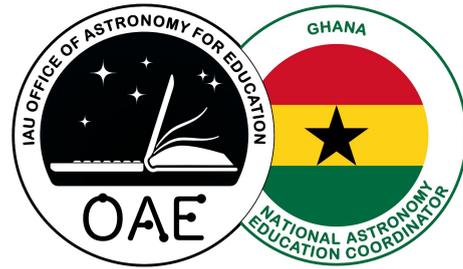


Astronomy Education in Ghana



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: Formal education starts at age 4 with 2 years of Kindergarten, followed by 6 years of Primary education. Three years at Junior High School (JHS) is next, at the end of which students take a national exam, the Basic Education Certificate Examination (BECE) in 7 to 9 subjects. Good grades at BECE admit students, through a computerised system, to Senior High School (SHS) for 3 years. Here they study one of the following more specialised programmes of study; Agriculture, Business, Technical, Vocational (Home Economics or Visual Arts), General Arts or General Science. At the end of SHS, students take the West African Senior School Certificate Examinations (WASSCE) in 4 Core (compulsory) subjects plus another 3 or 4 subjects depending on the specific programme studied. The WASSCE exams are also taken by students in Nigeria, Liberia, Sierra Leone and Gambia and are used to gain admittance to tertiary institutions.

Basic school ie up to the end of JHS is free and compulsory (although parents still have to pay for uniforms, and in some cases textbooks and exercise books). In September 2017 the current government fulfilled an election promise by making SHS free also. Although this is a great initiative in principle (since in the past, many students were prevented from taking up their SHS places due to an inability to pay school fees), it has, understandably, led to logistical challenges with the schools being over-subscribed. A temporary "double-track" system, where students are split into 2 batches and attend school on alternate semesters, has been brought in while facilities such as extra classrooms are built.

English is the official language of Ghana although of course there are many different local languages spoken in the various regions of the country. In the education system, the language of instruction is the local Ghanaian language for KG and the first 3 years of primary school, with English used thereafter.

Around 35% of all schools are private¹, fee-paying institutions, with facilities ranging from very basic up to "international" standard. There are also a handful of "true" international schools that cater (mainly) for children of foreign nationals, and offer the curriculum and exams of a specific country (eg France, Germany, USA etc). Some of the top private Ghanaian schools also offer international curriculum/exams eg IGCSE/A-level or IB. Almost all SHS are boarding schools, some Primary and JHS schools also offer boarding facilities. Around 10% of SHS are Islamic schools, which still follow the GES (Ghana Education Service) curriculum, but also offer Arabic and Islamic Religious Studies.

Education facilities: School facilities vary greatly between public and private schools and across the different regions of the country, with the North being significantly worse off compared to the South. Many public schools have only the most basic infrastructure and equipment. Across the country, science labs, libraries and ICT labs are often not available or poorly equipped. There are some instances of "schools under trees" ie without a building at all. Some of the available statistics show that: At basic level (up to JHS) 23% of classrooms are in need of major repair¹, with 12% at SHS

level¹. At basic level, 61% of public schools and 86% of private schools have toilets¹. (At SHS level, the schools are almost exclusively boarding, hence bathrooms and toilets are in place). According to UNESCO², only 25% of public schools have a regular stable electricity supply, only 8% have internet access, and only 3% have computers for teaching and learning.

Governance and organisation: Pre-tertiary education is overseen by the Ghana Education Service (GES), which is part of the Ministry of Education. Schools come under the authority of the local district office of the GES. The National Teaching Council (NTC) is in charge of the training of teachers and maintaining teaching standards. The curriculum is set by the National Council for Curriculum and Assessment (NaCCA), and is currently undergoing review (Primary curriculum completed and being implemented, JHS being finalised and SHS still to be done).

Teacher Training: Those wishing to teach take a 4-year degree in education at one of 5 universities or 46 colleges of education throughout the country. The degree could be general ie Early Years, Primary or JHS education (allowing teaching at that level) or more specialist eg a degree in mathematics education to allow maths teaching up to SHS level. Alternatively, a degree holder can take a 1 year post graduate diploma in education (PGDE) to qualify them to teach at any level in the subject of their first degree.

The National Teacher Licensure Exam (NTLE) was initiated in 2018. The aim is to enhance the professionalism of the teaching service and ensure continuous professional development for teachers. All teachers must be licensed and must renew their license every 2 years by undertaking regular accredited training programmes and undergoing assessment in the classroom.

Astronomy in the curriculum: Astronomy is not taught as a separate subject on the curriculum, and there are just a few aspects of basic astronomy included in the Science curriculum. At Primary level, students learn about day and night, the importance of the Sun to life on Earth, and the Solar System. At JHS level, students learn about light energy, solar eclipses, and the Solar System in more detail. Students taking Physics at SHS (ie only those taking the General Science Programme) will learn a little about gravity, natural and artificial satellites, lenses, how telescopes work and the electromagnetic spectrum.

Astronomy education outside the classroom: There are no science centres in Ghana, and the only Museum of Science & Technology, situated in Accra has a very limited set of exhibits. However, Ghana is fortunate to have a Planetarium, where school groups can visit to see a Planetarium show about the Solar System or other astronomy topics. The charge to visit the Planetarium (although modest) plus the transport expenses mean that government schools are rarely able to visit. Schools can also visit the Ghana Radio Astronomy Observatory (GRAO), located at Kutunse, just north of Accra. They can tour the facility to learn how the radio telescope functions.

¹ Ghana Annual Schools Census (Basic Schools Information) 2012-2013:

<https://www2.statsghana.gov.gh/nada/index.php/catalog/62/> and Ghana Annual Schools Census

(Senior High Schools) 2012-2013:

<https://www.webdeploy.statsghana.gov.gh/nada/index.php/catalog/69/>

² UNESCO Global Education Monitoring Report 2020 (data is from 2018):

<https://unesdoc.unesco.org/ark:/48223/pf0000373718>

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