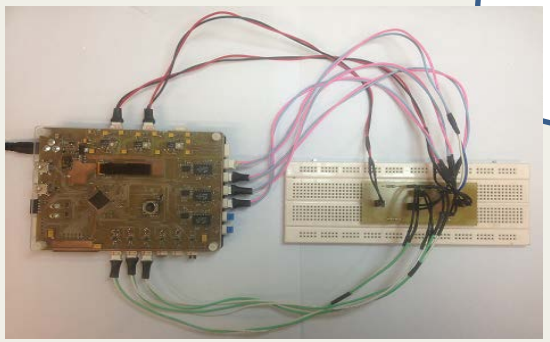
Server @ ITE CW

Remote Users



Sends real-time measurement

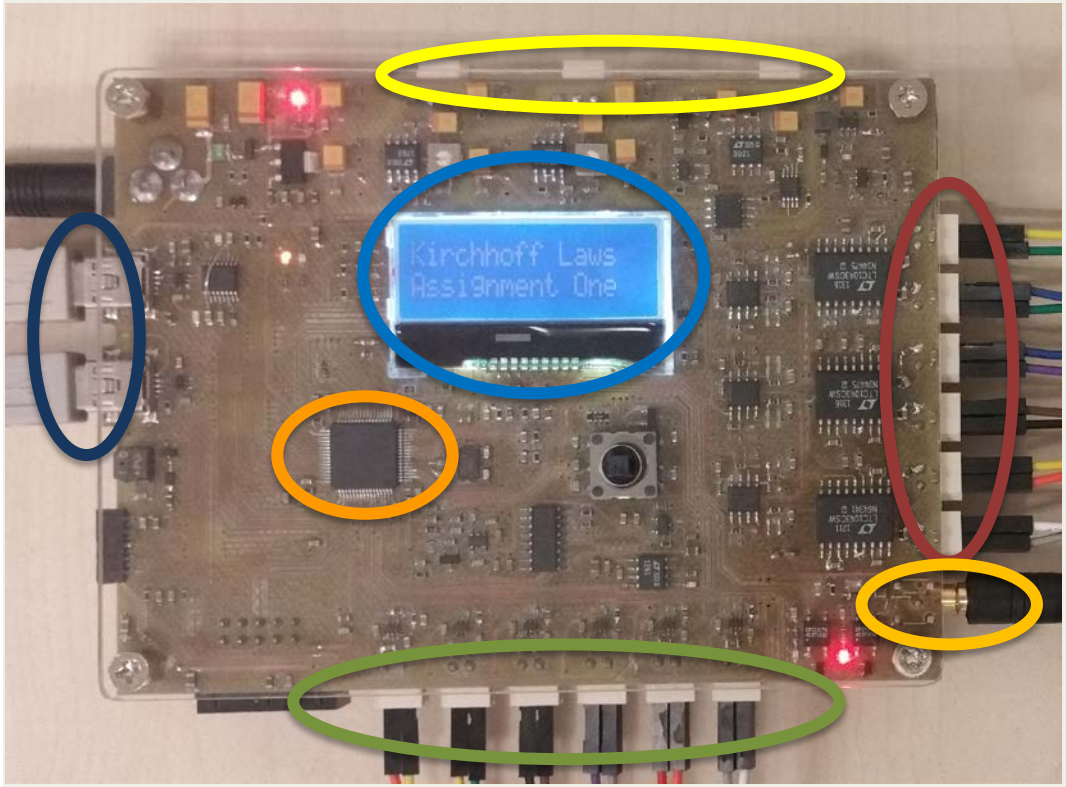
Capture student's measurement



Take Real-time voltage and current measurement

Display real-time voltage and current

