



School of Education

EDST6784 Science and Technology

Term 2 2022

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1. LOCATION

Faculty of Arts, Design & Architecture
School of Education
EDST6784 Science and Technology (6 units of credit)
Term 2 2022

2. STAFF CONTACT DETAILS

Course Co

STUDENT LEARNING OUTCOMES

| Outcome | | Assessment/s |
|---------|--|--------------|
| 1 | Demonstrate awareness and understanding of appropriate ways to harness children's natural curiosities and their sense of wonder, and develop interest and enthusiasm for science and technology. | 1, 2 |
| 2 | Demonstrate how the skills, knowledge and understanding of syllabus documents relate across strands and sub-strands for all Stages. | 1, 2 |
| 3 | Demonstrate ability to critically examine and evaluate relevant research and pedagogies to enable primary-aged students to engage and learn the skills and concepts of science and technology effectively. | 1, 2 |
| 4 | Demonstrate understanding of the nature of science as well as knowledge of areas of scientific and technological content. | 1, 2 |
| 5 | Demonstrate understanding of why ICT is integrated with science and ability to integrate it into Science and other KLAs effectively. | 1, 2 |
| 6 | Demonstrate ability to develop a unit of work which incorporates skill development embedded in effective learning experiences. | 1, 2 |

AUSTRALIAN PROFESSIONAL STANDARDS FOR TEACHERS

| Standard | | Assessment/s |
|----------|---|--------------|
| 1.1.1 | Demonstrate knowledge and understanding of physical, social and intellectual development and characteristics of students and how these may affect learning. | 1, 2 |
| 1.2.1 | | |

NATIONAL PRIORITY AREA ELABORATIONS

| Priority area | | Assessment/s |
|--|----------|--------------|
| A. Aboriginal and Torres Strait Islander Education | 1, 5, 8 | 1, 2 |
| B. Classroom Management | 1, 4, 5 | 1, 2 |
| C. Information and Communication Technologies | 1-10, 12 | 1, 2 |
| D. Literacy and Numeracy | 1-19 | 1, 2 |

4. RATIONALE FOR THE INCLUSION OF CONTENT AND TEACHING APPROACH

The course structure allows students to explore and understand the content and organisation of the NSW K- 6 Science and Technology curriculum. Students will develop and demonstrate the skills they need to plan programs, lessons and activities suitable for different learning styles and stages of development. Teaching and assessment tasks provide opportunities to develop resources and apply them to record and present their findings for an investigation into a scientific question. The importance of literacy and numeracy skills for science is demonstrated, along with opportunities to integrate science and technology with other KLAs.

5. TEACHING STRATEGIES

The course will run as an intensive 9-week program of study including lectures, practical hands-on tasks, structured and collaborative discussions, and on-line activities.

6. COURSE CONTENT AND STRUCTURE

This unit of study involves a 9-week program. This is an **indicative** topic schedule/reading plan. Refer to Moodle for the most current schedule and readings. Throughout the course, the content **may** change to be adapted to the students' learning needs and interests.

| Module | Topic |
|--------|--|
| 1 | <p>Introduction to the structure and organisation of the Science and Technology K-6 Syllabus</p> <p>Unpacking the integration of pedagogical approaches of Science and Technology. Overview of inquiry questions and focus questions.</p> <p>Readings and resources:</p> <p>NESA (2017) <i>Guide New K-6 Science and Technology Syllabus</i>. Sydney https://www.educationstandards.nsw.edu.au/wps/wcm/connect/dac0b1f9-b943-486b-96fb-6ed6c44cadee/guide-science-and-technology-k-6-new-syllabus.pdf?MOD=AJPERES&CVID=</p> <p>NESA (2017) <i>Science and Technology K-6 Syllabus</i>. Sydney. https://educationstandards.nsw.edu.au/wps/portal/nesa/k-10/learning-areas/science/science-and-technology-k-6-new-syllabus</p> <p>Brown, R. A., & Brown, J. W. (2010). What is Technology Education? A Review of the "Official Curriculum". <i>The Clearing House: A Journal of Educational Strategies, Issues and Ideas</i>, 83(2), 49-53. doi:10.1080/00098650903505449</p> <p>Forbes, A.; Chandra, V.; Pfiffer, L.; Sheffield, R (2021) STEM education in the primary school a teacher's toolkit Cambridge University Press ch 2 p.22-39</p> |
| 2 | <p>Skill strands Working Scientifically, Design and Production and the Cross Curriculum priorities.</p> <p>Teaching science in the primary setting is mostly about two processes – Working Scientifically and Design and Production. We will look at these in some detail this week as well as visiting the cross-curriculum priorities.</p> <p>Readings and resources:</p> <p>NESA (2017) <i>Guide New K-6 Science and Technology Syllabus</i>. Sydney https://www.educationstandards.nsw.edu.au/wps/wcm/connect/dac0b1f9-b943-486b-96fb-6ed6c44cadee/guide-science-and-technology-k-6-new-syllabus.pdf?MOD=AJPERES&CVID=</p> <p>NESA (2017) <i>Science and Technology K-6 Syllabus</i>. Sydney. https://educationstandards.nsw.edu.au/wps/portal/nesa/k-10/learning-areas/science/science-and-technology-k-6-new-syllabus</p> <p>Skamp, K. & Preston, C. (2021) <i>Teaching primary science constructively</i> 7th Edition Cengage Chapter 4 p.142-187</p> |

