



# EDUCATION FOR SUSTAINABLE FUTURE

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**BY PHUTI RAGOPHALA: RECIPIENT  
OF THE PRESIDENTIAL NATIONAL  
ORDER OF BAOBAB SILVER 2023**

# INTRODUCTION

**Education needs to be prioritized in this fast moving world of changes in order to sustain and secure the better future**

**As such educators and all stake holders in education , are urged to ensure that they instill relevant skills to learners during teaching and learning that will meet the requirements and the needs of the society and of the economy so as to have a sustained future**

**Without education and transformation, there is no future. The more we transform and develop on how things are done, the more the future**

**Education is the only tools that can sustain the future**

**To achieve this, team work and collaborative efforts by all the relevant stake holders in education is needed**

Lets me take you back a bit.....



Where I got my primary education Sub A in 1965 to Std 6 in farmers house.



Lime stone

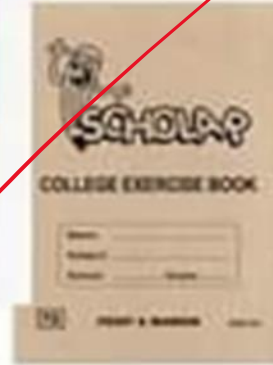


Finger on the ground

1965



Ball point



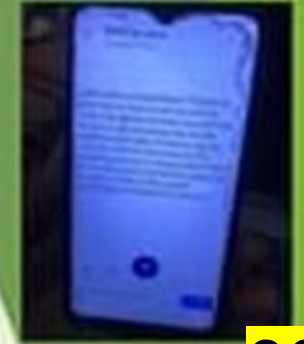
pencil



Bottle of ink and pen



Key board



Write by Voice

2023

SOME OF THE  
INITIATIVES THAT  
CAN SUSTAIN THE  
FUTURE

# Long life learning

(Substitute and Augment)) Incorporating  
Technology tools and applications into  
teaching and learning

(Redefinition) Approaches in teaching and  
learning looking at the E3: Education,  
Entrepreneurship and Employability

(Modification) Introduction of  
educational resources that are  
adaptable



- ❑ **Life long learning** as learners and teachers can help in building the culture of learning amongst teachers and learners so as to sustain it for better future
- ❑ Learners need not to read for examination only but for knowledge accumulation and continuous updates in educational matters. They can also become authors
- ❑ ~~Teachers to adapt to Continuous Professional Teaching Development that is advocated by SACE to be able to transform and transfer relevant knowledge to learners looking at learners future~~
- ❑ There are many zero rated websites with online courses available where teachers can register, study on their own time, pace , space and styles to be role models for future generation
- ❑ 4IR came up with new way of teaching and learning that need teachers to upskill and upgrade themselves based on the changes in education looking at the new future looking at the future(Transform how you teach)
- ❑ In actual fact, continuous Transformation and development make education to change with time and sustain future
- ❑ Learning is from cradle to grave



# AUTHORING AS ONE OF THE PROJECTS

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- To engage learners in on line book writing projects:  
Book creator app etc
- Writing project in itself ensures continuity, resilience, consistency and development in sustaining the future
- We conquer by continuing

