

# Hermann Ohlthaver Trust

NMMU Report of ICT Training and Support

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Faculty of Education

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## 1. INTRODUCTION

For this year, three primary schools and one high school are the beneficiaries of the ICT engagement programme of the Faculty of Education. These schools are La Trobe Primary, Rietberg Primary, Zanoxolo Primary and Sandisulwazi High School. Zanoxolo Primary is the only urban school located in Motherwell, Port Elizabeth. The remaining schools are located in the rural Sundays River Valley outside Port Elizabeth.

The focus for 2014 at the primary schools will be more on learner development. Teacher training will continue as there is still a great need and demand from the schools concerned. Research into aspects of language literacy will also be supported through this engagement with the schools. Mathematical skills and literacy will also have a special focus during this year. The objective is to improve learners' skills in these areas with the aid of language and mathematics software. By making learning fun and exciting we hope to see a shift in attitude by learners towards language and mathematics.

We are still offering continued technical support at Sandisulwazi High in the form of maintenance of the computer laboratory. We have also added another initiative, Virtual Classroom Science Education from Port Elizabeth to Sandisulwazi High School in Paterson.

Mr Preston Geswint is playing a very important role in this initiative as he visits the school and assists them on a weekly basis.

## 2. SPECIFIC OBJECTIVES FOR 2014

### 2.1 General computer skills training for learners and teachers

As mentioned, the focus for 2014 would be to train mainly the learners in basic computer skills such as:

- Correct start up and shut down procedures.
- Basic keyboard and mouse skills.
- Elementary folder and file management.

### 2.2 Introduce learners to Mathematics and Language literacy software.

Mathematics software downloaded onto the computers was **Tux Math of Command** and **Mathemagic**. English literacy software included **Cartoon Story Maker**.

### 2.3 Plan curriculum integrated training lessons and activities.

Expose teachers to the software and encourage them to make use of the computer laboratories as part of their normal teaching practice.

## 3. GENERAL PROGRESS

After consultations with the three primary schools, the work commenced during March at La Trobe and Rietberg and in April at Zanoxolo. At La Trobe, 70 grade 5 to 7 learners participate in training. Sessions are conducted on Mondays. La Trobe has 12 computers available and the class groups are split in two and sometimes three in the case of grade 5. Rietberg has a greater learner enrolment and two days with six sessions each are allocated for training. The grade 5 and 6 classes, a total of 176 learners, are split into three groups. The computer laboratory has 15 computers available. Zanoxolo has a lab of 32 ageing computers. Sessions here takes place on Thursdays. 240 grade 5 and 6 learners are involved.

The Learners at all three primary schools were introduced to the mathematics software as envisaged. All learners are comfortable with **Tux Maths of Command**. This program allows for the drilling of the basic mathematical operations in a fun and interactive game format. Most of the sessions with learners start with Tux Math for up to 15 minutes before moving onto other activities. All learners have also started using the more challenging **Mathemagic** software. At all three schools the teachers have been taken through the mathematics software. Teachers were encouraged take learners to the computer labs outside of our intervention program. The software can easily be used by teachers to evaluate the mathematical skills of the learners and to design and implement remedial programs to improve learner's ability.

Our approach to on-going computer skills training is to integrate with curriculum activities at the respective schools. Themes were chosen in conjunction with some teachers at Rietberg and La Trobe. We chose to focus on Data Handling as part of the mathematics curriculum. The specific topics chosen can however be used across some other learning areas. Data collected will be used to teach spread sheet skills including generating graphs. Learners will also have to report on the project using word processing skills as well as a presentation in PowerPoint. In the case of Rietberg Primary we will go a step further and use the internet as part of this project. The first aspect of the data handling task is already underway as will be reported below. The training of teachers at Rietberg Primary is on-going.