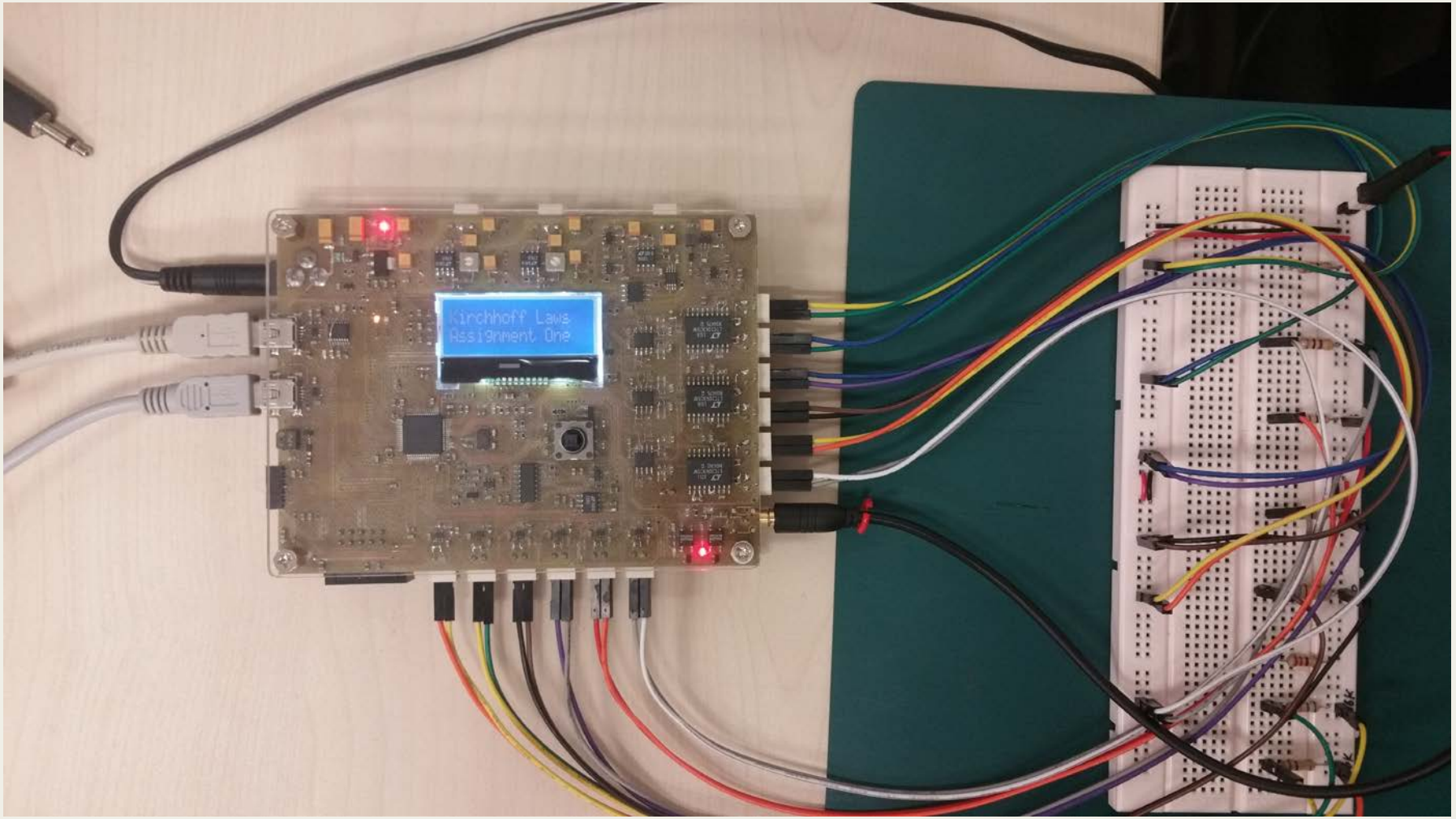
Mobile Integrated Unit



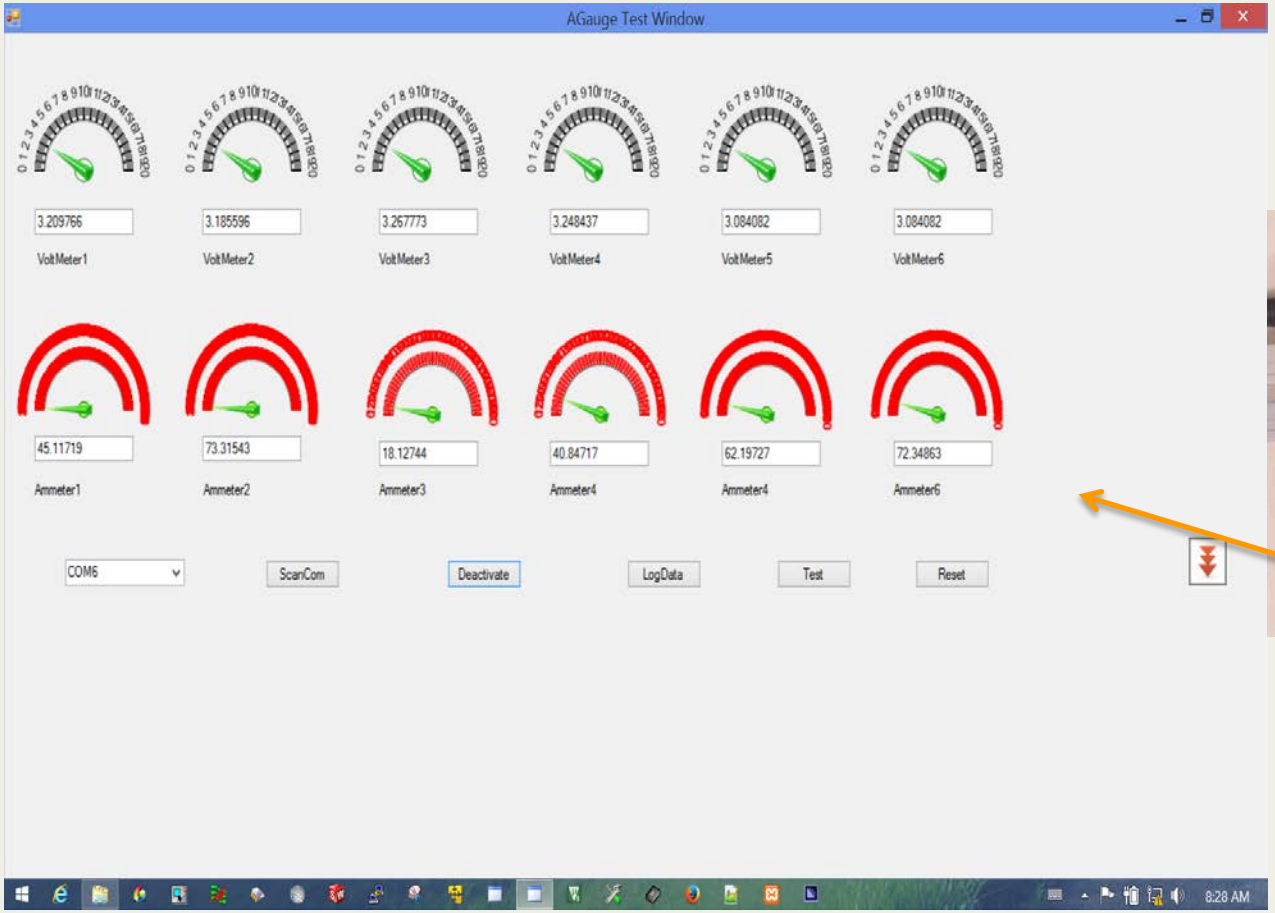
Features

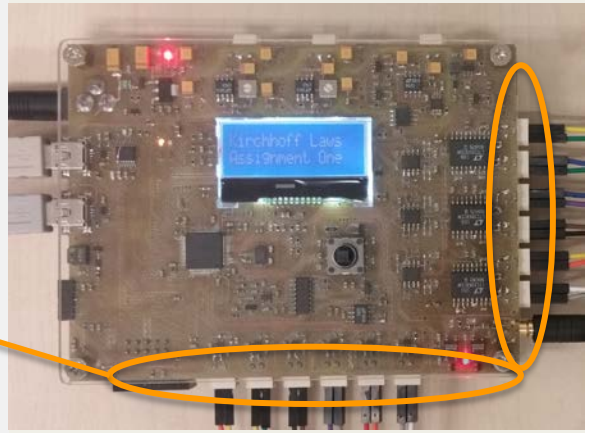
- 3 x Independent DC supply
- 6 x voltmeter
- 6 x ammeter
- Built-in Oscilloscope
- LCD Display
- USB connection to PC/Server

