Hermann Ohlthaver Report for week ending 05 April 2019 (Total 193 Learners)

Wednesday 03 April 2019	14:00-16:00 (2 Hours)	Paterson High	Total 15 Learners

Science Club (15 learners)
An introductory meeting was initiated with a general discussion including learners. This was in preparation for a Science Expo with a cluster of schools. Topics covered included

- Scientific Literacy
- Coding in general
- The Internet of Things
- General Career Guidance
- Science Expo principals in general

Thursday, 04 April 2019	8:30-12:30 (5 Hours)	Khwezi Lomso	Total 130 Learners

Mrs Maneli invited me to deliver the lessons to Grade 8 and 9 learners using my own data projector. On arrival I was shown into a classroom with a Telkom Interactive Board which was able to connect to WiFi devices. I soon had the Raspberry Pi connected to the device which worked well in calling up Phet demonstrations.

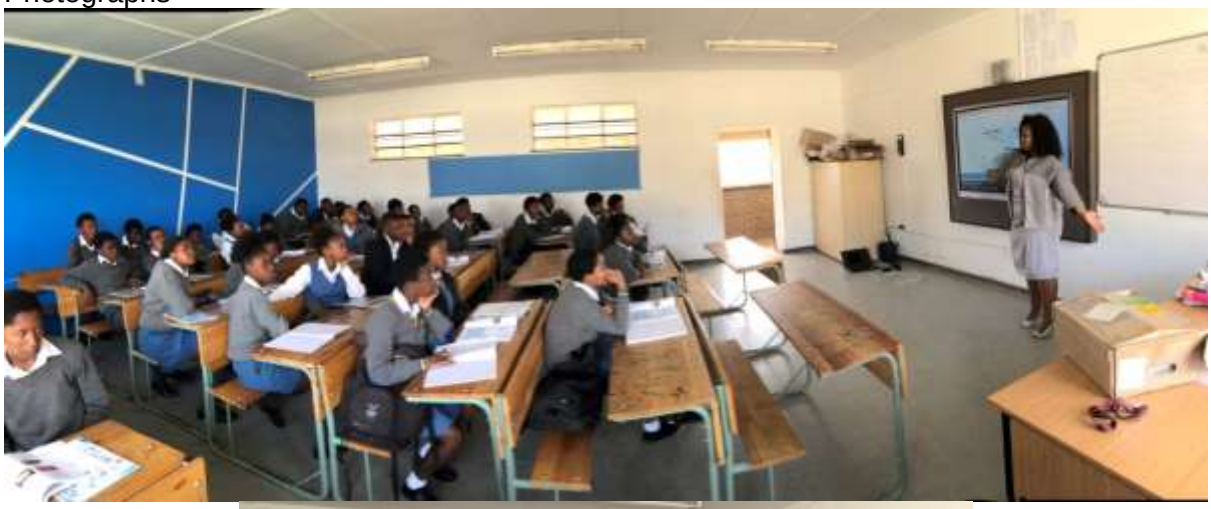
Lesson 1 - Grade 9 (40 learners)
Structure of the atom - Phet Simulation off Raspberry Pi
Balancing chemical equations - Phet Simulation off Raspberry Pi

Lesson 2 - Grade 9 (45 learners)
Structure of the atom - Phet Simulation off Raspberry Pi
Balancing chemical equations - Phet Simulation off Raspberry Pi

Lesson 3 - Grade 8 (45 learners)
Structure of the atom - Phet Simulation off Raspberry Pi
General topics relating to LEGO Robotics and the Internet of Things Videos off Raspberry Pi

Other
Discussions relating to the formulation of a computer club and planning for the term

Photographs



Grade 09 Learners – Khwezi Lomso

Friday, 05 April 2019	09:00-13:00 (4 Hours)	Paterson High	Total 48 Learners

Introduction to Scientific Literacy in the context of Clean Energy Education. This involved the demonstration of energy and energy flow using

