



Central University of  
Technology, Free State

FACULTY OF ENGINEERING, BUILT ENVIRONMENT &  
INFORMATION TECHNOLOGY



# The use of e-learning at a University of Technology in a Higher Certificate in Renewable Energy Technologies By Lindiwe Bokopane



Departamento de  
Investigaciones  
Educativas

16th HER  
2019

16th INTERNATIONAL CONFERENCE  
ON HIGHER EDUCATION REFORM (HER 2019)

**Digital Society and Higher Education: Impact and Consequences for Policy**

Hosted by the Department of Educational Studies  
at Centre for Research and Advanced Research  
Mexico City, September 11-13, 2019



Cinvestav



Departamento de Estudios Educativos



Centro de Investigación y Avanzada Investigación



UNIVERSIDAD AUTÓNOMA METROPOLITANA

# Presentation Outline

- Background of South African educational structure
- Higher education bodies and policies on teaching and learning in SA
- CUT Policies on teaching and learning
- Teaching strategies in a HC: RET
- The use of ICT in a UOT
- Discussion and Conclusion.





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# Background



- Post apartheid Government strategies
- SA's constitution
- Steps towards building inclusive education
- The regulations
- The need for HC:RET

# HE bodies and policies on teaching and learning in SA



- Policies on the use of ICT in higher education.
- Higher education bodies and their purposes
- Statutory professional bodies
- Graduate attribute (set out by statutory bodies)



# Bodies and policies on teaching and learning in CUT



- CILT (Centre for innovation in learning and teaching)
- SoTL (Scholarship of Teaching and learning)
- CASD (Curriculum and academic staff development)
- SADS (Student academic development)
- e-LET (e-learning educational technology)
- CUT's policies of teaching (As stated in our vision 2020 and Stepps)

# Teaching strategies

## **Provision of a detailed work plan**

- Study guide as well as a practical guide

## **Teaching practices**

- Knowledge pre-test
- Chapter summary
- Clear objective

## **Teaching strategies**

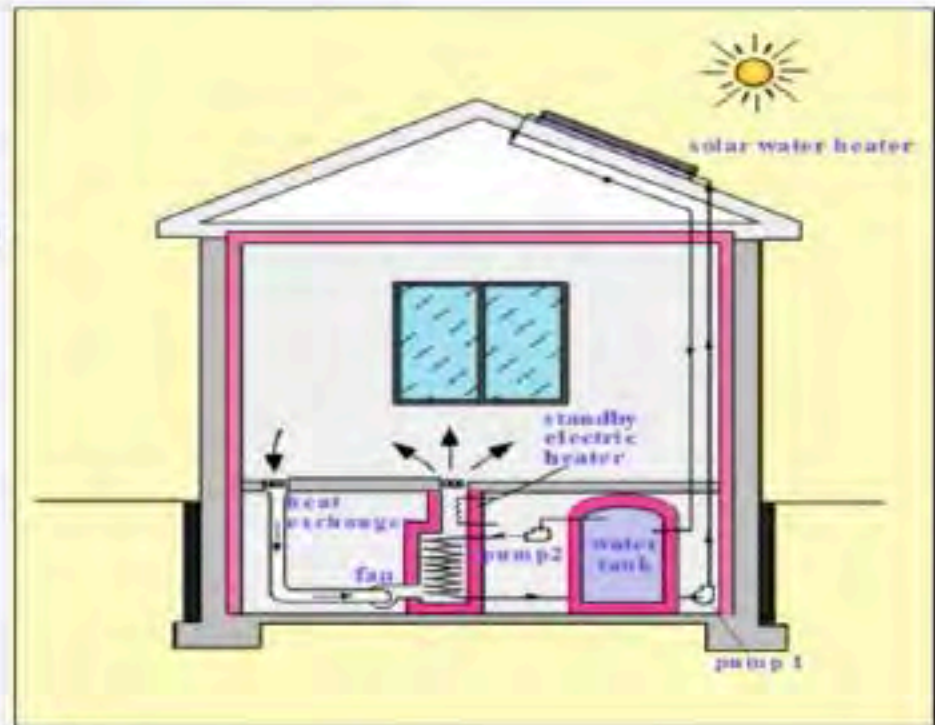
- face-to-face pedagogy,
- computational learning,
- cross-over learning,
- Argumentative learning
- learning management system, laboratory/experiment learning)



## Solar Energy

### Solar heating

- Solar water heating (SWH) is the conversion of sunlight into renewable energy for water heating using a solar thermal collector.
- A solar thermal collector collects heat by absorbing sunlight.