Mobile Integrated Unit

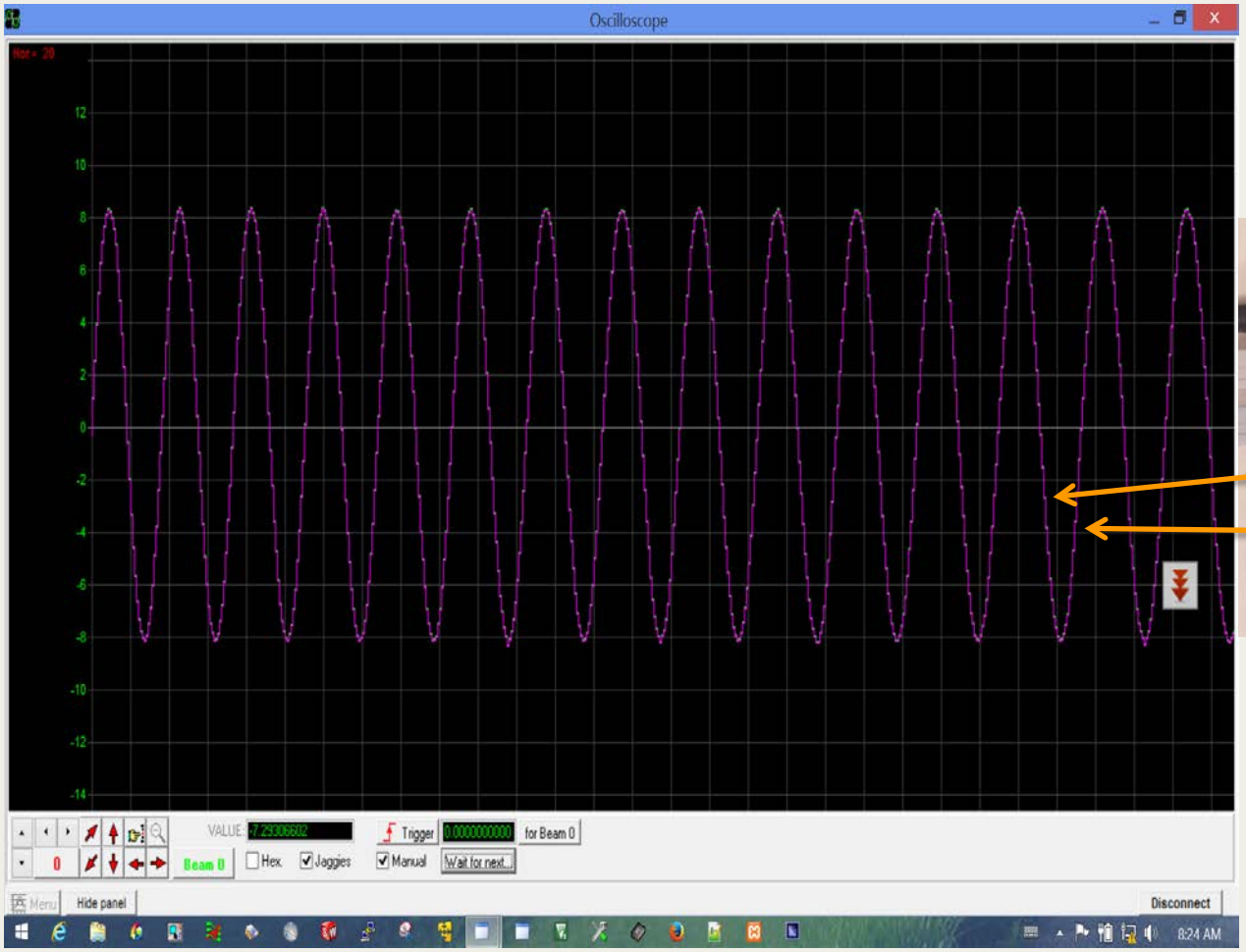


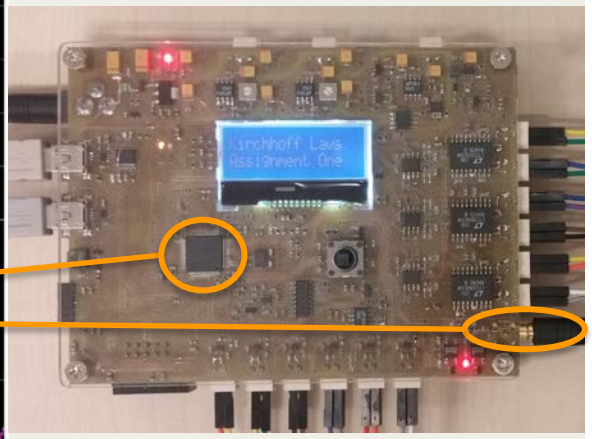
Mobile Integrated Unit



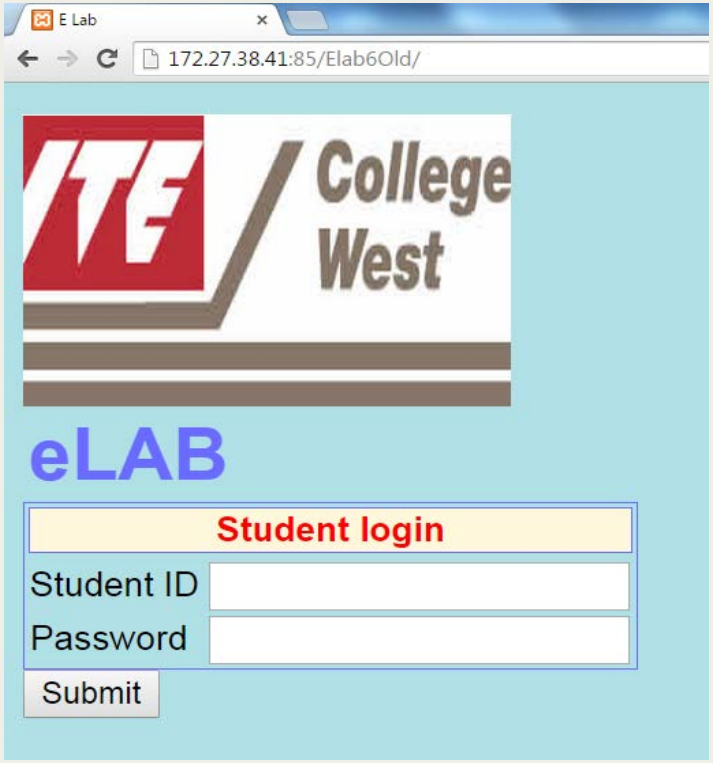


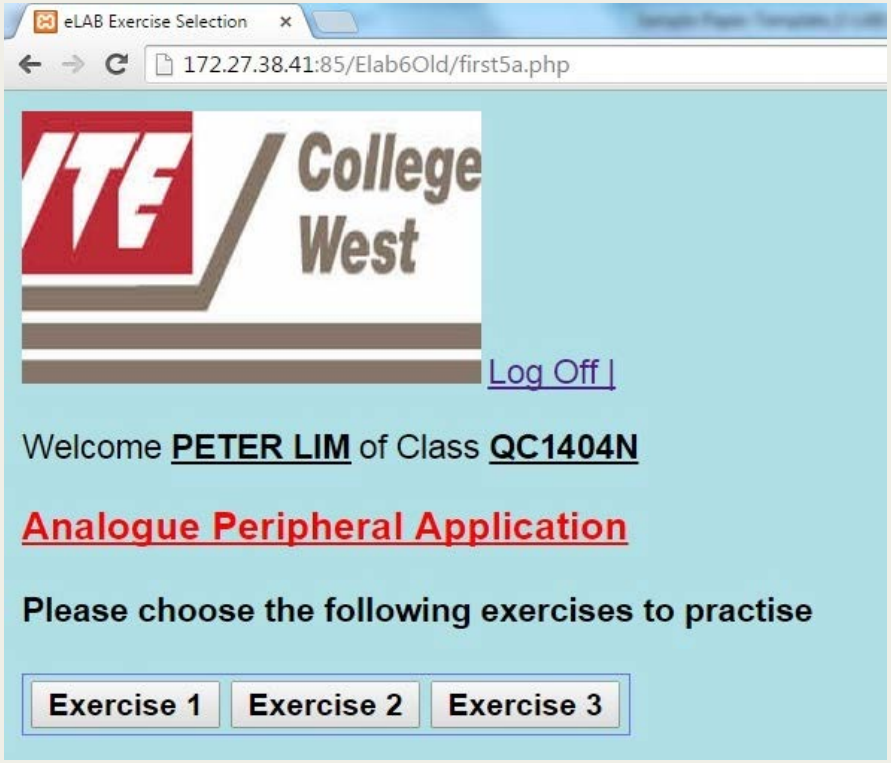
Mobile Integrated Unit



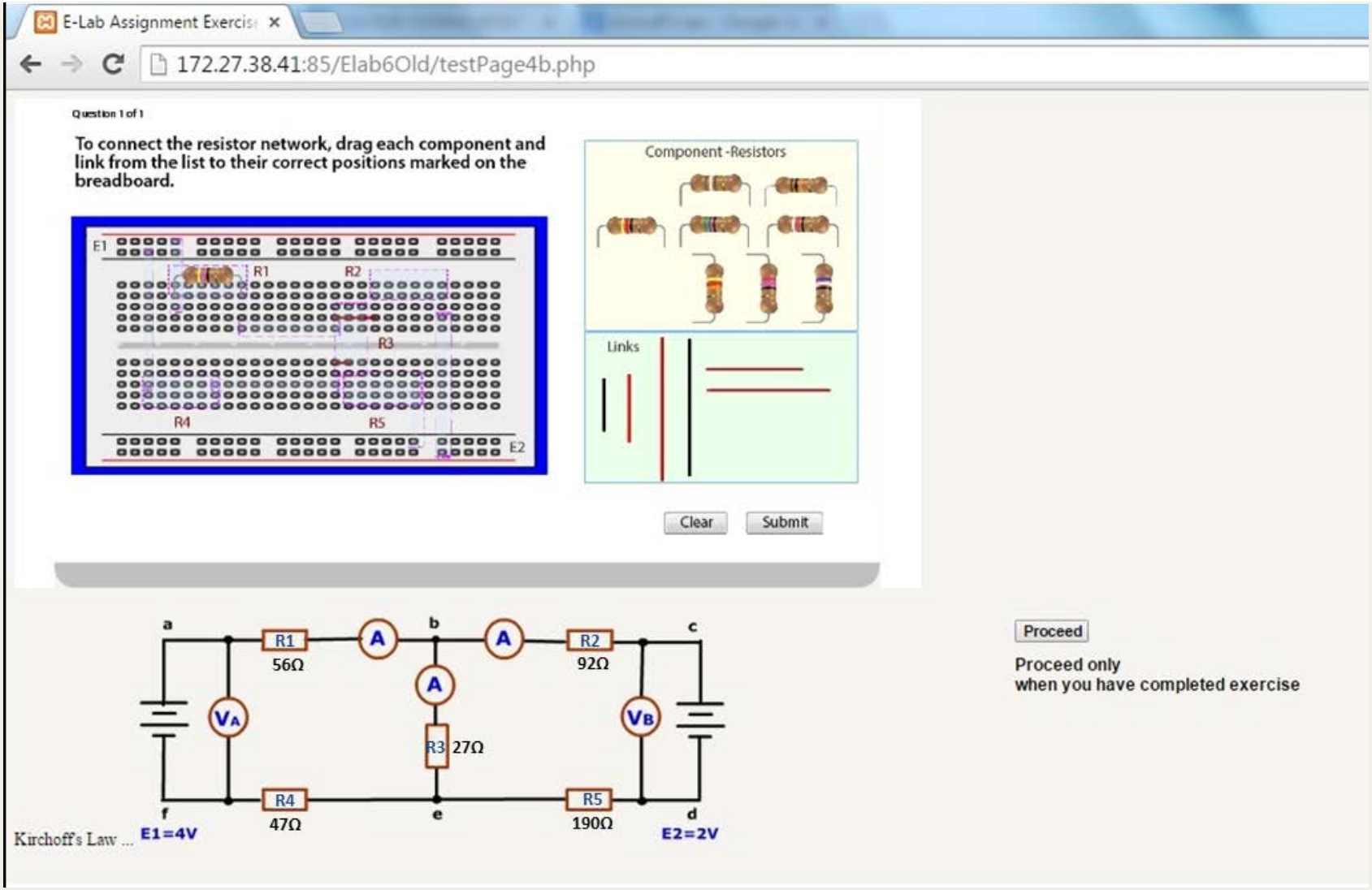


Online Practical Experiment

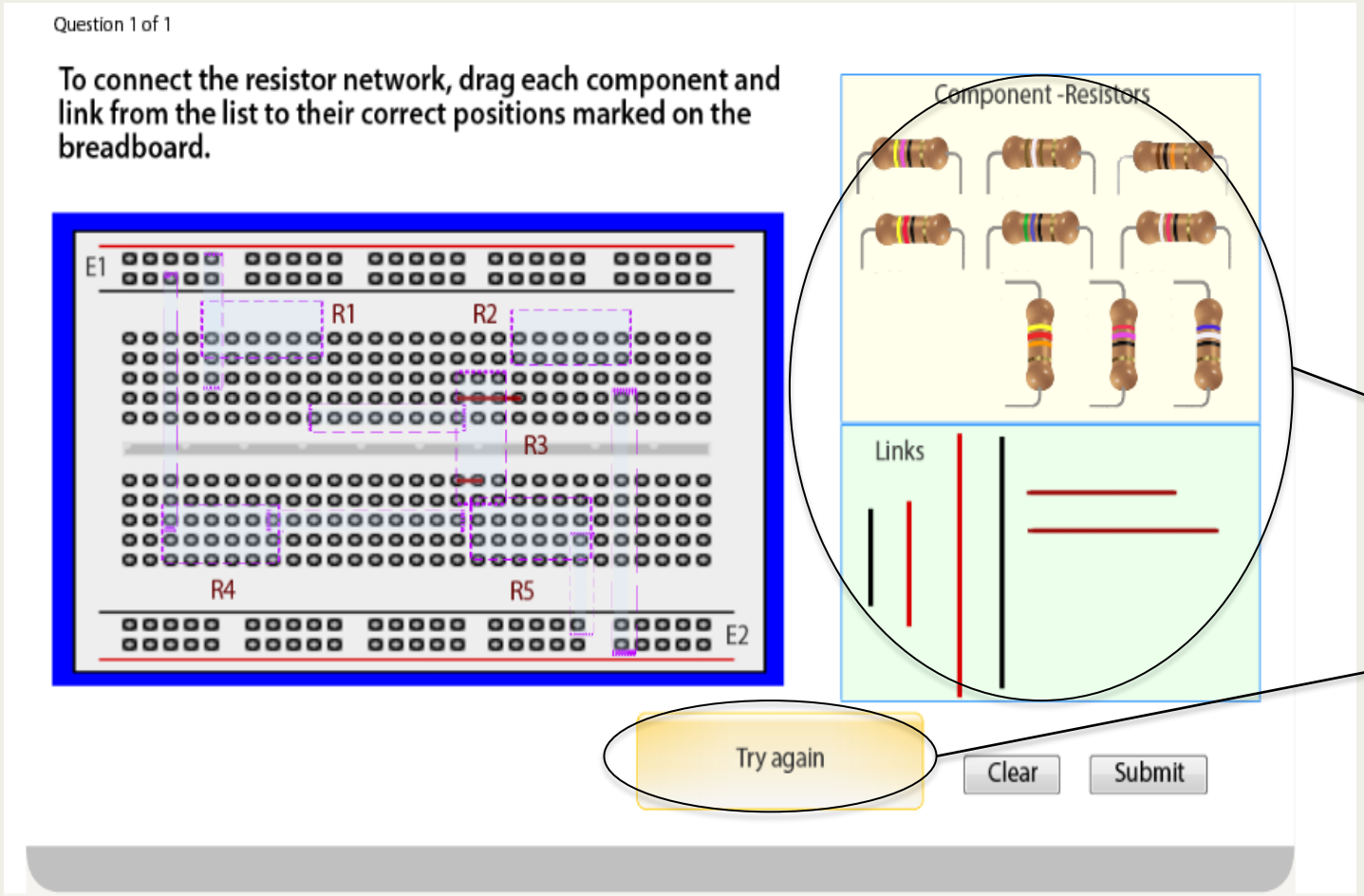




Online Practical Experiment