- A dynamo
- Solar cell (not used due to rain falling at the time of the demonstration
- Wind turbine with variable pitch settings driven by an electric fan
- Hydrogen Fuel cell to demonstrate electrolysis and the formula for water (H20)
- Reversible fuel cell using hydrogen and oxygen to power a small electric car

Lesson 1 - Grade 12 (16 Learners)
Lesson 2 - Grade 11 (15 Learners)
Lesson 3 - Grade 10 (17 Learners)
Lesson 4 and 5 - Cancelled due to disruptions in the school
Computer Club - Cancelled due to disruptions in the school

Grade 12 Learners – Paterson High

Grade 11 Learners

Grade 10 Learners

Monday, April 8 2019	8:30-13:30 (5 Hours)	Khwezi Lomso	Total 133 Learners

- Grade 9 (45 Learners) Set up the system with the Raspberry Pi. Mrs Nomakhaya Maneli took over the class and delivered the lesson on the structure of the atom and Balancing Chemical Equations using Phet simulations. An important transition was made to empowerment of teachers after a short period of time.
- Grade 8 (46 Learners) - Teacher Absent. Presented on the Structure of the Atom. Reviewed the introduction to Atoms on Khan Academy and then switched to the Phet Simulations with extensive discussions and interactions.
- Grade 8 (42 Learners) - Teacher Absent. Presented on the Structure of the Atom. Reviewed the introduction to Atoms on Khan Academy and then switched to the Phet Simulations with extensive discussions and interactions.

Photographs

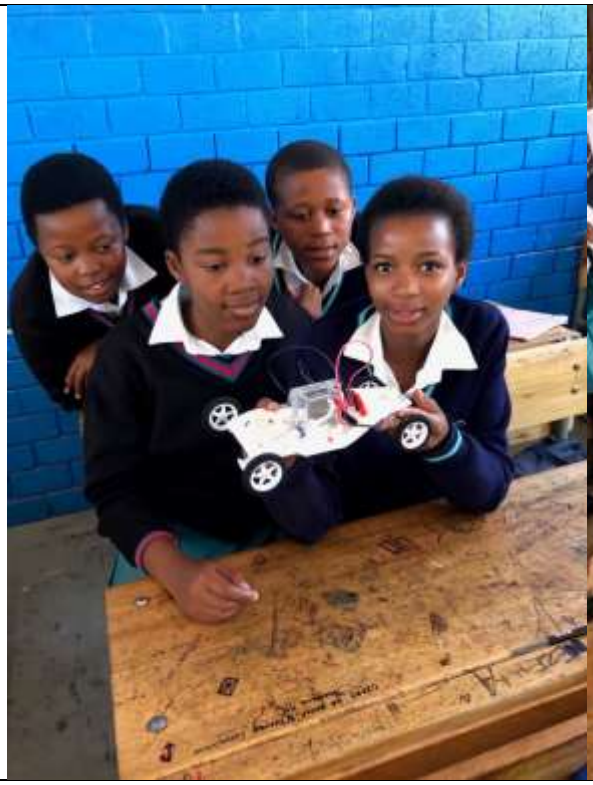
Tuesday, 09 April 2019	8:00-2:15 (6.5 Hours)	Ndzondelelo	Total 307 Learners