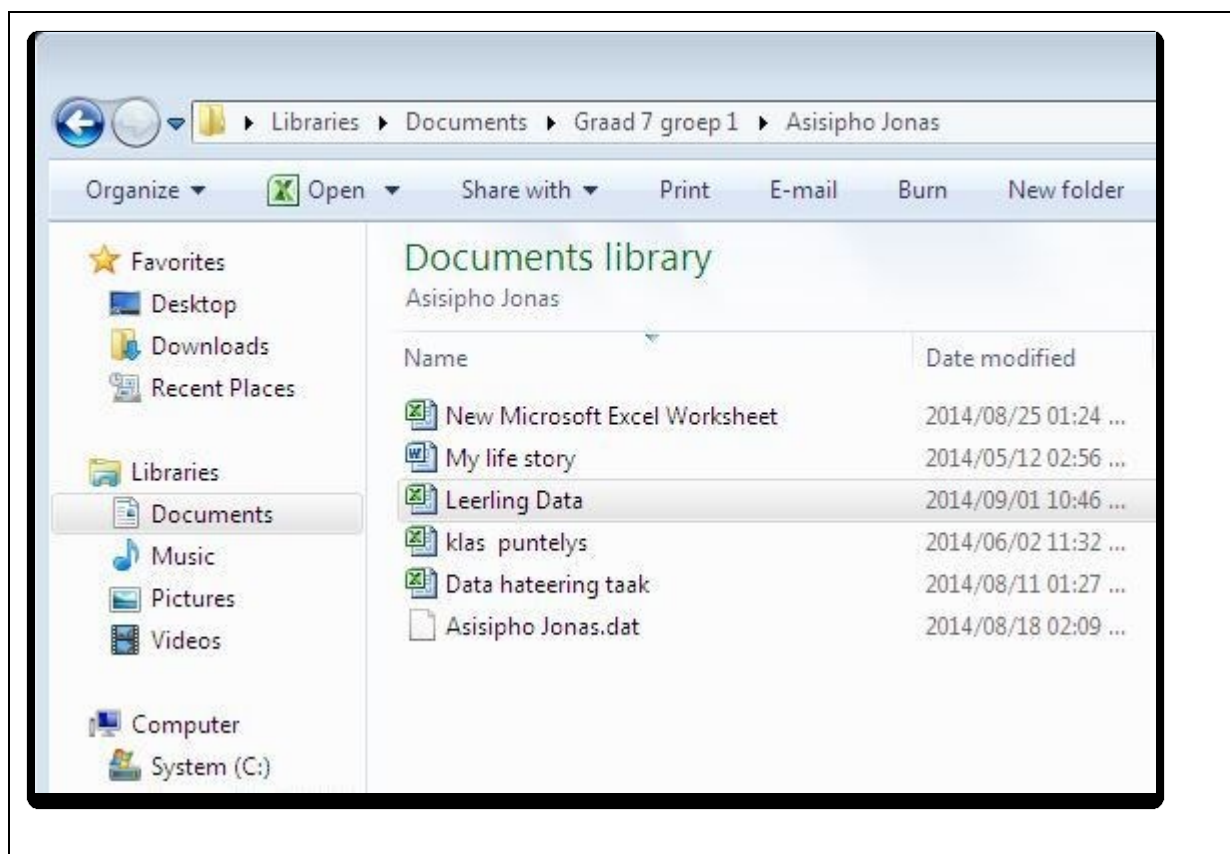
### 3.1 La Trobe Primary

The grade 6 and 7 learners already had exposure to the computers during 2013. Very noticeable then was the difficulty learners have with basic mathematical operations when working with a mathematics program (Tux Math of Command).

Learners were orientated with the computer room. They were taken through the following:

- Start-up, log-on and shut down procedures.
- Basic keyboard and mouse skills
- Elementary file management procedures. Each learner has created a personal folder which will serve as a personal portfolio.

