

Evolution of the Universe

Links to the Australian Curriculum: Science (Year 10)

Science understanding concepts include:

Earth and space sciences: The universe contains features including galaxies, stars and solar systems and the Big Bang theory can be used to explain the origin of the universe (ACSSU188)

- identifying the evidence supporting the Big Bang theory, such as Edwin Hubble's observations and the detection of microwave radiation
- recognising that the age of the universe can be derived using knowledge of the Big Bang theory
- describing how the evolution of the universe, including the formation of galaxies and stars, has continued since the Big Bang

Science as a human endeavour concepts include:

Nature and development of science:

Scientific understanding, including models and theories, are contestable and are refined overtime through a process of review by the scientific community (ACSHE191)

- recognising that Australian scientists such as Brian Schmidt and Penny Sackett are involved in the exploration and study of the universe

Advances in scientific understanding often rely on developments in technology and technological advances are often linked to scientific discoveries (ACSHE192)

- recognising that the development of fast computers has made possible the analysis of DNA sequencing, radio astronomy signals and other data
- researching examples of major international scientific projects, for example the Large Hadron Collider and the International Space Station

Advances in science and emerging sciences and technologies can significantly affect people's lives, including generating new career opportunities (ACSHE195)

- recognising that the study of the universe and the exploration of space involve teams of specialists from the different branches of science, engineering and technology

Science inquiry skills concepts include:

Planning and conduction: Select and use appropriate equipment, including digital technologies, to systematically and accurately collect and record data (ACSIS200)

- applying specific skills for the use of scientific instruments

Communicating: Communicating ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language, conventions and representations (ACSIS208)

- using the internet to facilitate collaboration in joint projects and discussions
- presenting results and ideas using formal experimental reports, oral presentations, slide shows, poster presentations and contributing to group discussions

Evolution of the Universe 4: Stars

Stars comprises a teachers guide, two procedure sheets and worksheet.

Students make more advanced use of the *SPIRIT* telescopes to capture images of deep sky objects and develop their understanding of stellar life cycles. Students take coloured images of a star cluster then relate star colours to stars' ages and stages of their life cycle. See the teachers guide for detailed information on the purpose and use of this resource.

Acknowledgements

Thanks to Professor Simon Driver and Dr Aaron Robotham (International Centre for Radio Astronomy Research, The University of Western Australia), Dr Alan Duffy (ICRAR, currently at University of Melbourne) and Mr Mehmet Alpasian (ICRAR, currently at University of St Andrews).

Designed and developed by the Centre for Learning Technology, The University of Western Australia.
Production team: Graham Baker, Alwyn Evans, Jenny Gull, Dan Hutton, Paul Luckas, Domenic Manley, Paul Ricketts and Michael Wheatley, with thanks to Bob Fitzpatrick and Wendy Sanderson

banner image: 'The Barred Sculptor Galaxy' by NASA/JPL-Caltech, www.jpl.nasa.gov/spaceimages/details.php?id=PIA17256

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Stellarium is planetarium software that enables users to view and identify astronomical objects and gain understanding of a range of astronomical concepts. It can be downloaded free of charge from www.stellarium.org/wiki/index.php/Download.

SPICE provides teachers who attend the *SPIRIT* telescope professional development workshop with a targeted, full-colour version of the Stellarium Manual and access to a black-and-white version for photocopying purposes. Alternatively, they may choose to download the Stellarium user's guide (PDF) from www.stellarium.org/wiki/index.php/Main_Page.

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