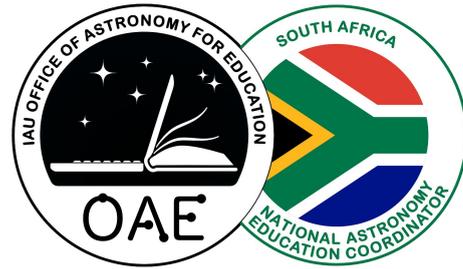


Astronomy Education in South Africa



This overview is part of the project "Astronomy Education Worldwide" of the International Astronomical Union's Office of Astronomy for Education.

More information: <https://astro4edu.org/worldwide>

Structure of education: South African schooling is compulsory during the General Education and Training (GET) stage. This includes the Foundation Phase (grade 0 or 'R' at ~6 years old to grade 3), the Intermediate Phase (grades 4 to 6), and the Senior Phase (grades 7 to 9 at ~15 years old). Grades 10–12 form part of an optional Further Education and Training (FET) stage, where a National Senior Certificate may be awarded on completion of Grade 12. Education in South Africa can be divided into two main schooling systems, namely public or private (independent) schools. There are also several Montessori and Waldorf schools, special needs schools and an allowance for home-schooling systems. Whereas public schools can be either fee-paying or non-fee paying, private schools (which are ~8% of all South African schools, or 3% of the student population) are fee-paying. The language of instruction for all public schools is English (in theory), but there are still Afrikaans medium schools. Although there are some religious private schools, instruction in a single religion over others is considered inappropriate and does not form part of the curriculum in public schools.

Education facilities: In public systems, South African schools are differentiated by quintiles (where quintile 1 represents the poorest schools and quintile 5 the most affluent). Rural schools (quintile 1) are typically over-crowded (over 45+ learners per 1 teacher) and are not well-resourced (no libraries, computers or labs). They have no internet access, limited textbooks (students need to share), and amenities such as running water, electricity, ablution facilities and infrastructure are a challenge. Furthermore, some students are required to walk long distances to attend classes. Township schools (between quintile 2–3) have similarly large class sizes (30–40 or more). Although they lack resources, they have better access to learning materials than rural schools, with limited internet access. In township schools, textbooks are shared, running water is provided and there is usually public transport. On the other hand, urban schools, Model C and former Model C schools (quintiles 4–5) with class sizes between 28–35, are relatively well-resourced (with libraries, computer labs, science labs and sports facilities). Running water and infrastructure are maintained, internet access is provided and both public and private transport is available. Private schools in South Africa offer smaller classes (~25 learners or less) and are typically very well-resourced with buildings that are maintained in good condition. The schools are often in close proximity to homes, with dedicated public or private transport available.

Governance and organisation: The Department of Basic Education (DBE) is responsible for all GET and FET stages (grades R – 12) in both public and private schools (as well as early childhood development centres and special needs schools), whereas Tertiary and vocational education is handled by the Department of Higher Education and Training (DHET). The nine South African provinces each have their own education departments to implement national policies and deal with local issues. Public schools (state-controlled and either fully or partially government funded) are

taught according to the national “Curriculum and Assessment Policy Statement” (CAPS) whereas private schools (privately governed) follow the Independent Examining Board (IEB) curriculum or CAPS managed by a Board of Governors.

Teacher Training: Teacher training is mostly offered through diplomas or bachelor degrees at Universities with either a four-year dedicated Bachelor of Education degree (B.Ed), or a 1-year postgraduate certificate in education (PGCE) offered to graduate students who have already completed an undergraduate qualification.

There are two models that currently exist in teacher training at universities in South Africa:

- Concurrent: Pre-service teachers do both content and methodology courses, with about 8 weeks of teaching experience every year (except for 1st year students).
- Consecutive: Pre-service teachers start with content courses (with BSc students) and then do methodology courses with about 8 weeks teaching experience every year.

Astronomy in the curriculum: Astronomy is not taught as a separate subject, but is incorporated into the physical science CAPS curriculum under the ‘Earth and Beyond’ strand (covered during grades 4 to 9) with simple weather and night sky principles introduced from Grade R. Topics that are mainly covered in ‘Earth and Beyond’ include the Solar System, seasons, tides, Moon phases, stars (as different from planets), and basic stellar evolution and formation. Although there is no astronomy content in the FET phase (grade 10 to 12), teachers are encouraged to teach mathematics, physics and chemistry using astronomy as a context to show relevance and applications.

Astronomy education outside the classroom: Urban schools (as well as a city-based township schools) are relatively well-catered for and are encouraged to make yearly outings to planetaria, science centres, observatories, or astronomy society-hosted events. A few planetaria offer dedicated school programmes that are tailored according to the CAPS curriculum and offer free transport if necessary. On the other hand, rural schools get minimal exposure to astronomy education outside the classroom. Efforts to reach rural communities are ongoing, with projects that include mobile planetaria and a minibus with astronomical resources (called the ‘Starbus’, in the past it has been very successful but lacked funding).

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