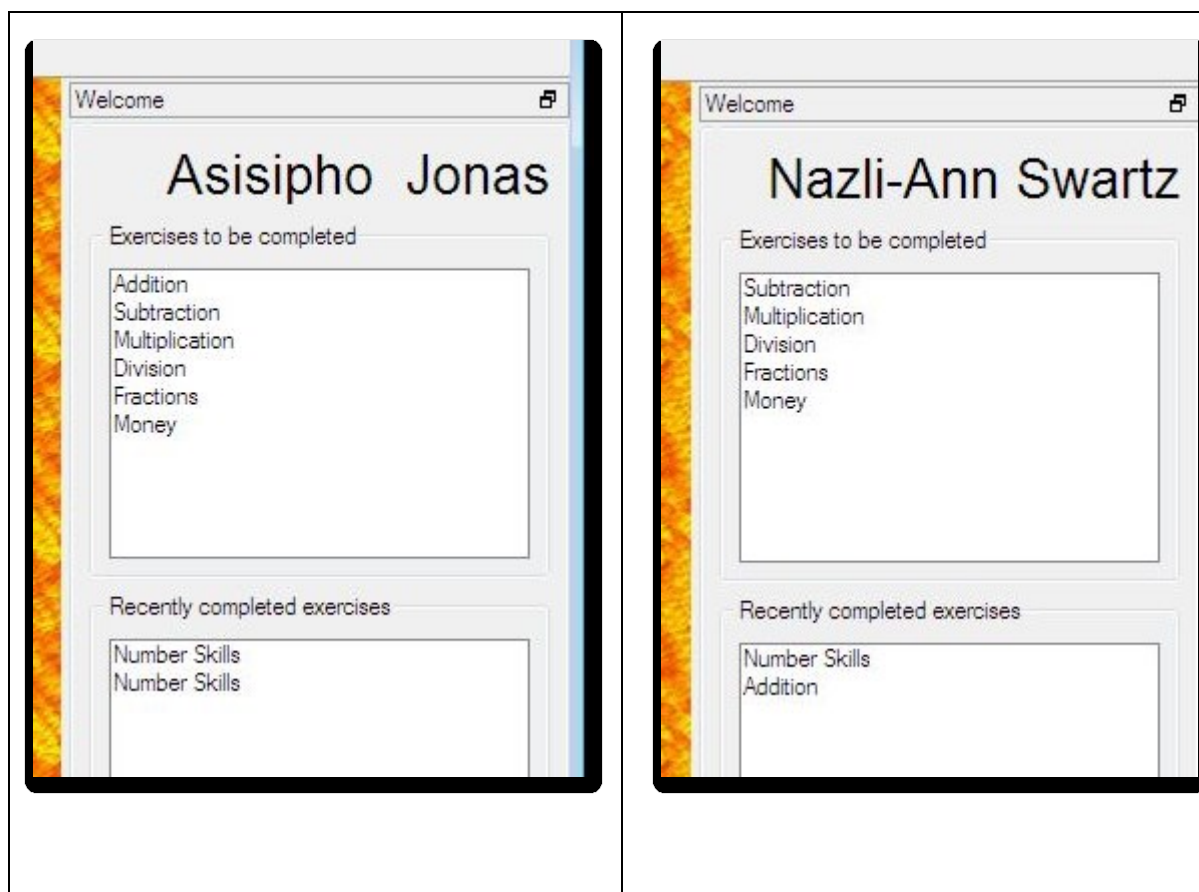
**Screenshot 1: The folder of Asisipho Jonas, a grade 7 learner at La Trobe Primary. Most learners are very comfortable in navigating to their folders to access a specific file.**



## Mathematical Literacy Software

All learners involved in the training program have been introduced to **Tux Math of Command** and **Mathemagic**. The learners are registered in Mathemagic. They have been taught to save their progress and to recall the file in a subsequent session.

**Screenshots 2 and 3: Examples of learners using Mathemagic. The program is able to track the progress of learners. This is useful for both learners and teachers in assessing learner performance.**



## Integrated Computer Skills Training

As stated above, computer skills training is integrated with the Data Handling module of the mathematics curriculum. All three grades of learners were given a task of collecting data to be captured in MS Excel. Learners were assigned into groups for this task.

Grade 5 learners did research of the number of and different types of trees found within the school ground. They are now at the stage where the data is being captured into MS Excel. Learners are therefore able to develop spreadsheet skills whilst developing mathematical and natural science knowledge.