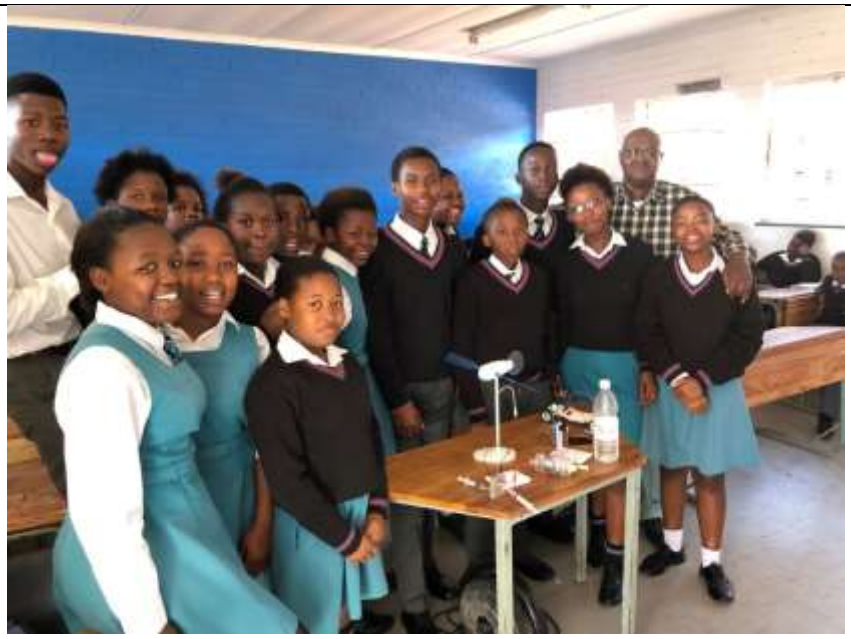
The day was scheduled for Clean Energy Education with a heavy emphasis on Scientific Investigations. The first session was conducted in a classroom but all the rest of the sessions were conducted outside to emphasize the importance of clean energy.

- Lesson 1 - Grade 9E Natural Science ...(48 learners)
- Lesson 2 - Grade 12 Physical Science .(42 learners)
- Lesson 3 - Grade 9A Natural Science ...(46 learners)
- Lesson 4 - Grade 10 Physical Science .(53 learners)
- Lesson 5 - Grade 9 Natural Science .....(45 learners)
- Lesson 6 - Grade11 Physical Science ..(73 learners)

It was interesting to observe that only one of the three hundred learners managed to solve the Turbine Challenge. During the set up the turbine blades are set at 90 degrees to the wind and a variable speed fan is placed about 50 cm away.

A discussion relating to what engineers do ensued together with the importance of changing one variable at a time. The changing of the wind speed is guided by the teacher after which they are asked to solve the problem. All suggestions relate to changing the position / direction of the fan / turbine. The solution lies in altering the pitch of the blades.





Tuesday, 09 April 2019	14:30-16:00 (1.5 Hrs)	Paterson High	
Presentation by Dr Gibbs relating to Eskom Expo for Young Scientists. I was requested to attend to discuss the Scientific Literacy Program with the cluster of schools but due to time constraints the sessions did not take place.			

Wednesday, 10 April 2019	12:00-15:30 (3.5 Hrs)	Paterson	Total 13 Learners

Coding Club : Tried to set up 6 desktops but could not bypass the password which was not available. I was provided with four laptops which were switched on and checked that the Raspberry Pi Server was accessible. 13 learners arrived for the Coding Club as some had other commitments.

We covered the concepts of an Algorithm, Commands and Variables in a simple game away from the computers. This laid an important foundation for coding.

There was sufficient time to show learners how to :-

- Connect to the Raspberry Pi through the WiFi connection
- Launch a browser and enter the IP address
- Navigate to the Portable Apps section
- Download the Scratch (Zipped) File
- Extract the file to a directory on the Desktop
- Launch the program
- Move the Sprite manually with the mouse
- Insert the first command (Move)
- Change the variable of distance
- Move the Sprite backwards with a negative variable
- Monitoring the mouse position coordinates
- Moving the Mouse to the Origin x=0 y=0

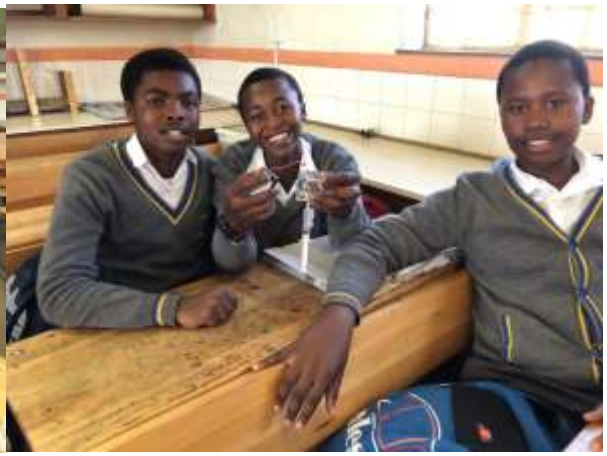
Thursday, 11 April 2019	8:00-2:30 (6.5 Hours)	Khwezi Lomso	Total 222 Learners

