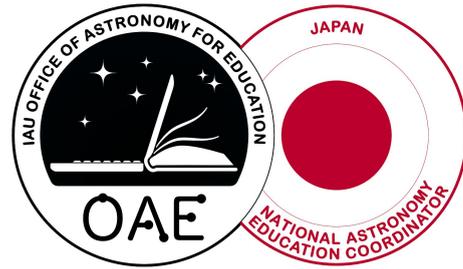


Astronomy Education in Japan



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: The Japanese school system consists of pre-primary education at nursery, preschool or kindergarten, followed by a 6-year elementary school of primary education starting at age of 6, 3-year junior high school of lower secondary education, and 3-year senior high school of upper secondary education. Higher education is followed by 2-year or 3-year junior college or 4-year university. Graduates of senior high school are qualified to take the entrance exam for university or junior college. Compulsory education lasts 9 years through elementary and junior high schools. About 98 % of children at age of 5 are educated before elementary school, and about 98 % of junior high school graduates enter senior high schools. After senior high school, the education continuance rate is about 80 %. About 50 % go on to university, about 10 % to junior college, and about 20 % to vocational school. Basically, at public school, compulsory education charges free, and at private school, it is supported partially by public expense. In almost all schools the language is Japanese. The public schools are non-religious and some of the private schools are religious, mostly Buddhism or Christianity.

Education facilities: At the elementary school, there are about 30 pupils in each class, typically. At the junior and senior high schools are about 30 to 40 students in each class. In some cases, the number of children is very small in class. It depends on the children's population in each area. In such small schools, pupils or students of multiple graders learn in the same classroom from a teacher. Most schools are provided facilities as science room, art room, music room, cooking room, swimming pool, gymnasium or hall, library, and playground. The internet connection and computer facilities are prepared gradually, but still on the way. School buildings are generally well-maintained, however, many problems remain. Though huge earthquakes have hit in Japan, many school buildings are still old. It is important to correspond to the earthquake resistance system for keeping the safety of children. Air conditioners are needed in whole buildings because summer is very hot and humid, however, not all rooms are equipped yet. Some schools offer dormitories for students who devote themselves to sports and so on.

Governance and organisation: Public schools are run by local district government or national government and supervised by local education board councils and the Ministry of Education, Culture, Sports, Science and Technology (MEXT). The education standards, which private schools follow as well, of elementary school, junior and senior high schools are strictly governed by MEXT and the school curricula under the standards are supervised by local education board and MEXT. The national standards for schools have been reformed about every ten years, and the latest one is announced in 2017 to 2018.

Teacher Training: It is necessary to finish a teacher training course at university for most of the teacher licenses. A classroom teacher system is adopted in many elementary schools. Many elementary teachers study undergraduate degrees in education at universities. The challenge is that many elementary school teachers have difficulty with science class and need support. A subject teacher system is adopted in junior and senior high schools. Many junior and senior high school teachers study degrees in education or a specific subject, e.g., science, law, literature, or economy, and some of them study degrees of graduate schools. Throughout elementary, junior and senior high schools, there is a problem of inadequate subject specialization at the teacher training stage. First-year beginning teachers must take the starter training and in-service training is compulsory for about every ten years.

Astronomy in the curriculum: Children do not learn astronomy as a single subject at the school. Astronomy content can be found in one of the subjects, science, in elementary and junior high schools. Science is started in the 3rd grade of elementary school at age of 8. The main astronomical contents in elementary school are the shadow and the Sun in the 3rd grade, the phases the Moon, constellations, and the movement of celestial bodies in the 4th and 6th grades. After that children do not have a chance to learn astronomy in science until 3rd grade in junior high school (9th grade). The graders learn about celestial spheres and their movements, rotation and revolution, solar and lunar eclipses, solar system, stars, and the Milky Way Galaxy. The elementary school pupils learn a phenomenon in the sky mainly from daily-life view, and high school students learn about astronomy using the astronomical view as well. In senior high school, science is divided into four subjects: physics, chemistry, biology, and earth science, and they are optional subjects. Astronomy content is mainly contained in the subject of earth science, some contents of gravity and Kepler's law are contained in the subject of physics. Of the four science subjects, earth science is the least chosen subject, and for many students, the astronomy content offered at school is in the 3rd, 4th, 6th, and 9th grades as described above.

Astronomy education outside the classroom: There are science centers, planetariums, and public observatories around the country in Japan from rural to urban area. There are about 300 planetariums and about 400 public observatories, however, it still needs to be enhanced in the treatment of staff and maintenance of facilities. There are active local amateur astronomy clubs. The science centers, amateur astronomy clubs, and professional research institutes and observatories have a nation-wide network for education and outreach. The community has an organization of Japanese Society for Education and Popularization of Astronomy.

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