3

Physical World

Deep dive into the Physical World strand. Look at the continuum of learning. Unpack the use of inquiry and focus questions to frame learning.

Readings:

Preston, C. M. (2019). Effect of a diagram on primary students' understanding about electric circuits. *Research in Science Education*, 49(5), 1433-1456.

King, D., & English, L. D. (2016). Engineering design in the primary school: applying stem concepts to build an optical instrument. *International Journal of Science Education*, 38(18), 2762-2794.
doi:10.1080/09500693.2016.1262567

4

Material World

Deep dive into the Material World strand. Look at the continuum of learning. Unpack the use of inquiry and focus questions to frame learning.

Readings:

Skamp, K. (2011). Teaching chemistry in primary science: what does the research suggest? *Teaching Science*, 57(4), 37–43.

Hudson, P., English, L., Dawes, L., King, D., & Baker, S. (2015). Exploring Links between Pedagogical Knowledge Practices and Student Outcomes in STEM Education for Primary Schools. *Australian Journal of Teacher Education*, 40(6).
<http://dx.doi.org/10.14221/ajte.2015v40n6.8>

5

Earth and Space

Deep dive into the Earth and Space strand. Look at the continuum of learning. Unpack the use of inquiry questions to frame learning.

Readings:

Thornburgh, B., Tretter, T., & Duckwall, M. (2015). Seeing the solar system through two perspectives: Primary students explore Earth and space science by modelling and observing patterns. *Science and Children*, 53(4), 42-51.

Aktamı , H., Acar, E., & Çoban, G.Ü. (2015). A summer camp experience of primary student: Let's learn astronomy, explore the space summer camp. *Asia - Pacific Forum on Science Learning and Teaching*, 16(1)
https://www.eduhk.hk/apfslt/v16_issue1/aktamis/index.htm

8. ASSESSMENT

**UNSW SCHOOL OF EDUCATION
FEEDBACK SHEET
EDST6784 Science and Technology (K-6)**

Student Name:

Student Number:

Assessment Task 1: **Inquiry and focus questions**

| SPECIFIC CRITERIA | (-) ➔ (+) | | | | |
|--|--|--|--|--|--|
| <p>Understanding of the question or issue and the key concepts involved</p> <ul style="list-style-type: none"> • Inquiry and focus questions are clear and provide a good basis for investigation • Aspects of student safety, interest, and activity engagement addressed | | | | | |
| <p>Depth of analysis and/or critique in response to the task</p> <ul style="list-style-type: none"> • Appropriate implementation of either Working Scientifically or Design and Production • Uses evidence of learning and relevant literature to conduct a critical analysis that presents both points and counterpoints | | | | | |

Familiarity with and relevance of professional and/or research literature used to support response

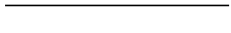
**UNSW SCHOOL OF EDUCATION
FEEDBACK SHEET
EDST6784 Science and Technology (K-6)**

Student Name:

Student Number:

Assessment Task 2: **Design and production**

SPECIFIC CRITERIA

(-)  (+)