The day was scheduled for Clean Energy Education with a heavy emphasis on Scientific Investigations. All session were conducted in a Science Laboratory with the Solar section moved to the veranda outside the Lab.

- Lesson 1 - Grade 11 Physical Science ...(45 learners)
- Lesson 2 - Grade 10 Physical Science ...(30 learners)
- Lesson 3 - Grade 12 Physical Science ...(43 learners)
- Lesson 4 - Grade 11 Physical Science ...(43 learners)
- Lesson 5 - Grade 12 Physical Science ...(28 learners)
- Lesson 6 - Grade 10 Physical Science ...(33 learners)

Only two learners managed to solve turbine challenge

Photographs



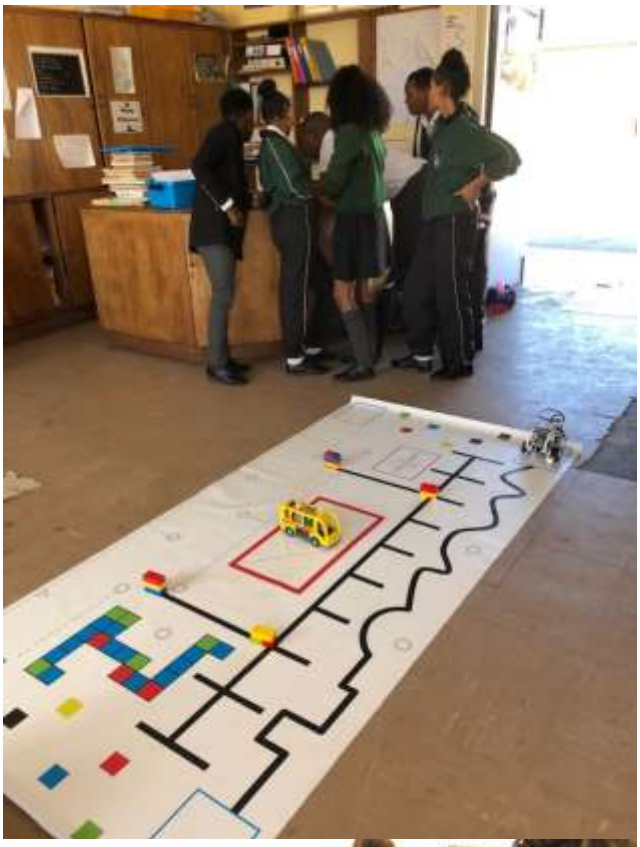
Friday, 12 April 2019	12:00-15:00 (5 Hours)	Paterson	Total 13 Learners