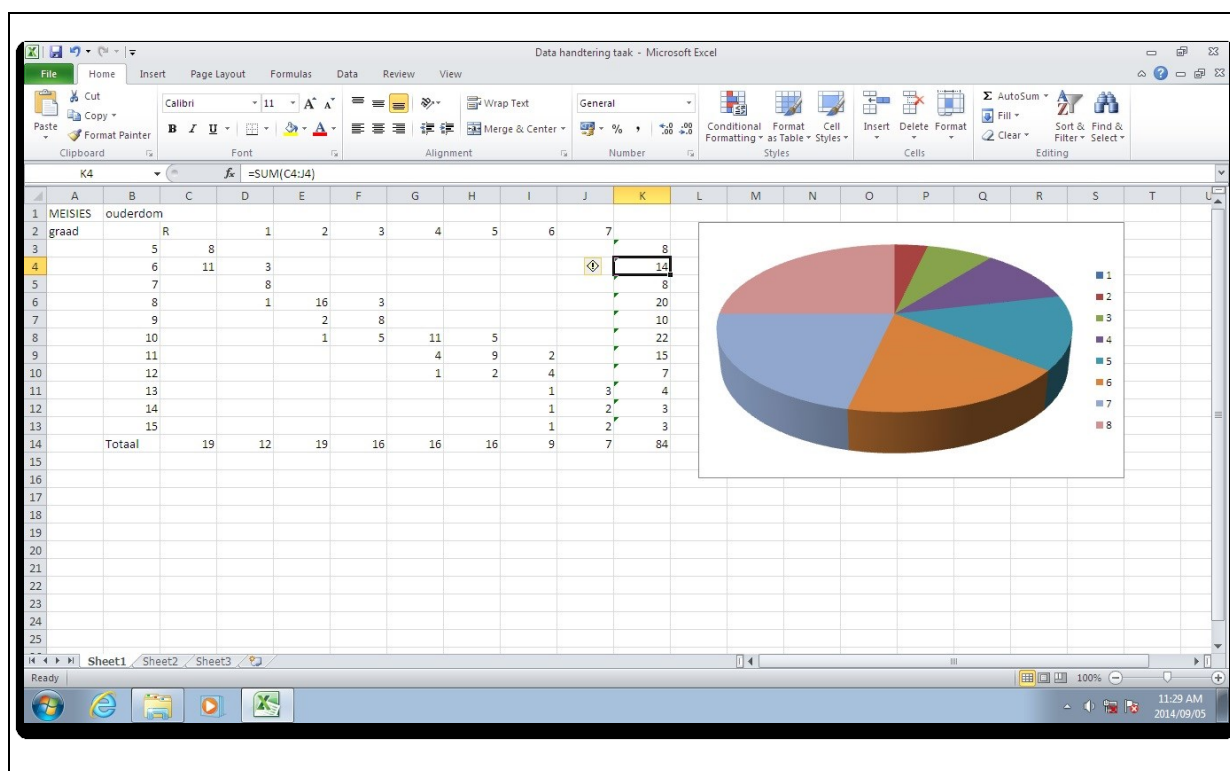
Grade 6 learners were tasked to interview each class teacher to obtain learner enrolment statistics for the whole school. Of particular interest in this project is the age of learners and decrease in the number of learners in the senior grades at the school.

Grade 7 learners had to collect two sets of data. They collected learner enrolment data as done by grade 6. They were also tasked with surveying the small-scale agricultural practices in the local community.

