Challenges facing the future of Geoscience Education. What is the way forward?

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Current Challenges

- **Declining student numbers at HE levels**
  - lack of bursaries,
  - minimal vac-work opportunities,
  - geosciences not recognised as STEM subject in secondary/high schools
- **Under-preparedness of school leavers**
  - associated grade creep
- **Geology seen as "*dirty*" and "*non-green*"**
  - seen as "*part of the problem*" and not "*part of the solution*" **#**
- **Cyclical nature of commodities market**
  - impact on jobs/careers,
  - job security/insecurity
- **Perceptions regarding mine safety**
  - due to "illegal mining activities",
  - poor maintenance and future of mining
- **Lack of societal engagement**

Consequences?

- Decline in Geoscience graduates poses a **serious & economically damaging skills shortage**, particularly **at a critical time of transition for many industries and businesses that rely on geological expertise** (4IR needs minerals! Minerals need to be mined in an environmentally sustainable way)
- **Lack of appropriate career guidance by non-specialists** (parents & guidance teachers)
- Assume that such Geoscience qualifications are **only suitable for students who enjoy and excel at outdoor activities** such as hiking and camping.

Dealing with Challenges: SA context

1. **Improving readiness of incoming students**.
2. **Promoting geoscience as a career that contributes to the *National Development Plan 2030* & *UNESCO SDGs***.
3. **Promote public understanding of geoscience**.
4. **Revise remuneration structures for academics** (to avoid a "brain-drain")
5. **Minimize barriers to student entry through improved bursary schemes** (& avoid stagnation of the graduate pipeline; NSFAS).
6. **Create a National Research Digital Library Resource**, supported by ready internet access, to facilitate **free access to research that is published and in the public domain.**

7. **Create "National User Facilities (NUFs)"** across research institutions, including updating, maintenance and staffing arrangements.
8. **Promote "Flagship Projects"** that promote interdisciplinary research opportunities.
9. **Promote "Small Science"** that leads to interdisciplinary collaboration & practical teaching opportunities (don't teach in silos).
10. **Train the next generation of geoscientists** with relevant and globally required content and skills.
11. **Encourage links to industry and innovation** that promote research and learning opportunities while simultaneously **providing industry with solutions for innovative advancement**.