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# Computational learning





# Argumentative learning

## **Open-ended question/learning**

Debate a topic in a scientific dialog  
e.g Climate change and energy crisis



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# Problem-based learning

**Aim: Demonstrate heat or electricity generation.**

Method: Build a small scale model of one of the technologies that you have learned except anything concerning direct solar power (Don't use the sun).

It can be a small power plant, a standalone model or other, to demonstrate heat or electricity generation.

Write a report on its operation, output energy, efficiency and possible improvements. Your model must be demonstrated in class.





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# Cross-over learning

DEPARTMENT OF SCIENCE, TECHNOLOGY,  
ENGINEERING AND PUBLIC POLICY



UCL

## How to Change the World 2018

UCL STEaPP – CUT  
18<sup>th</sup> - 20<sup>th</sup> July 2018

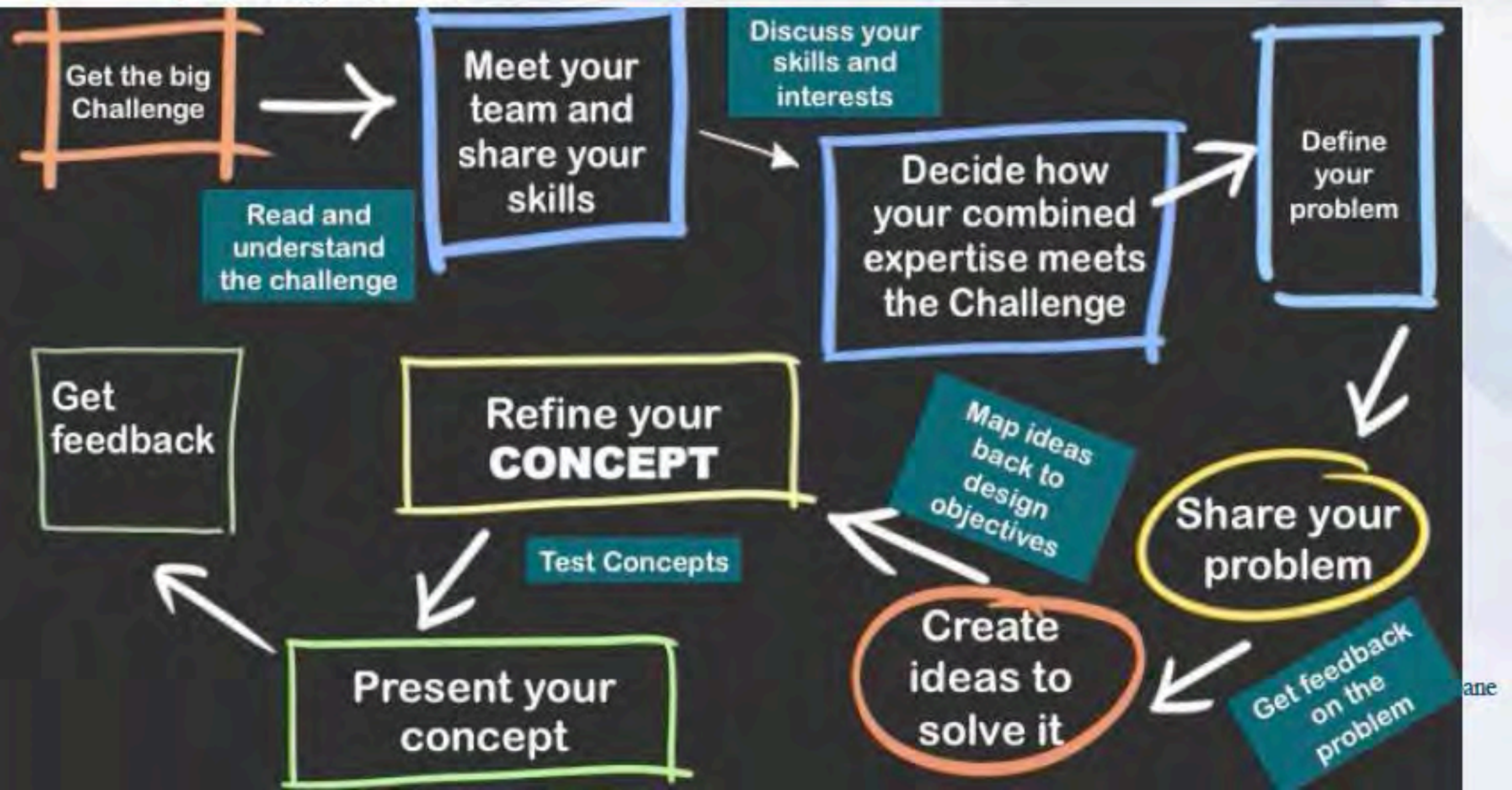


#htctw



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# Cross-over learning







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# Learning management system

Learning Unit 4 - 2018

Secure | https://ethuto2.cut.ac.za/webapps/blackboard/content/listContentEditable.jsp?content\_id=\_531605\_2&course\_id=\_10966\_2&mode=reset

Apps | Bookmarks | NASA Surface meso | Wind turbine power | PPT - Generation | How to Design Sol | Solar Time | PV Educ | File.aspx | physics calculations | Forces in 2D Review | Inclined Planes Probl | Mass on incline | SunCalc - sunrise | Avg Sunshine Hours