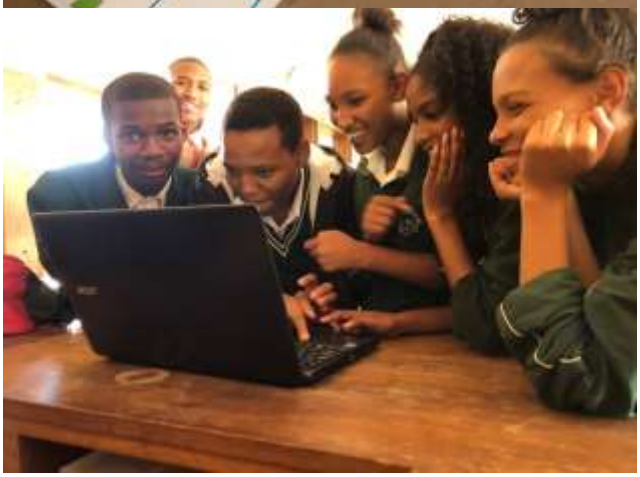
Computer club

- Grade 12 - 2
- Grade 11 - 6
- Grade 10 - 5

After a demonstration at the Harvest Christian school in the morning as part of digital literacy I decided to do a LEGO session with the coding class as I had the equipment with me. Unfortunately the desktop computers had been removed so I could not work on them. The session involved linking the LEGO Robot to my laptop via Bluetooth to execute commands. A World Robotics Olympiad May was used as the basis for the challenge. Each learner was given a turn to add a command and to alter the variables to complete the overall challenge. It was encouraging to see girls participating as well. The learners took naturally to coding.

Photographs





Monday, 15 April 2019	8:00-2:30 (6.5Hrs)	Chapman	Total 199 Learners

Clean Energy Education Demonstrations with a touch of Scientific Literacy.
This included:-

- Hypothesis formation
- Method
- Dependent variables
- Getting Results
- Drawing conclusions

A key theme also included the flow of energy and energy transformations at each level with Solar, Wind and Hydrogen energy.

- Grade 9 Natural Science - 50
- Grade 9 Natural Science - 50
- Grade 10 Physical Science - 32
- Grade 9 Natural Science - 50
- Grade 11 Physical Science - 17

One student was able to solve the Wind Turbine challenge right from the outset which is encouraging to see. In general discussions with Mrs Erasmus it was indicated that Interactive boards are carried from class to class and Tablets are locked in the strong room. The Raspberry Pi could be used to deploy the Tablets in more classes placing them in the hands of the learners by creating a need within the various subjects.

Tuesday, 16 April 2019	8:00-13:30 (5.5 Hrs)	Ndzondolelo	Total 213 Learners

- Grade 9 Natural Science - 57 Clean Energy Education demonstrations with Scientific Literacy
- Grade 12 Physical Science - 48 Clean Energy Education demonstrations with Scientific Literacy
- Grade 10 Physical Science - 54 Structure of the Atom and Balancing Chemical Equations (Phet Simulation)
- Grade 10 Physical Science - 54 pH (Phet Simulation)

Photographs

Wednesday,17 April 2019	12:00-15:00 (3 Hours)	Paterson	Total 4 Learners

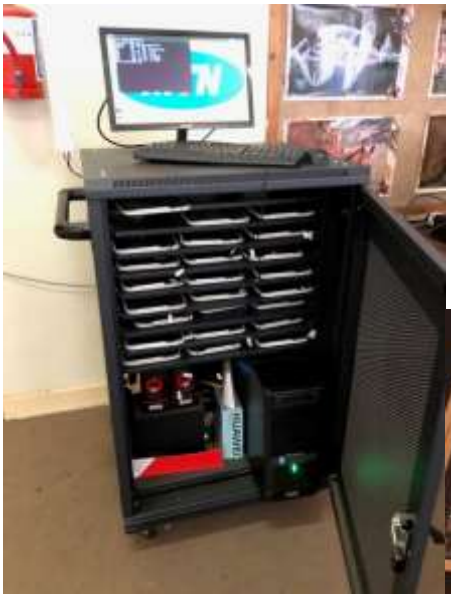
The original room allocated for computer training was the old library but this was not suitable and the computers available were not accessible as nobody had the password. On arrival I was taken to the original computer where 8 fully functional PCs were available for training. There were plans to network all the computers to facilitate the installation of software directly from the Raspberry Pi. It must be noted that Java Runtime Environment needs to be updated in order to make full use of many of the new programs. Due to the fact that the PCs were not networked a manual method of using a Flash Drive was used to install Scratch onto all the Desktops. A number of old computers were also stored in the room which were ready to be disposed of. It was suggested that they be set up with Linux to increase the number available for teaching and learning. The responsibility for setting up and maintaining the additional Linux machines could be placed in the hands of a small group of interested learners.