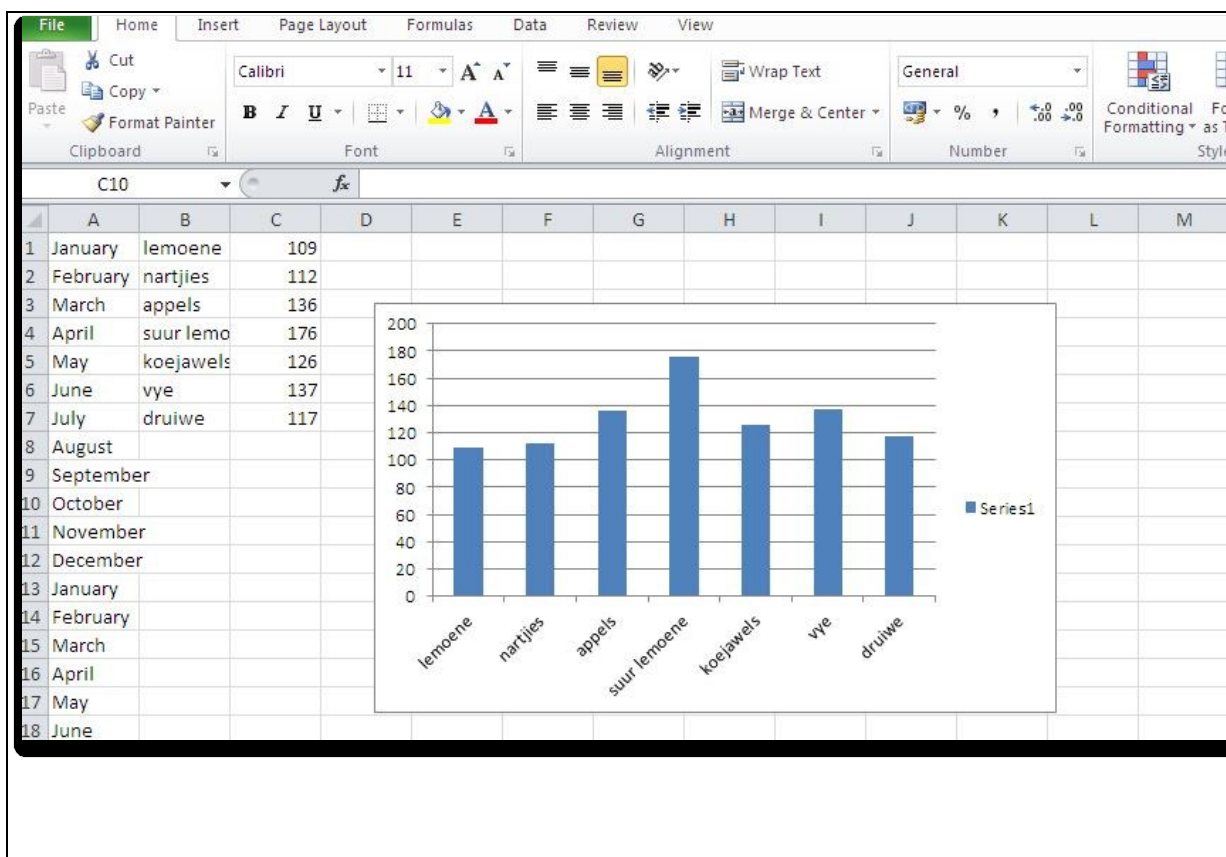
The learner enrolment data were collected and captured into MS Excel by both grade 6 and 7 learners. They are now busy processing the data. Learners are already able to calculate data totals using the Autosum function in MS Excel. They can also generate their own basic formula to find totals of data ranges. They have also been introduced to the Autofill operation in the spreadsheet. Simple graphs were generated by both grade 6 and 7.

This program will run for the remainder of the school year. Word processing and Presentation skills will also form part of the training. We also hope to integrate this study with the Life Skills curriculum component. After studying the enrolment patterns, learners will be asked to evaluate all the data collected and processed and to propose possible solutions to the challenges drawn from the data.