**eThuto** | [My eThuto](#) | **My Courses** | [Library](#) | [Content Collection](#) | [ADS Community](#) | [Student Support](#) | [System Admin](#)

2018\_PPE5011\_B | Subjective physics at Energy conversions | [Logout](#) | [ON](#)

Source 2017\_PPE5011\_B | Description 2018\_PPE5011\_B is complete. To access the detailed log, click here.

## Learning Unit 4

[Build Content](#) | [Assessments](#) | [Tools](#) | [Refresh Content](#) | [Discover Content](#)

- [Sources of energy \(Non-renewable energies\)](#)
- [Sources of Energy \(Renewable energies\)](#)

**2018\_PPE5011\_B (Applied physics of Energy conversions I)**

- Learning Unit 1
- Learning Unit 1: Calculations
- Learning Unit 2
- Learning Unit 3
- Learning Unit 4
- Help
- Study Guide
- Practical Guide
- Test and memos
- course mark
- TUTORIAL 1

**Course Management**

- Control Panel



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# Learning management system

2018\_LE55011 | IT Solar Energy Systems | 100%

Source 2017\_LE55011\_B | Destination 2018\_LE55011\_B is complete. To access the detailed log, click here

## ASSIGNMENT

Build Content | Assessments | Tools | Partner Content | Discover Content

**ASSIGNMENT**

**Assignment 2**

Availability: item is no longer available. It was last available on 27-Mar-2018 12:00.  
Do not use commas use full stops  
Do not write any units, write answers only

- 2018\_LE55011\_B (Solar Energy Systems I)
- Solar Energy Systems Contents
- Learning Unit 1
- Learning Unit 2
- Learning Unit 3
- Learning Unit 4
- Learning Unit 5
- Learning Unit 6
- Lecturer's Notes
- Help
- Videos
- Study Guide
- Practical guide
- Memo Main test
- Announcements
- Marks
- ASSIGNMENT
- Instruction for practical 2

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# Learning management system

2018\_LESS011\_B (Solar Energy Systems I)

