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Status of Coding and Robotics in South African Schools

Jonathan Freese
DCES: Technology
WCED

Ultimate aim of teaching Coding and Robotics

To assist learners to be globally relevant and employable

Coding and Robotics is the interrelation between ICT, Engineering and Coding in the context of 21st Century technologies.

Computational Thinking and the Engineering Design Process are the golden threads at the core of Coding and Robotics

Learners will be taught to solve problems, think critically, work collaboratively and creatively, and communicate effectively while acquiring skills and competencies for a changing world.



Coding and Robotics Timeline

- 2017: Digital Skills Curriculum design began
- 2019 SONA: President Ramaphosa announced the development of the Coding and Robotics Curriculum.
- March 2019: Coding and Robotics Curriculum Development began including Foundation Intermediate and Senior Phases (infused into Technology Senior Phase)
- June 2019: Identification of Pilot Schools. 1000 Grade 7 and 200 Foundation Phase schools
- January 2020: Coding and Robotics Curriculum development as a stand alone subject from grade R-9. Included HEIs, Unions, NGOs, practicing teachers, TVET college system, business
- Lockdown 2020: DBE developed the curriculum further and submitted to UMALUSI, Council of Education Ministers
- 19 March 2021: C&R Curriculum was signed off by the Minister of Basic Education, Angie Motshekga on 19 March 2021 for public comment
- 19 March 2021: All Provincial Task Teams 5-day Orientation (40 hours) concluded.
- 26 April 2021: Orientation of Pilot Teachers has begun

From Pilot to Implementation

- 2021: Foundation Phase (200 schools) and Grade 7 (1000 schools)
- 2022: Intermediate Phase (200 schools) and Grade 8 (1000 schools)
- 2023: Grade 9 (1000 Schools)
- 2024: C&R compulsory as a stand alone subject for gr R-9

Teacher Training

- 160 hours - UNISA
- Blended model

Pilot Funding



- Senior Phase Pilot (grades 7-9) funded by the EU. Funds held by National Treasury
- Foundation Phase Pilot Teacher Training funded by ETDP SETA

Committees

- DBE Coding and Robotics Committee established:
 - Project Manager: Desiree Letshwiti
- Provincial C&R Committees established
- District and school Committees in process

How can Sectors Contribute

1. HEIs

- Pre-service Teacher Training
- In-service Teacher Training
- Post grad degrees

2. NGOs

- Training and support
- Teacher professional learning communities (PLCs)
- Coding and Robotics kits
- Clubs / maker spaces / hubs

How can Sectors Contribute cont...

3. **Business**

- Partnerships
- Funding

4. **Media**

- Demystify the place of Coding and Robotics and 21st Century Tech
- Showcase successes and challenges

5. **GOV Departments:**

- **Science and Innovation** Expos, Olympiads, Talent identification
- **DBE:** C&R Curriculum; Accredited Coding and Robotics Course

6. **Science Centres**

- Exhibits / workshops for all
- Public understanding of C&R
- Expos and Olympiads

Coding and Robotics

- The Coding and Robotics subject is central to a **digital and information**-driven world;
- Apply digital **ICT skills** and transfer these skills to solve everyday **problems** in the development of learners.
- It is concerned with the various inter-related areas of **Information Technology and Engineering**.
- The subject studies the activities that deal with the solution of problems through **computational thinking AND the Engineering Design Process**

Mathematics and Language Realities

- 8 out of 10 Grade 4 students in South Africa are not able to read for meaning.
- 6 out of 10 learners do not have basic mathematical knowledge and 7 out of 10 do not demonstrate basic science knowledge.

*Does this mean that they
must not learn how to code?*



How useful is Coding and Robotics to Language and Mathematics competency?

- Meaningful experiences for learners in Coding and Robotics via a fun, project-based approach develops confidence and self esteem.
- Procedural thinking and writing
- Shared reading and writing techniques
- 21st Century Technical Literacy
- Computational thinking includes four interrelated processes in problem solving (decomposition, pattern recognition, abstraction and algorithmic thinking). This has a bearing on both language and mathematical competencies

Let us freshen up the education space

If we always do what we always did then we will always get what we always got.

We have to do differently to get a different result.

Thank You

The future is
not what it
used to be!

Jonathan Freese:
Jonathan.Freese@westerncape.gov.za



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B. Academy of Science of South Africa (ASSAf) Events

I. Other

2021

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<https://youtu.be/hMHgnEY-41U>

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