# EDUCATOR DEVELOPMENT PATH IN ORDER TO BE A SMART EDUCATOR IN A SMART SCHOOL



**AI ChatGTP**

**Remote, Hybrid, synchronized, asynchronized, blended learning.....**

**Multi classrooms & distance learning through skype .zoom, teams**

**Computers in various classes to support learners in learning**

**Inter active white board in class smart learning in the lab**

**Computers, projecting information, presenting projects  
lab**

**Over head projector, and transparencies in the lab**

**Work books, text books etc..**

**Blackboard ,chalk and duster**

**Ground and finger**

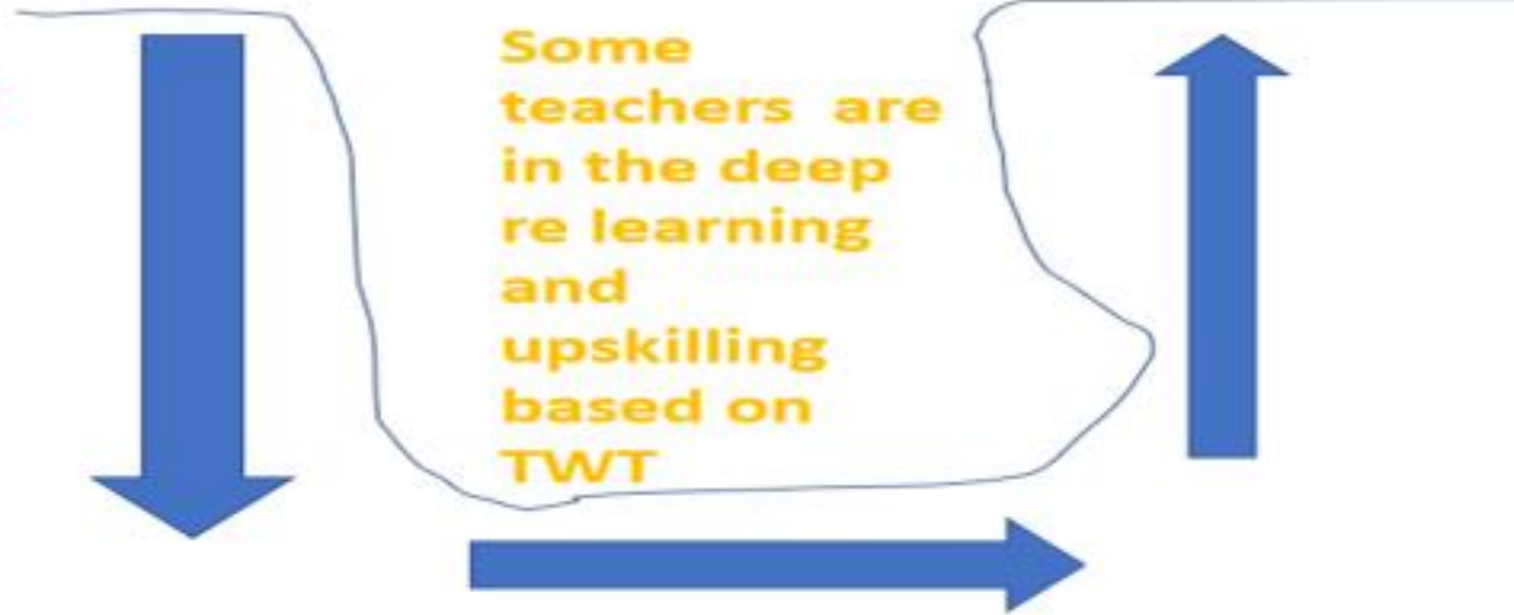
# Implementation Deep

**Most of  
the  
teachers**

**Learners, youth  
and students**

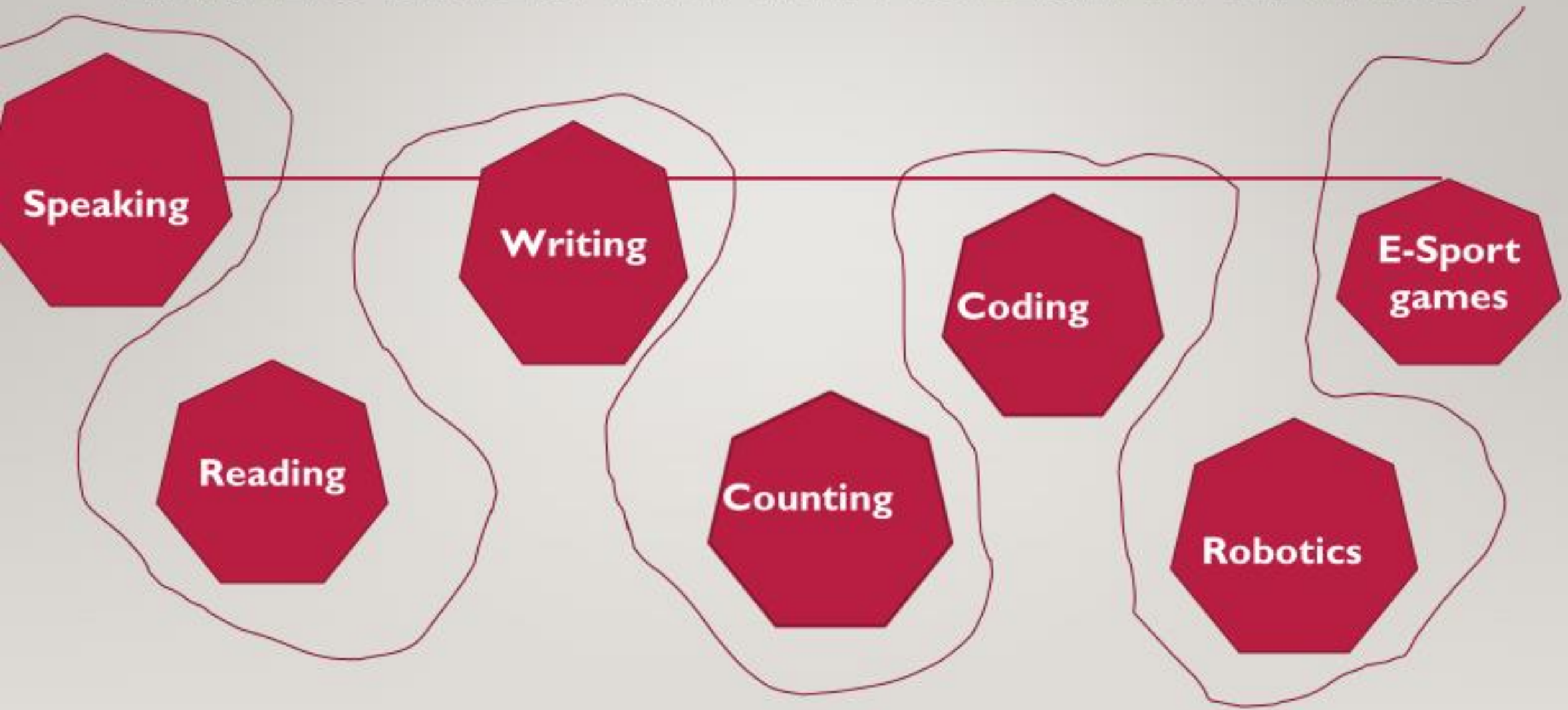
**Some  
teachers are  
in the deep  
re learning  
and  
upskilling  
based on  
TWT**