Solar Energy Systems Contents

Learning Unit 1

Learning Unit 2

Learning Unit 3

Learning Unit 4

Learning Unit 5

Learning Unit 6

Lecturer's Notes

Help

Videos

Study Guide

Practical guide

Memo Main test

Announcements

Marks

ASSIGNMENT

Instruction for practical 2

Course Management

Control Panel

Content Collection

Course Tools

Evaluation

Grade Centre

Grade Centre : Full Grade Centre

The Full Mark Centre displays all columns and rows in the Mark Centre and is the default view of the Mark Centre. [More Help](#)

Create Column

Create Calculated Column

Manage

Reports

Filter

Discover Content

Work Offline

Move To Top

Email

Sort Columns By:

Layout Position

Order:

Descending

Grade Information Bar

Last Solved: 27 March 2018 12:45

	LAST NAME	FIRST NAME	LAST ACCESS	AVAILABILITY	WEIGHTED T	TOTAL	ASSIGNMENT 2
<input type="checkbox"/>	MANYONI	ZANELE	27 March 2018	Available	--	70.00	70.00
<input type="checkbox"/>	MATSEBELA	TEBOHO ISAAC	26 March 2018	Available	--	50.00	50.00
<input type="checkbox"/>	MJEZU	ANDILE	28 March 2018	Available	--	30.00	30.00
<input type="checkbox"/>	MOFCKENG	XOLANI ZEPHANIA	17 March 2018	Available	--	--	--
<input type="checkbox"/>	MOLOA	MELESINA ELIZA	24 March 2018	Available	+	60.00	60.00
<input type="checkbox"/>	MOKGHTSI	PATRICK DITABA	28 March 2018	Available	--	70.00	70.00
<input type="checkbox"/>	MOXDENA	THABISO VINCENT	26 March 2018	Available	+	70.00	70.00
<input type="checkbox"/>	MOLOI	SEIPATI PATIENCE	27 March 2018	Available	--	70.00	70.00
<input type="checkbox"/>	MOTODI	DIKETSO GODFREY	28 March 2018	Available	--	80.00	80.00
<input type="checkbox"/>	MPEKE	MOKGGO PEGGY	26 February 2018	Available	--	--	--

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# Supporting material - PEER Evaluation

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Classroom Observation Instrument for Peer Review

Name of Instructor: L. Bokojane  
Code and Title of Course: Small Wind Generators (LWV5012)  
Observer: L.P. Majo Date: 30/08/2016

DIRECTIONS: Please rate your colleague's teaching performance according to the scale below:

Rating: 1= Poor; 2 = Satisfactory; 3 = Good; 4 = Very good; and 5 = Excellent

CLASSROOM OBSERVATION	RATING				
	1	2	3	4	5
<b>1. Content is:</b>					
• Relevant to the course objectives					X
• Current and up-to-date					X
• Appropriate for the level of the students					X
• Adequate for the class period					X
<b>2. Organization</b>					
• Introduction bridges materials covered previously			X		
• Material is organized clearly and logically			X		
• There is evidence of adequate preparation			X		
• Presents a summary of materials covered			X		
<b>3. Presentation</b>					
• Uses methods appropriate to the content and level of students				X	
• Uses effective and audible voice				X	
• Stimulates and maintains student attention and interest			X		
• Presents material at a suitable pace			X		
• Makes appropriate use of available teaching aids and illustrations			X		
• Shows comprehensive mastery of content			X		
<b>4. Interaction</b>					
• Maintains discipline and conducive teaching and learning environment			X		
• Uses appropriate posture, body movement, and eye contact with students			X		
• Shows confidence and enthusiasm			X		
• Encourages students to ask questions and express their own points of view			X		
• Provides prompt feedback/ follow-up to student responses where appropriate			X		

General Comments by Observer: Module was well presented. The lecturer is knowledgeable and well prepared.

Overall Score: 74/95 = 78 % Signature of Observer: L.P. Majo

Comments by the Assessee: I feel the Assessment is fair/ unfair.