Online Bread Board Simulation



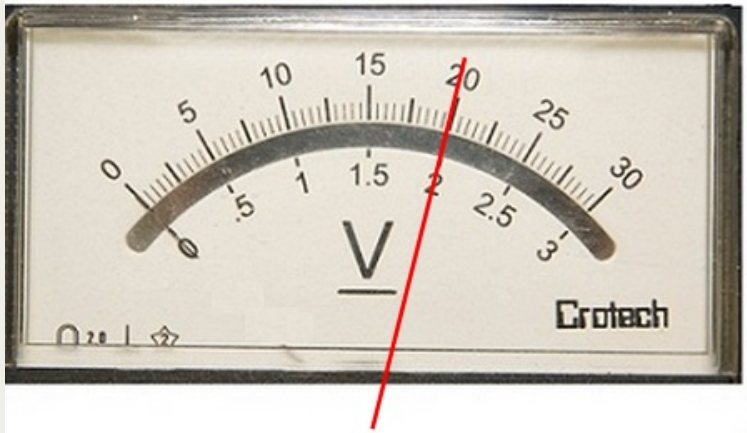
Online Practical Experiment
Bread Board Simulation



Students have to choose the correct resistors and correct wire lengths to place them on the breadboard. Students are given three attempts to try and better their understanding.

Online Practical Experiment
Online Multi Meter

172.27.38.41:85/Elab6Old/Analog_Meter_VB.php