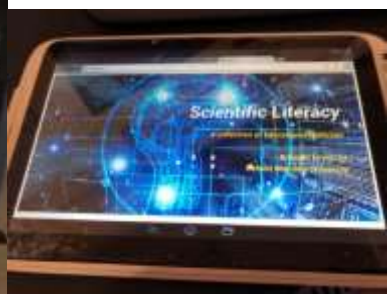
The MTN trolley with Tablets was in the computer room. It did not take long for a tablet to be connected to the Raspberry Pi. An existing server is also available with plenty of storage space. It must be noted that the staff at Paterson have gone out of their way in facilitation better working conditions at the school especially Mr Prins, Mr Fonteyn and Mr Ibrahim.

Grade 10 - 1

Grade 11 - 2

Teacher - 1





Thursday, 18 April 2019	8:00-11:0 (3 Hours)	Khwezi Lomso	Total 130 Learners

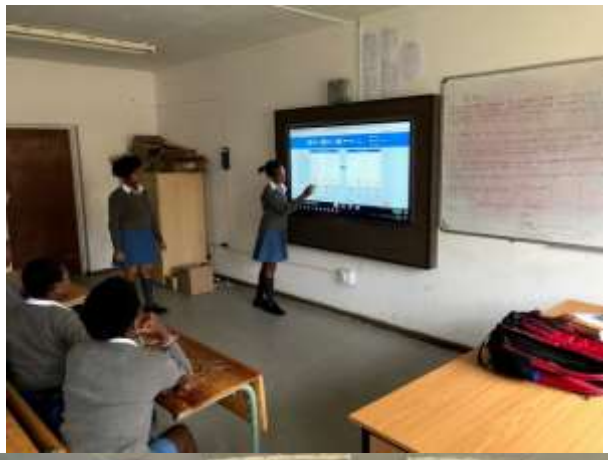
The same Grade 8 class (46 Learners) was taken through two lessons as the school was closing early for the Easter Holidays. The topic for the lesson included.

Elements, Mixtures and Compounds
Particle model of matter
Khan Academy introduction to Atoms

Time was also spent on exploring ways of integrating the Raspberry Pi with the interactive boards to overcome the challenge of not being able to access the left and right mouse buttons.

A Technology eBook was placed on the Desktop to assist the teacher in using it in her lessons.

Photographs



Stats (Total 67.5 Hours) (Total number of learners 1390)

Month	Date	Hrs	School	Month Tot	Claim	Hours						
						Paterson	Khwezi Lomso	Ndzondelelo	Champman	Seyisi Primary	Charles Duna	General
Jan	24	2	Schools	Jan Tot								
	25	5	Schools	7								7
Feb	7	1	Nico									
	14	1	Andre	Feb Tot								
	27	2	Nico	4								4
				Mar tot								
March	12	2	Schools	2								2
April	3	2	Paterson			2						
	4	5	Khwezi Lomso				5					
	5	4	Paterson			4						
	8	5	Khwezi Lomso				5					
	9	6.5	Ndzondelelo					6.5				
		1.5	Paterson			1.5						
	10	3.5	Paterson			3.5						
	11	6.5	Khwezi Lomso				6.5					
	12	3	Paterson			3						
	15	6.5	Champman						6.5			
	16	5.5	Ndzondeleo					5.5				
		1.5	Seyisi Primary							2		
		1	Charles Duna								1	
	17		Paterson			3						
	18	3	Khwezi Lomso				3					
				54.5	67.5							
					Hours	17	19.5	12	6.5	2	1	13

Grades

4	5	6	7	8	9	10	11	12

Grades

4	5	6	7	8	9	10	11	12	
						15			15
				45	85				130
						17	15	16	48
				42	91				133
					139	53	73	42	307
									0
						13			13
						63	88	71	222
						15			15
					150	32	17		199
					57	108	48		213
									0
									0
						1	2		3
				92					92
									0
Grades				179	522	317	243	129	1390