**LONG LIFE LEARNING(CPTD)**

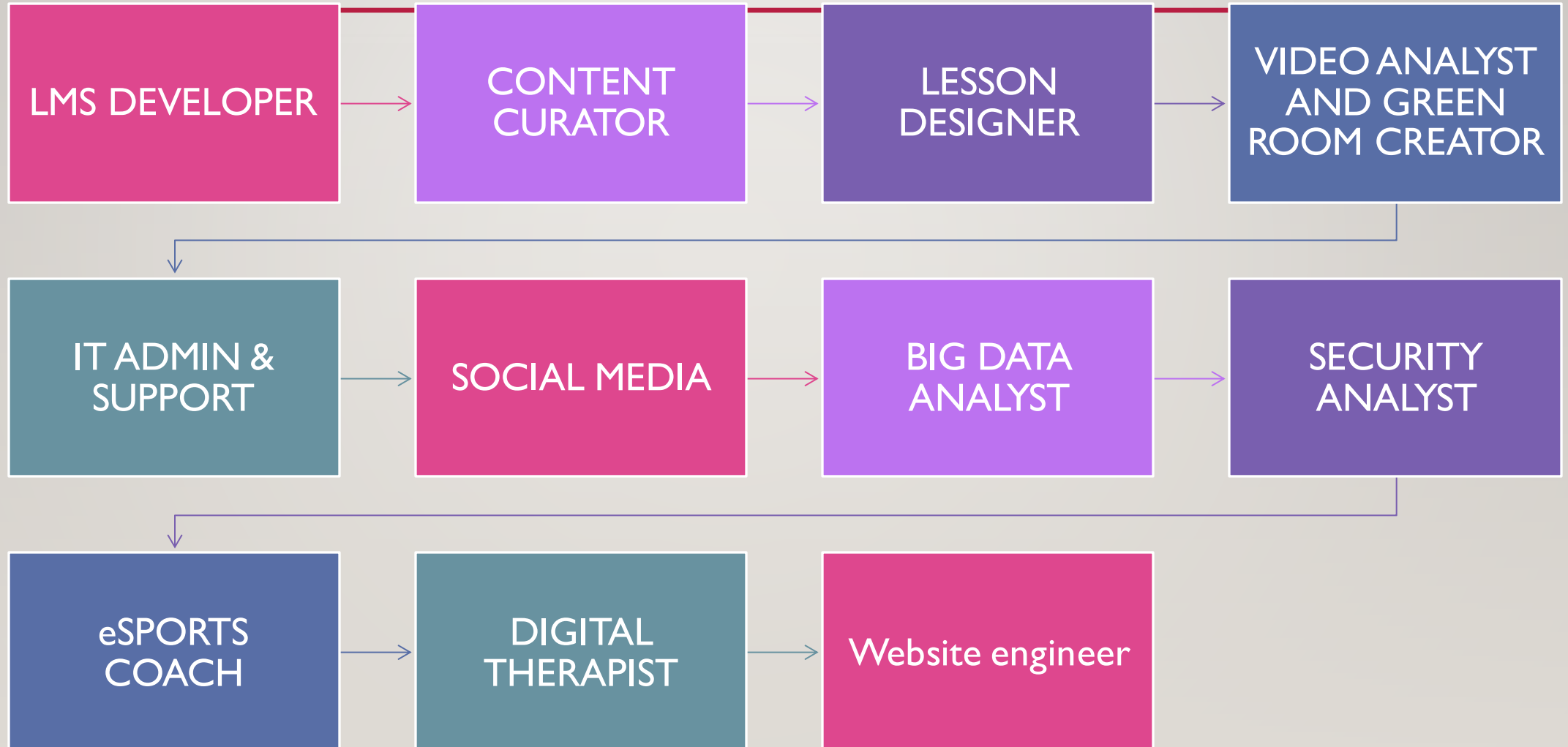




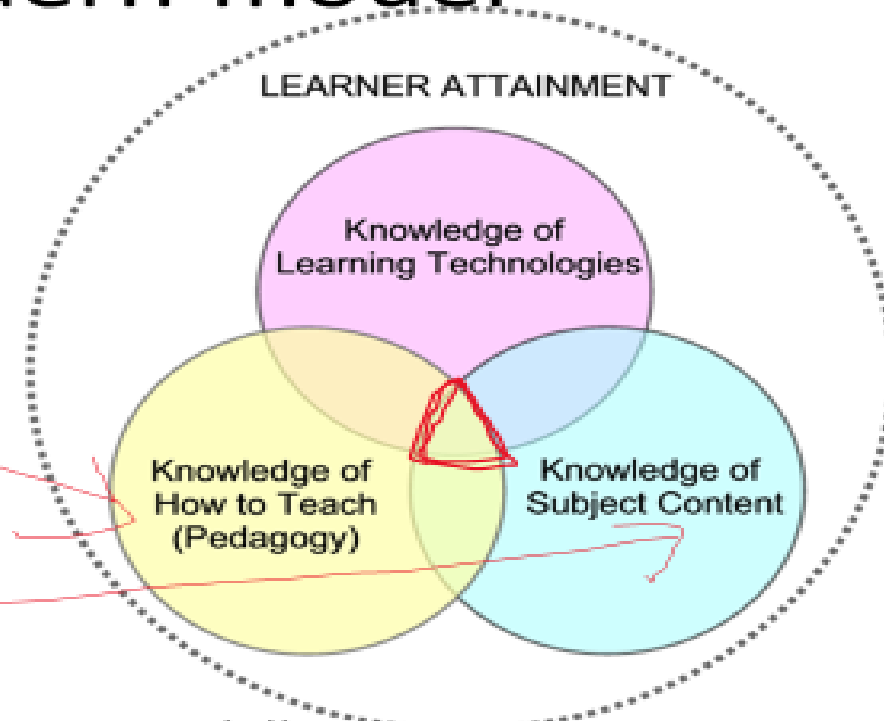
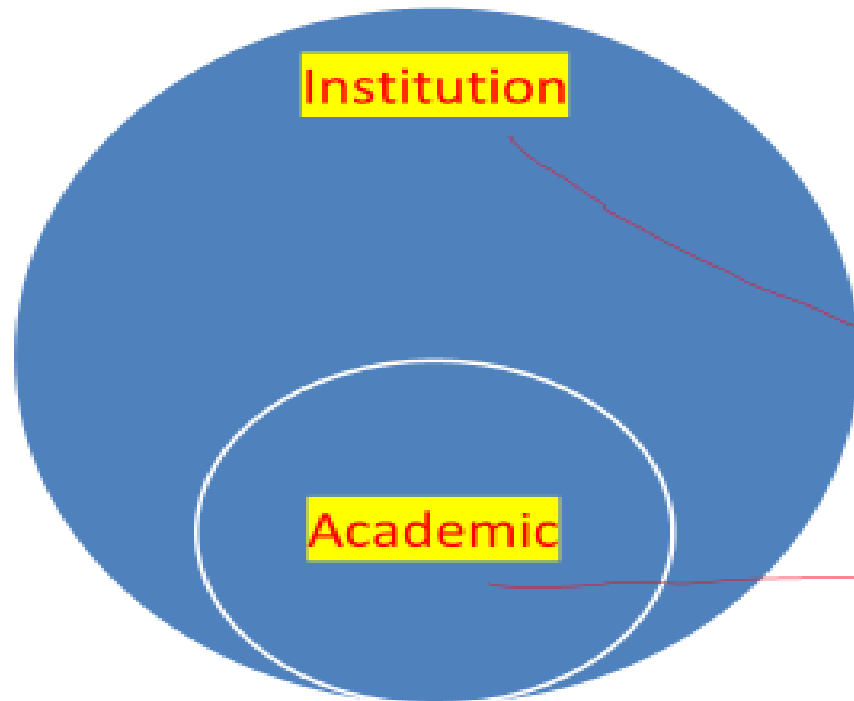
# LEARNERS DEVELOPMENT PLAN TO BE SMART LEARNERS



# EXPECTATIONS



## Traditional versus modern model



Focus was on academic careers  
Less no integration between learners and institution  
Less skills to be acquired

Focus on skills acquisition  
Integration of Pedagogy, Content and Knowledge of learning Technology  
Academically Gifted and not gifted learners are accommodated. Academic and Vocational careers

# INCREASING EMPLOYABILITY AMONGST YOUTHS THROUGH EDUCATION

- ❑ Teaching and learning that is based on Projects (PBL) and E3(Education, Entrepreneurship and Employability) bears good fruit
- ❑ Students end up acquiring relevant qualifications and educational background to start their own businesses and take part in the job market to sustain their future and other peoples futures
- ❑ As such new careers and marketed skills are needed for employability in this new job market
- ❑ The following is a project that is initiated by a student from Nelson Mandela University by the name of Byron Batteson under the mentorship of Professor Jean Greyling who developed TANKS app for learners, more especially rural school learners where computers don't exist, to learn programming without using computers. (Unplugged communities)
- ❑ Its on monetary value. Learners need to be properly taught from the classroom for them to start their own business and employ other in order to sustain their futures. The projects is called Tangible Africa.( where coding is actually tangible not digital)



# Tangible Africa – Impact Tomorrow (levafoundation.org)



Byron Batteson developed the TANKS app as his honours project in Computer Science at Nelson Mandela University in 2017. It started off our project and since then we have presented workshops for around 50000 learners and distributed coding kits to over 500 schools. The app is in monetary value worth around R500 000.00 – what I would have to pay someone to develop it. BOATS is probably R200 000.