The page at 172.27.38.41:85 says:

Use Range from 0 to 3

OK

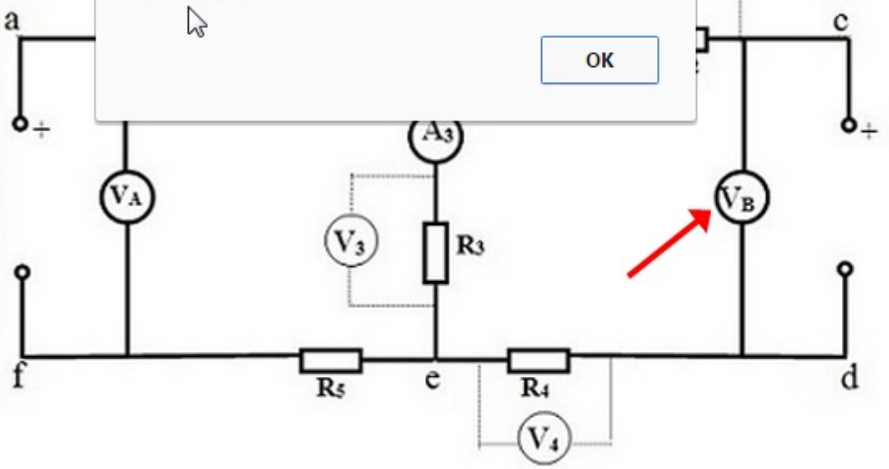


FIG 1

Please press the button to show the real time measurement

Reading for VB

Reading for VB:

Next

Online Practical Experiment
Online Multi Meter

172.27.38.41:85/Elab6Old/Analog_Meter_Readings1.php

The page at 172.27.38.41:85 says:

This is your try no. 2
Wrong answers are in red!