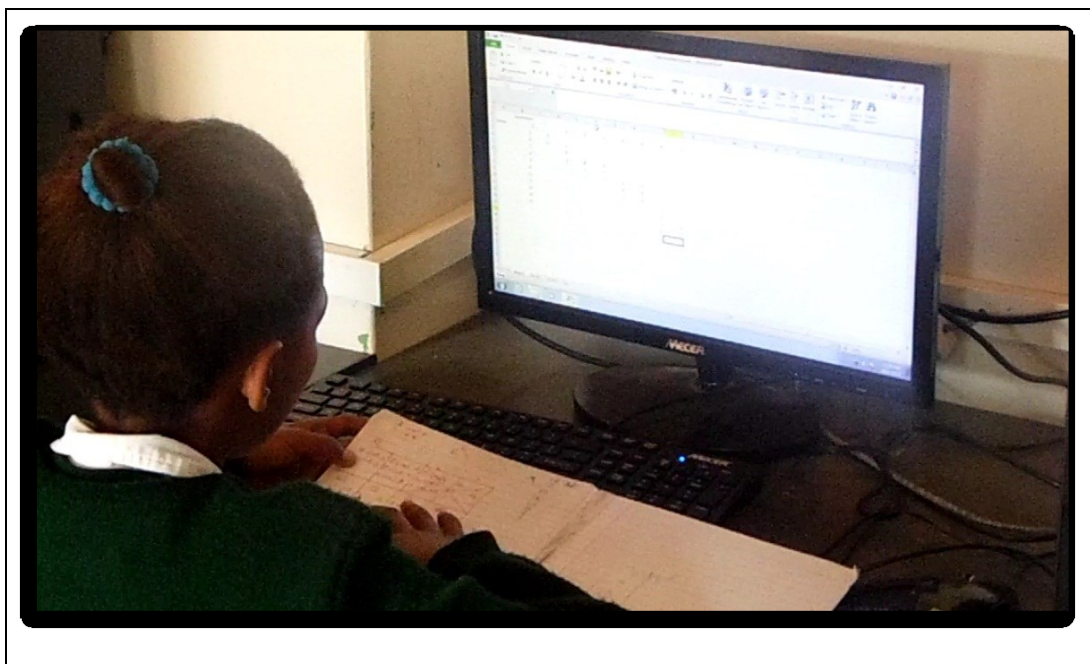
**Screenshot 4: Basic Spread Sheet skills using the Data Handling module from the Mathematics curriculum.**



Screenshot 5: A survey of fruit trees grown by local households in Enon, the village in which La Trobe Primary is situated.



Picture 1: Sherell Martin capturing learner enrolment data in in MS Excel





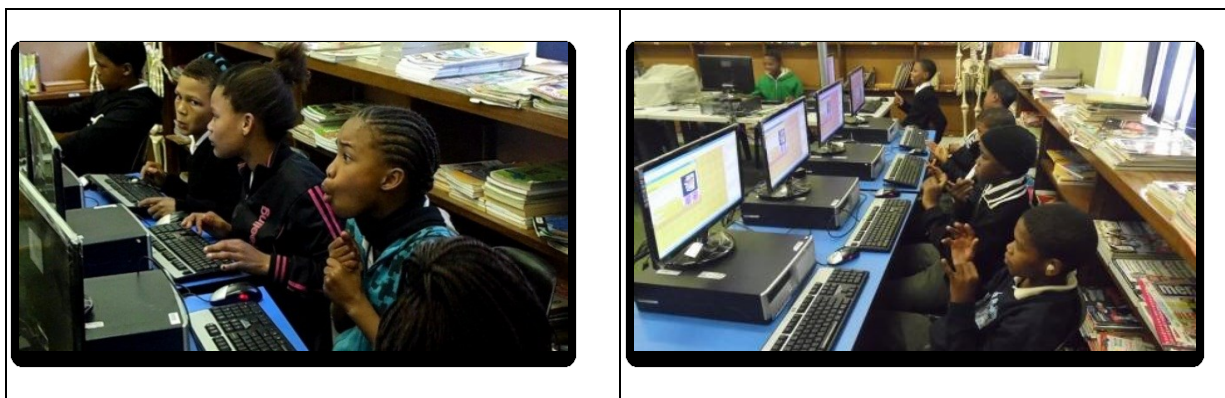
### 3.2 Rietberg Primary

Great strides have been made at Rietberg. This is highlighted below.

#### Mathematics Software

All grade 5 and 6 learners are actively using Tux Math and Mathemagic. The teachers at Rietberg are getting more involved with these two programs. This is very encouraging in the sense that they can see the value of using it as a teaching and learning tool. The principal and two other mathematics teachers have been trained in the use of both programs as a diagnostic and remedial tool.