Please comment if necessary:

Signature of the Assessee

Date: 30 August 2016

Central University of Technology  
Classroom Observation Instrument for Peer Review

Name of Instructor: L. Bokojane  
Code and Title of Course: Small Wind Generators (LWV5012)  
Observer: PT Mandibaza Date: 14 September 2017

DIRECTIONS: Please rate your colleague's teaching performance according to the scale below:

Rating: 1= Poor; 2 = Satisfactory; 3 = Good; 4 = Very good; and 5 = Excellent

CLASSROOM OBSERVATION	RATING				
	1	2	3	4	5
<b>1. Content is:</b>					
• Relevant to the course objectives					X
• Current and up-to-date					X
• Appropriate for the level of the students					X
• Adequate for the class period					X
<b>2. Organization</b>					
• Introduction bridges materials covered previously			X		
• Material is organized clearly and logically			X		
• There is evidence of adequate preparation			X		X
• Presents a summary of materials covered			X		
<b>3. Presentation</b>					
• Uses methods appropriate to the content and level of students				X	
• Uses effective and audible voice				X	
• Stimulates and maintains student attention and interest				X	
• Presents material at a suitable pace				X	
• Makes appropriate use of available teaching aids and illustrations				X	
• Shows comprehensive mastery of content				X	
<b>4. Interaction</b>					
• Maintains discipline and conducive teaching and learning environment			X		
• Uses appropriate posture, body movement, and eye contact with students					X
• Shows confidence and enthusiasm					X
• Encourages students to ask questions and express their own points of view				X	
• Provides prompt feedback/ follow-up to student responses where appropriate				X	

General Comments by Observer:

The course was conducted with utmost professionalism

Overall Score: 77/95 (81%)

Signature of Observer: PT Mandibaza

Comments by the Assessee: I feel the Assessment is fair/ unfair.

Please comment if necessary: No

Signature of the Assessee

Date: 14/09/2017

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# Supporting Material - Student evaluation

Report

## Question 23: Opinion Scale/Likert

The lecturer clearly interpreted abstract ideas and theories

	Per cent Answered
Strongly Agree	66.667%
Agree	16.667%
Neither Agree nor Disagree	16.667%
Disagree	0%
Strongly Disagree	0%
Not Applicable	0%
Unanswered	0%

## Question 24: Opinion Scale/Likert

The lecturer encouraged students to think for themselves

	Per cent Answered
Strongly Agree	50%
Agree	33.333%
Neither Agree nor Disagree	0%
Disagree	0%
Strongly Disagree	0%
Not Applicable	0%
Unanswered	16.667%

## Question 25: Opinion Scale/Likert

Classes were evenly spread over the week

	Per cent Answered
Strongly Agree	83.333%
Agree	16.667%
Neither Agree nor Disagree	0%
Disagree	0%
Strongly Disagree	0%
Not Applicable	0%
Unanswered	0%

## Question 26: Opinion Scale/Likert

Honours helped me to understand the learning material more clearly

	Per cent Answered
Strongly Agree	33.333%
Agree	50%
Neither Agree nor Disagree	16.667%
Disagree	0%
Strongly Disagree	0%
Not Applicable	0%
Unanswered	0%

## Question 27: Opinion Scale/Likert

The prescribed textbook was useful

	Per cent Answered
Strongly Agree	50%
Agree	33.333%
Neither Agree nor Disagree	0%
Disagree	0%
Strongly Disagree	16.667%
Not Applicable	0%
Unanswered	0%

## Question 28: Opinion Scale/Likert

Learning materials were of a high standard (good quality)

	Per cent Answered
Strongly Agree	50%
Agree	50%
Neither Agree nor Disagree	0%
Disagree	0%
Strongly Disagree	0%
Not Applicable	0%
Unanswered	0%

## Question 29: Opinion Scale/Likert





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# Laboratory/Experiment based learning







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# Laboratory/Experiment based learning