OK

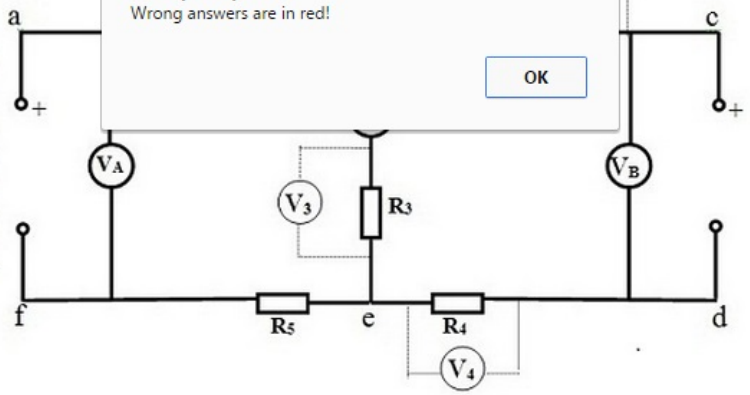


FIG 1

Final Reading

Reading for VB: 2 Reading for V4: 0.75 Reading for V3: 0.9 Reading for V2: 0.7

Reading for A1: 30 Reading for A2: 6.5 Reading for A3: 35

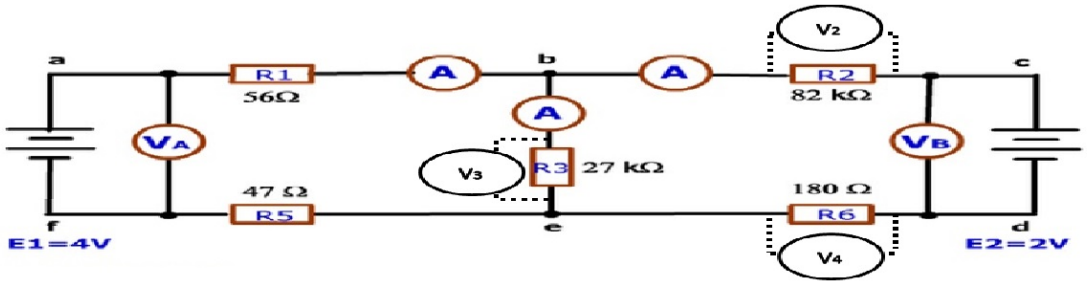
Try Again | Confirm

Reading	V4 (V)	V3 (V)	V2 (V)	A1 (mA)	A2 (mA)	A3 (mA)
Your Measurement	0.75	0.9	0.7	30	6.5	35

Online Practical Experiment
Theory conclusion

laboratory - Google Searc × | eLab Exercise 1 Conclusio × | Charles

172.27.38.41:85/Elab6Old/Ex1Con1A1a.php



Actual Correct Reading

Reading	V4 (V)	V3 (V)	V2 (V)	A1 (mA)	A2 (mA)	A3 (mA)
Your	0.75	0.9	0.35	30	6.2	35
Actual	0.75	0.93	0.34	29.66	5.97	35.28

Conclusion

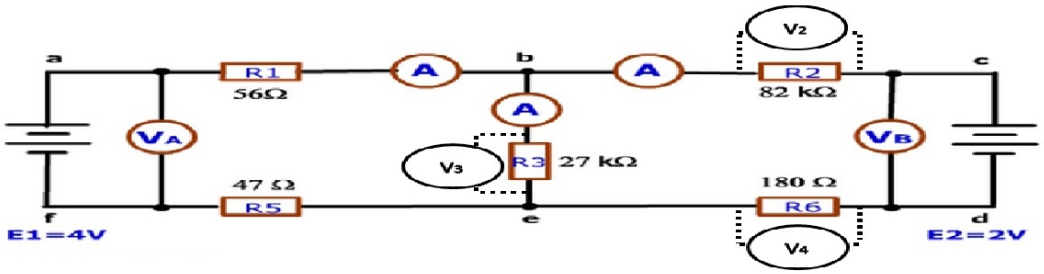
Q1. Does the algebrasic sum of the currents obtained experimentally verify Kirchhoff's Law?	Yes No
Q2. Is the Emf equal to the sum of voltage drops in loop bcdef?	Yes No
Q3. Determine the value of current in each resister if resister R3 were open circuit (in mA)?	
Q4(i). Determine the value of current in the resister R3 when R1 is open circuit (in mA)?	
Q4(ii). Determine the value of current in the resister R3 when R2 is open circuit (in mA)?	

Check Answers

Online Practical Experiment Theory Analysis

laboratory - Google Searc | eLab Exercise 1 Conclusio | Charles

172.27.38.41:85/Elab6Old/Ex1Con1A1a.php



Actual Correct Reading

Reading	V4 (V)	V3 (V)	V2 (V)	A1 (mA)	A2 (mA)	A3 (mA)
Your	0.75	0.9	0.35	30	6.2	35
Actual	0.75	0.93	0.34	29.66	5.97	35.28

Conclusion

Q1. Does the algebrasic sum of the currents obtained experimentally verify Kirchhoff's Law?	(•) Yes ( ) No
Q2. Is the Emf equal to the sum of voltage drops in loop bcdef?	(•) Yes ( ) No
Q3. Determine the value of current in each resister if resister R3 were open circuit (in mA)?	0.024
Q4(i). Determine the value of current in the resister R3 when R1 is open circuit (in mA)?	0.018
Q4(ii). Determine the value of current in the resister R3 when R2 is open circuit (in mA)?	0.14

Check Answers

Online Practical Experiment (Tabulation of marks)

172.27.38.41:85/Elab6Old/Ex1

ITE College West

Print |

Welcome **PETER LIM** of Class **QC1404N**

Detailed Scores for Exercise

Item	Description	Actual Score
1	Simulation	0
2	Measurement	100
3	Conclusion	40
	Final	42