# Introduction of educational resources that are adaptable

Tangible Africa Overview - 2023

File | C:/Users/pc/Desktop/unplugged%20coding/Unplugged%20coding%202023%20Prof%20Jean%20UNM/Tangible%20Africa%20Over...

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# TANGIBLE AFRICA

AN ENGAGEMENT PROJECT OF NELSON MANDELA COMPUTING SCIENCES, IN PARTNERSHIP WITH LEVA FOUNDATION.

## Objective

Tangible Africa strives to introduce learners to coding concepts without the use of computers, using offline, cost effective instruments that can be effective in scenarios where electricity and internet is not readily available, without needing teachers or facilitators who are qualified programmers.

This is relevant within the context of the Fourth Industrial Revolution and the fact that there is a desperate shortage of software developers.

## Background

The [TANKS](#), [RANGERS](#) and [BOATS](#) coding apps have been widely used in SA to reach learners with coding without the use of computers. It originates from Honours student Byron Batteson who developed the [TANKS app](#) for his project in 2017. Leva Foundation is the official Tangible Africa implementation partner for Nelson Mandela University Computing Sciences.

NELSON MANDELA UNIVERSITY  
Change the World

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The project has received various local, national, and global accolades. At NMU it received three Innovation and Engagement Excellence awards from the Vice-Chancellor. The Project Director, Prof Greyling from Computing Sciences was awarded the IITPSA Eastern Cape IT Personality as well as the national Distinguished Service in ICT Awards. He was also invited to UNESCO's Mobile Learning Week in Paris as a plenary panellist, while being a winner in the German based Falling Walls Education category, for breaking barriers in education. In November 2022 Tangible Africa was the first runner up in the African Union Innovating Education in Africa Awards.



### Teacher Training

Since January 2021 nearly 20000 teachers have been trained in Tangible Coding in physical and online workshops. These day long sessions are aimed at demystifying coding for teachers and empowering them to have confidence to introduce coding to their learners even though they have no prior coding experience, as well as come from schools with no computer laboratories. During 2022 a partnership with the teacher unions SADTU, SAOU and NATU had a great impact in empowering teachers.



### Products

### Long term Vision

The vision for the project is to identify learners from disadvantaged communities who show potential and then to firstly introduce them to some conventional coding through online coding clubs. After that we want to [guide them on their career](#) by providing career advice and hopefully find bursaries to let them attend good schools and finally register for computing degrees at university. For this purpose, we are initiating our Tangible Academies in different centers.



### More information

Prof Jean Greyling – [jean.greyling@mandela.ac.za](mailto:jean.greyling@mandela.ac.za) / Jackson Tshabalala- [jackson@levafoundation.org](mailto:jackson@levafoundation.org)







# About Us

Tangible Africa places coding concepts within reach of any child willing to learn.

We believe children from “un-plugged” communities could one day plug the global shortage of software developers.

Our solution targets scenarios where computers, internet access or even electricity are inaccessible. It utilizes cost-effective instruments, implemented by teachers or facilitators who aren’t qualified programmers. Our product is as simple and fun as a game.

## Founding Story

The concept for Tangible originates from the sunny coastal city of Gqeberha, South Africa. A 21 year old student, Byron Batteson, developed the TANKS app for his Honours project in 2017. Prof.

## OAU CHARTER



**OAU CHARTER**

# IN CONCLUSION

- **Education is an investment in oneself that can secure a brighter future**
- **Education gives people freedom to live, ~~communicate and collaborate~~ with each other and globally**
- **With the relevant skills instilled in students through education, they can pursue their passions, starting their businesses and achieve their goals.**
- **Education has the potential to unlock many door opportunities that can enable students to face their future with pride without depending on other people.**
- **Therefore its very much crucial to prioritize education to secure a brighter sustained future**







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