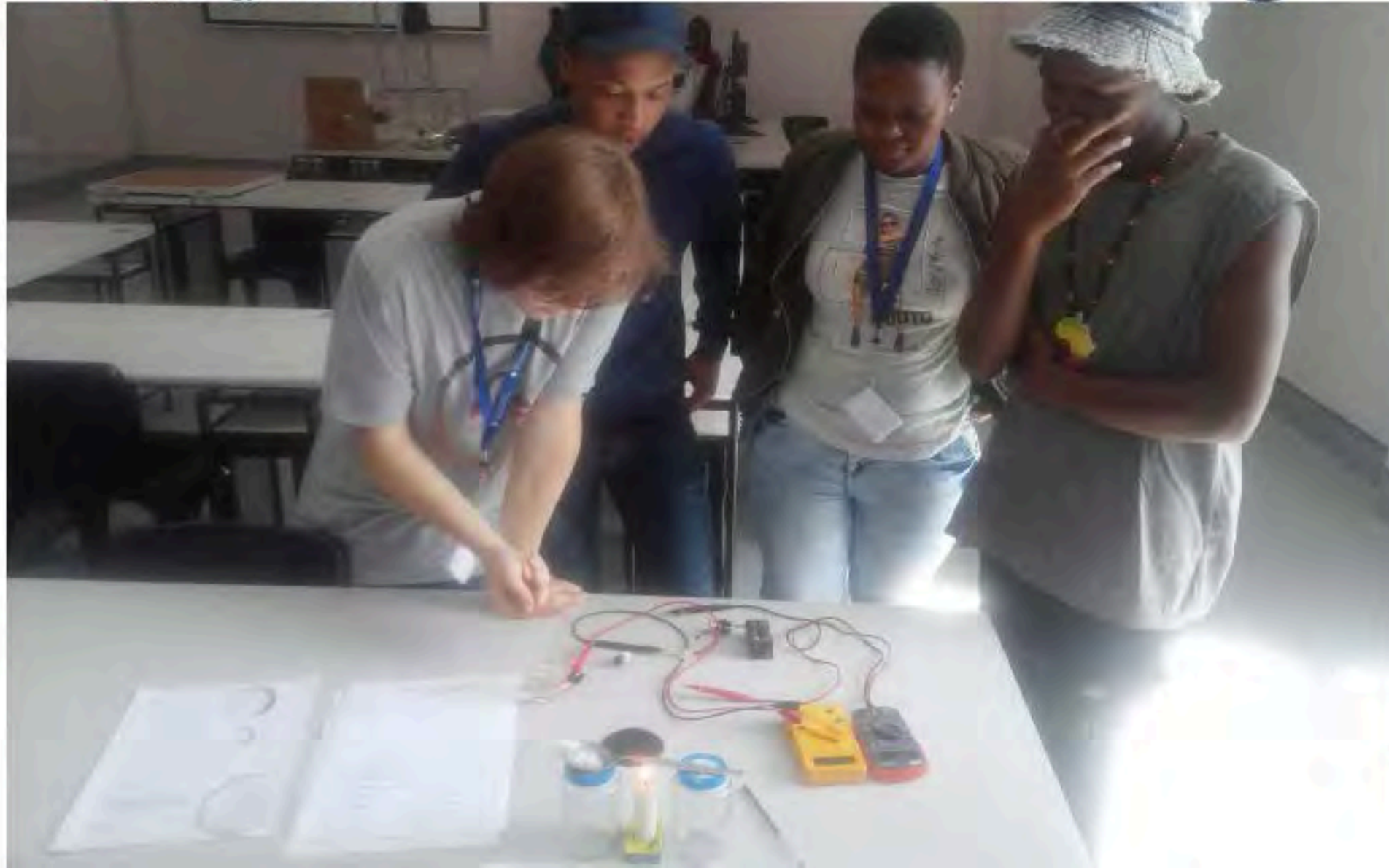






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# Laboratory/Experiment based learning



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# Discussion & Conclusion

## Discussion

- Fulfilment of the aim of the qualification
- Academic performance and concept implementation
- Growth in the qualification enrolment
- Bachelors and Honors

## Conclusion

**LMS effectiveness**

**The effective use and combination of other learning pe**





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# Thank You