Back To Menu

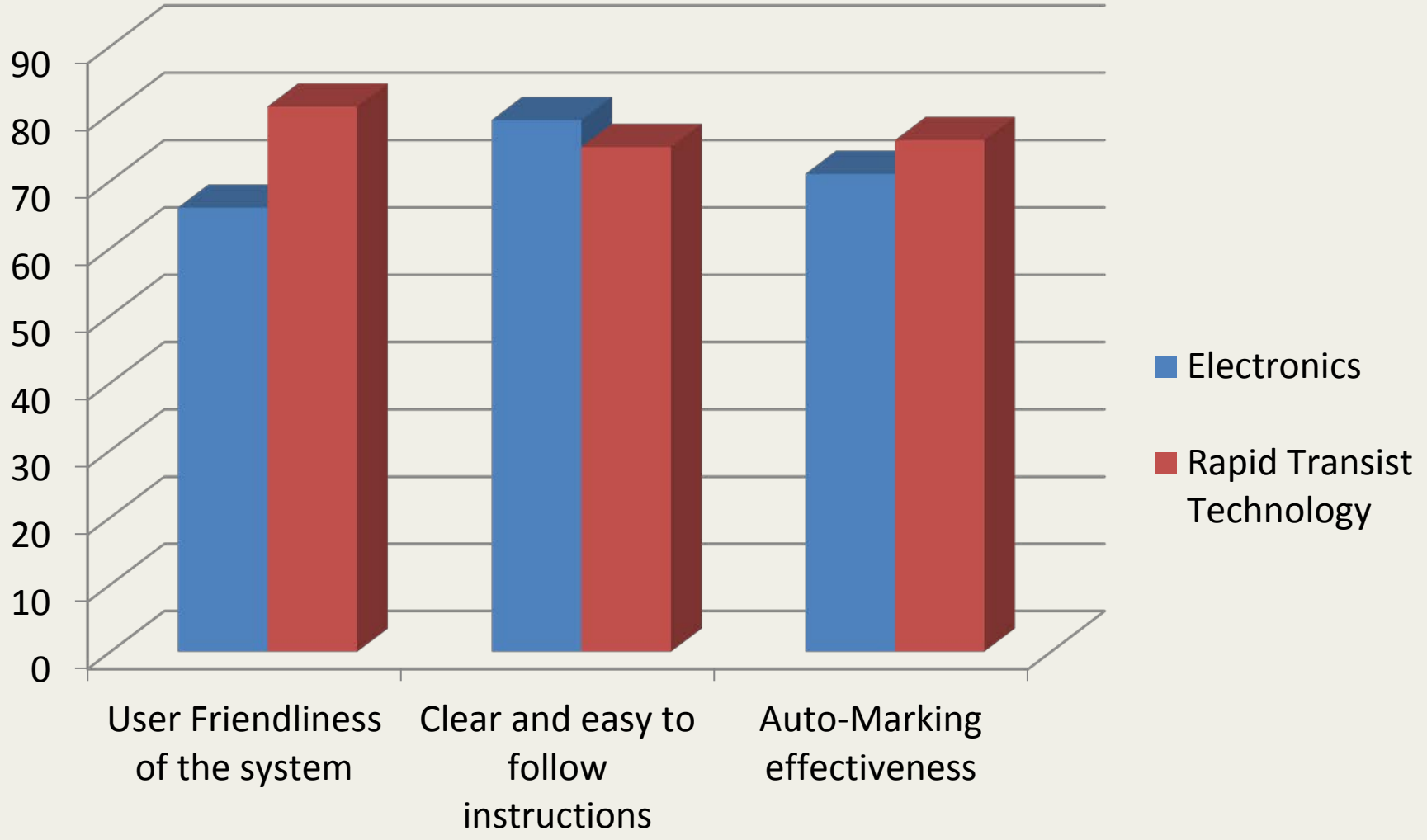
Displaying eLab Clas

172.27.38.41:85/Elab6Old/DisplayClass1.php

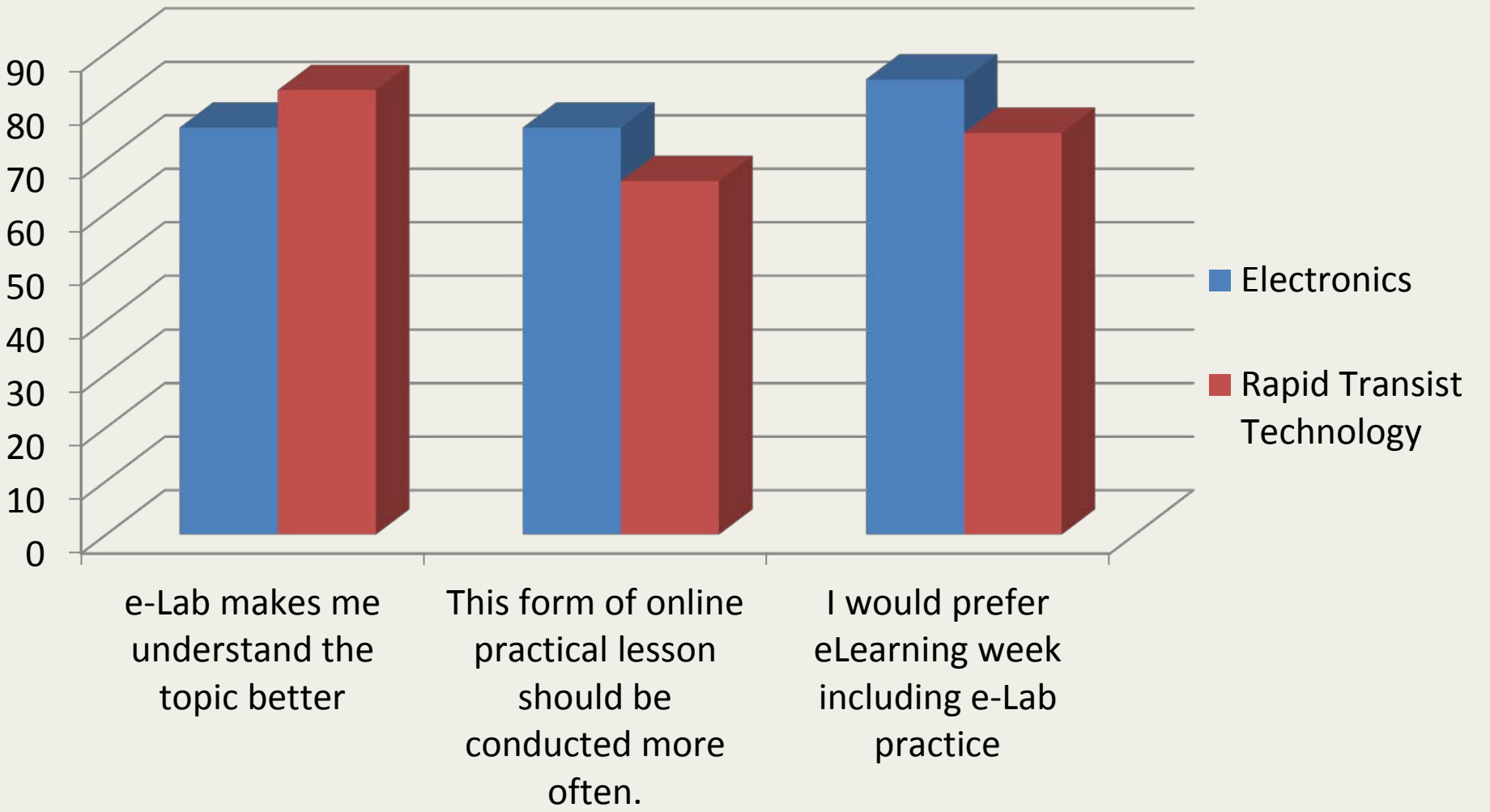
Exercise 1 of **QC1504A** is selected for display