Picture 2 and 3: Rietberg Primary Learners engaging Tux Math and Mathemagic



#### Integrated Computer Skills Training

As with La Trobe Primary the learners at Rietberg are also engaged with Data Handling as part of integrated computer skills training program. The grade 5 and 6 learners are currently involved in collecting and capturing data using Kingsoft Office Spread sheets. The school has a rich natural heritage with more than 25 species of indigenous and exotic trees found on the campus. The learners were tasked to **survey** the trees of the school. They have to distinguish between the different tree species and record their occurrence.

This presented an excellent opportunity for the learners to study the natural heritage in a practical way. About half of the trees on site are unknown and will have to be further researched so as to establish their names. Cross-curricular integration between mathematics and natural science is also possible with this project.

A few groups have completed data collection and started capturing in a Spread sheet. Word processing and presentation skills will form part the on-going training during the project. At the end of the project the learners are expected to produce a PowerPoint presentation about the

importance of their natural heritage. Internet skills will also be trained as the learners will have to research some known and unknown species.

**Pictures 4, 5 and 6: Rietberg Primary Learners exploring their natural heritage and integrating it with ICT in Spread Sheets**



**Screenshots 6 & 7: Excel and heritage integrated - Capturing the trees at Rietberg Primary in MS Excel**

	A	B	C	D	E
1	Boomsoorte	Getal			
2	Kippersol	2			
3	Deniboorn	10			
4	Jakaranda	18			
5	Pepperboom	3			
6	Ontbekend	2			
7	ontbekend	5			
8	Bottelbrush	7			
9	Ontbekend	7			
10	Bloekomboom	4			
11	Geelhoutboom	24			
12	Kasterolieboom	4			
13	Anysboom	1			
14	Koraalboom	8			
15	Misboom	2			
16					
17					

	A	B	C	D	E
1	boomsoorte	4			
2	tiperselboom	5			
3	denenboom	3			
4	jakarakaboom	6			
5	anonan	7			
6	pieperboom	8			
7	anonanon	9			
8	anonanon	2			
9	anonanon	11			
10	botelbrash	12			
11	anonanon	7			
12	kalgat	14			
13	boekom	51			
14	geelboom	61			
15	kalgat	22			
16	anonanon	31			
17	anonanon	13			
18	lakieboom	24			
19	anonanon	52			
20	mesboom	8			
21	siergies	7			
22	jakarakaboom	4			
23	kooralboom	3			
24	ykaboom	2			
25	kasteroolie	9			
26	onysplant	10			

**Picture 7: Mr D. Akom. Social Studies Teacher. showing learners how to search for information about the various South African public holidays and the meaning behind each one .**

