Teacher Guide: RoboCup Junior Spike Challenge

Theme: Survivors of the Future – Robots on a New World

This list is to assist teachers with curriculum links for the competition. It is not exhaustive.

1. Theme Overview

Students imagine they are part of a robotics crew exploring and adapting to new worlds. Missions include animal-inspired movement, supply delivery, habitat construction, and signal & survival coding.

2. Curriculum Mapping:

1. Australian Curriculum (ACARA v9)

Technologies → Digital Technologies

Years 5–6:

AC9TDI6K02 – Explain how digital systems represent data and transmit information

AC9TDI6P02 – Design and implement digital solutions using decisions, loops, and inputs

AC9TDI6P03 – Evaluate existing and student solutions for efficiency and user needs

Years 7–8:

AC9TDI8K02 – Explain how hardware and software interact in digital systems

AC9TDI8P02 – Design and implement digital solutions using structured programming

AC9TDI8P03 – Evaluate solutions against criteria including sustainability and innovation

Technologies → Design and Technologies (Engineering principles and systems)

Years 5–6:

AC9TDE6K01 – Explain how people in design and technologies occupations consider competing factors including sustainability in the design of products, services and environments

AC9TDE6K02 – Explain how electrical energy can be transformed into movement, sound or light in a product or system

AC9TDE6P02 – Generate, iterate and communicate design ideas, decisions and processes using technical terms and graphical representation techniques, including using digital tools

Years 7–8:

AC9TDE8K02 – Analyse the impact of innovation and the development of technologies on designed solutions for global preferred futures

AC9TDE8K03 – Analyse how force, motion and energy are used to manipulate and control engineered systems

AC9TDE8P02 – Generate, test, iterate and communicate design ideas, processes and solutions using technical terms and graphical representation techniques, including using digital tools

General Capabilities:

Critical & Creative Thinking

Digital Literacy

Ethical Understanding

Personal & Social Capability

2. NSW Curriculum - Science & Technology K–6 (2024) and Technology Mandatory Stage 4 (2026)

Stage 3 (Years 5–6)

ST3-4LW-S – Explains how living things adapt to survive

ST3-5DI-T – Explains how digital systems represent and transmit data

ST3-8DI-T – Designs, plans, and evaluates digital solutions

Stage 4 (Years 7–8)

TE4-DIG-01 – Demonstrates technological literacy in digital environments

TE4-DIG-02 – Uses data and digital systems to design and code solutions

TE4-SDP-01 – Applies design thinking to create and refine solutions

This has strong alignment with biomimicry, exploration, robotics, and systems thinking.

3. Victorian Curriculum 2.0 2026

Technologies → Digital Technologies

Levels 5–6

VC2TDI6D05 – Use digital tools to share content, plan tasks and collaborate on projects

VC2TDI6C04 – Implement programs that involve decisions, loops, variables and inputs

VC2TDI6C05 – Evaluate solutions against the requirements and their broader community impact

Levels 7–8

VC2TDI8D05 – Use a range of digital tools to share content, and plan and manage individual and collaborative iterative projects

VC2TDI8C04 – Implement, modify and debug programs involving control structures and functions

VC2TDI8C05 – Evaluate solutions against the requirements, constraints and possible future impacts

This matches Spike robotics, adaptation challenges, and optimisation tasks.

4. Queensland Curriculum - Digital Technologies (Years 5–10)

Years 5–6

DT5-6 – Design and implement digital solutions using branching and iteration

DT5-7 – Explain how digital systems represent data

Years 7–8

DT7-8 – Design algorithms and implement digital solutions

DT7-9 – Analyse and evaluate digital solutions

Clear links to coding, sensor use, and problem-solving missions.

5. South Australian Curriculum - Australian Curriculum v9 (implemented directly)

SA uses ACARA outcomes directly:

AC9TDI6 (Years 5–6)

AC9TDI8 (Years 7–8)

6. Western Australian Curriculum - Technologies Curriculum

Years 5–6

ACTDIP022 – Design and implement digital solutions using decisions and loops

ACTDIP023 – Explain digital systems and data transmission

Years 7–8

ACTDIP030 – Design and implement algorithms using structured programming

ACTDIP031 – Evaluate digital solutions

Has strong alignment to robotics competitions and applied problem-solving.

7. Tasmanian Curriculum - Australian Curriculum v9 (with state contextualisation)

Uses ACARA Technologies outcomes directly

Emphasis on design thinking, systems, and real-world application

Easily aligns with exploration, sustainability, and STEM pathways.

8. ACT Curriculum - Australian Curriculum v9

Full adoption of ACARA Technologies outcomes

Emphasis on inquiry, creativity, and digital systems

Direct alignment with no modifications required.

9. Australian Curriculum v9 (contextualised)

Technologies outcomes aligned to ACARA

Strong focus on remote contexts, problem-solving, and community relevance

The theme is particularly relevant for remote delivery, logistics, and adaptation.

3. Careers Spotlight

Space & Exploration, Biomimicry & Sustainability, Humanitarian & Disaster Response, Logistics & Smart Cities. Each mapped to jobs like Aerospace Engineer, Biomimicry Engineer, Humanitarian Engineer, Automation Specialist.

4. Teacher Resources

Lesson starters: NASA Mars Rover clips, CSIRO Robotics. Brainstorm animal adaptations.

Mini Design Thinking Cycle: Empathise, Define, Ideate, Prototype, Test.

Assessment Rubrics: Creativity, Coding, Problem-Solving, Teamwork.

5. Optional Extensions

Links to Mars Society, Antarctic Division, guest speakers, QR code challenge mats.