S/R	NRIC	Name	Item 1	Item 2	Item 3	Total
0		NG WENG HENG	100	100	100	100
1		ZHENG YUTING	100	100	100	100
2		JONATHAN TAN YONG CHUN	100	100	55	86.5
3		YEE JUN JIE	100	100	100	100
4		LIM YI HAN, NOEL	100	100	100	100
5		SU MYAT THIN ZAR	100	100	100	100
6		LUO YONG QUAN				0
7		WU SHI YAN JOLENE	100	100	100	100
8		JETHRO LIM ZHI HENG	100	20		46
9		NAZIRUL RAZIQ B RAZALI	100	100	40	82
10		CHANG SOO ZHENG	0	100	100	60
11		LIM MING HUI, MABEL	100	100	100	100
12		MUHAMMAD ARASH B SHRUDIN	100	100	40	82
13		RITCHIE ONG ZI RONG	100	100	100	100
14		WUN ZHEN YU	100	100	70	91
15		ANTHONY QUEK ZHONG HOW				0
16		MUHAMMAD SYAIFUL B ROSLI	0	100	40	42
17		KELVIN LOY CHEE YEAN	100	100	20	76

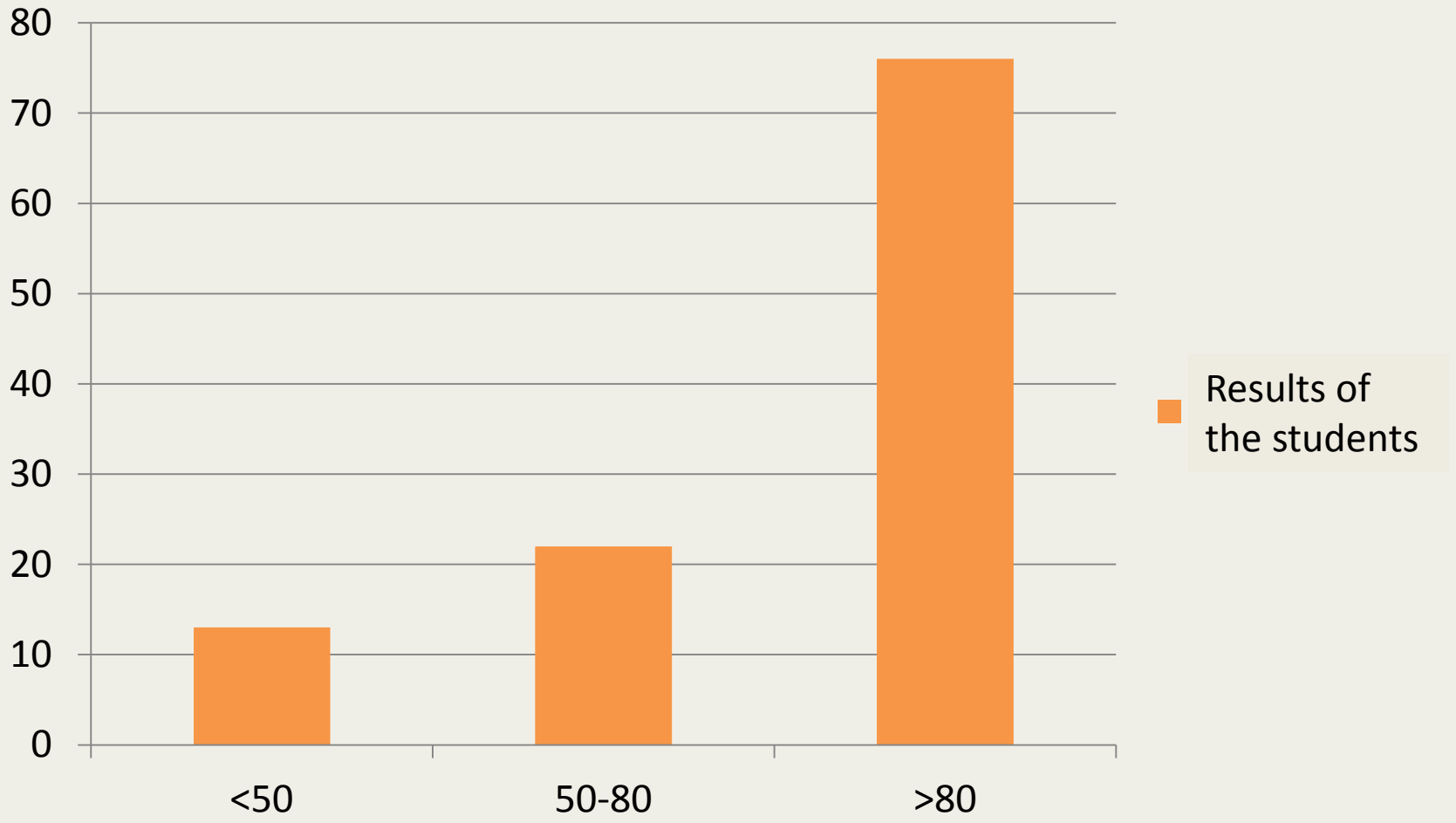
Beta test of the online practical Experiment. (Survey Results)



Beta test of the online practical Experiment. (Survey Results)



Beta test of the online practical Experiment. (Results)



Conclusion

e-Lab in Institute of Technical Education

Mobile Integrated Unit	Bread Board Simulation	Online measurement meter	Online Theoretical analysis
			

Provide students with more self-learning Programmes.

Thank you

Any Questions