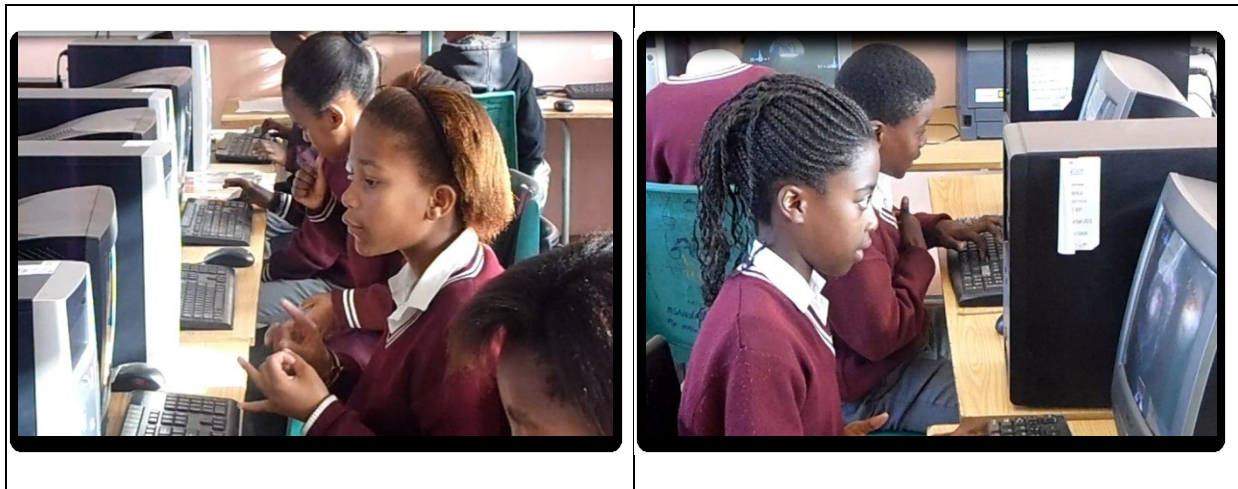


### **3.3 Zanoxolo Primary**

Training at Zanoxolo Primary is running behind that of the other two schools. This is due to a later kick-off of the program as well as some logistical issues such as ageing computers and the limited time available for the large learner numbers. Initially the learners used the computers in pairs but we now decided to rather split the classes into two groups. So far the focus has been mainly on basic computer skills especially the essential operating system basics. The learners have also created personal folders. Introduction to word processing skills was also dealt with. The data handling programme will soon start and will run for the remainder of the year in a similar manner as with La Trobe and Rietberg.

All grade 5 and 6 learners have been introduced to the Tux Maths and Mathemagic software. The mathematics teachers have shown a positive interest in these programs. Four maths teachers attended a session on the use of these programs and one teacher has already started using it as part of her teaching and learning routine.

Picture 8 and 9: Zanoxolo learners working out with Tux Math of Command



We are also offering on-going maintenance support to keep the computers running effectively.

### 3.4 Sandisulwazi High School

Sandisulwazi continues to receive technical support on an on-going basis. The Faculty has facilitated the sponsorship and installation of a very popular mathematics and science software package at the school. All learners of the school now have access to this software on a daily basis. The video link between Dr Jeff Ilsley and the science lab is still continues. This forms part of the Virtual Classroom Science Education project. Grades 10 to 12 Physical Science learners interact during lessons with the tutor. Physical lessons take place on Mondays to Wednesdays as well as an exam revision session for grade 12 learners on Fridays. The video link also serves to mentor the Physical Science teachers at the school.

Picture 9: Dr Jeff Ilsley busy with a virtual Skype lesson



#### 4. RESEARCH PUBLICATIONS

Dr Andre' du Plessis and Prof Paul Webb have been invited to share their ideas pertaining to ICT and Scientific Literacy at the IXth IOSTE SYMPOSIUM FOR CENTRAL AND EASTERN EUROPE Science and Technology Education for the XXIst Century at the University of Hradec Králové in the Czech Republic. This invitation was received after the conference organiser of the Czech Republic heard my presentation in October 2013 in Siauliai, Lithuania. The presentation was also selected to be published in an international journal (see below):

- Du Plessis, A. (2013). Wikis and Power Points as cognitive development tools in Scientific Literacy: A Proposed Heuristic. *Problems in Education in the 21<sup>st</sup> Century*. 57, 25-47.

The presentation and paper to be presented in the Czech Republic in September 2014, is:

- Du Plessis, A. and Webb, P. (2014, forthcoming). A heuristic for the design and practical implementation of ICT based animated learner designed cartoons for the promotion of scientific literacy thinking. Keynote plenary presentation at the IXth IOSTE SYMPOSIUM FOR CENTRAL AND EASTERN EUROPE Science and Technology Education for the XXIst Century at the University of Hradec Králové in the Czech Republic.

#### 5. NEWS

The Lego Club in Lorraine, Port Elizabeth, have heard of our initiatives. This club is busy with an ICT project and have asked us to assist with input regarding their project. We have assisted them.

#### 6. INVITATION

Our Virtual Skype classroom at Sandisulwazi High School has attracted attention and as such, we have received an invitation to attend a conference in 2015 in Lithuania to provide an overview of the project, as they are interested in how we use it, our challenges and positives.

#### 7. ACKNOWLEDGEMENTS

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- Creswell du Preez
- Connie van Zyl
- Prof Paul Webb
- Dr André du Plessis