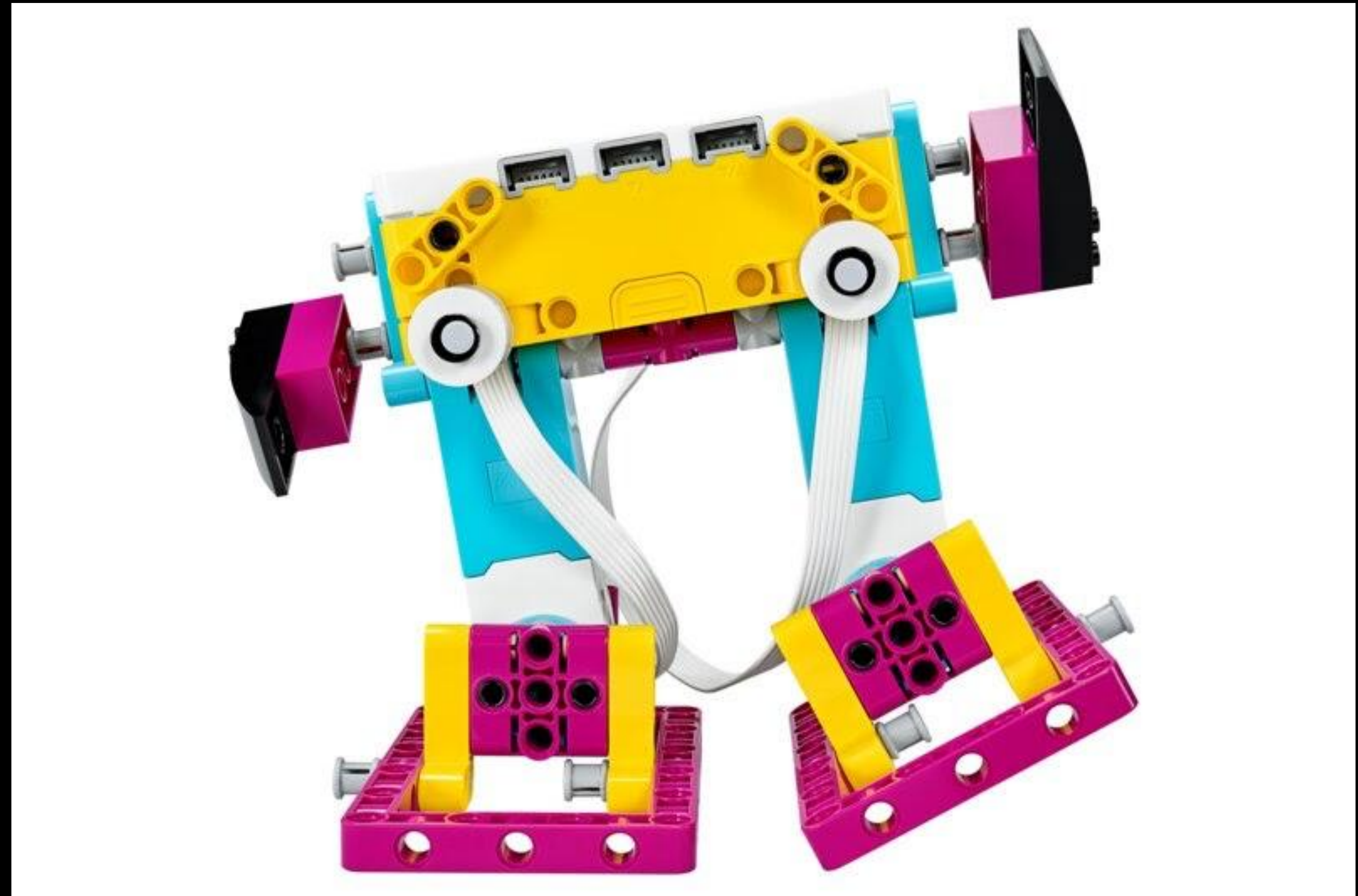
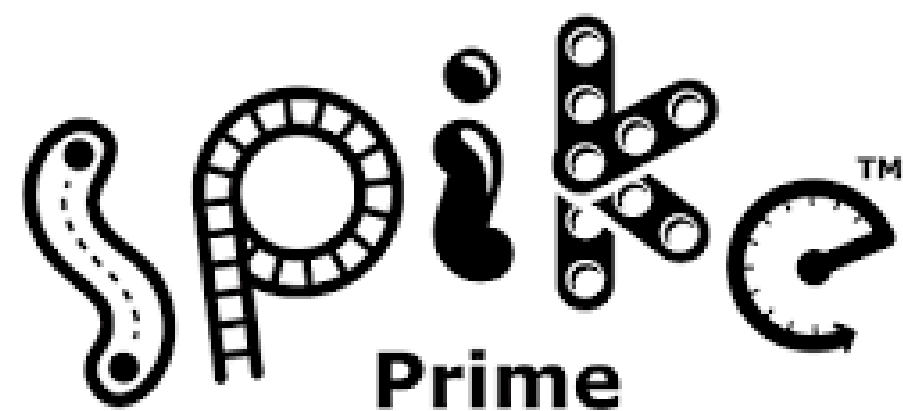


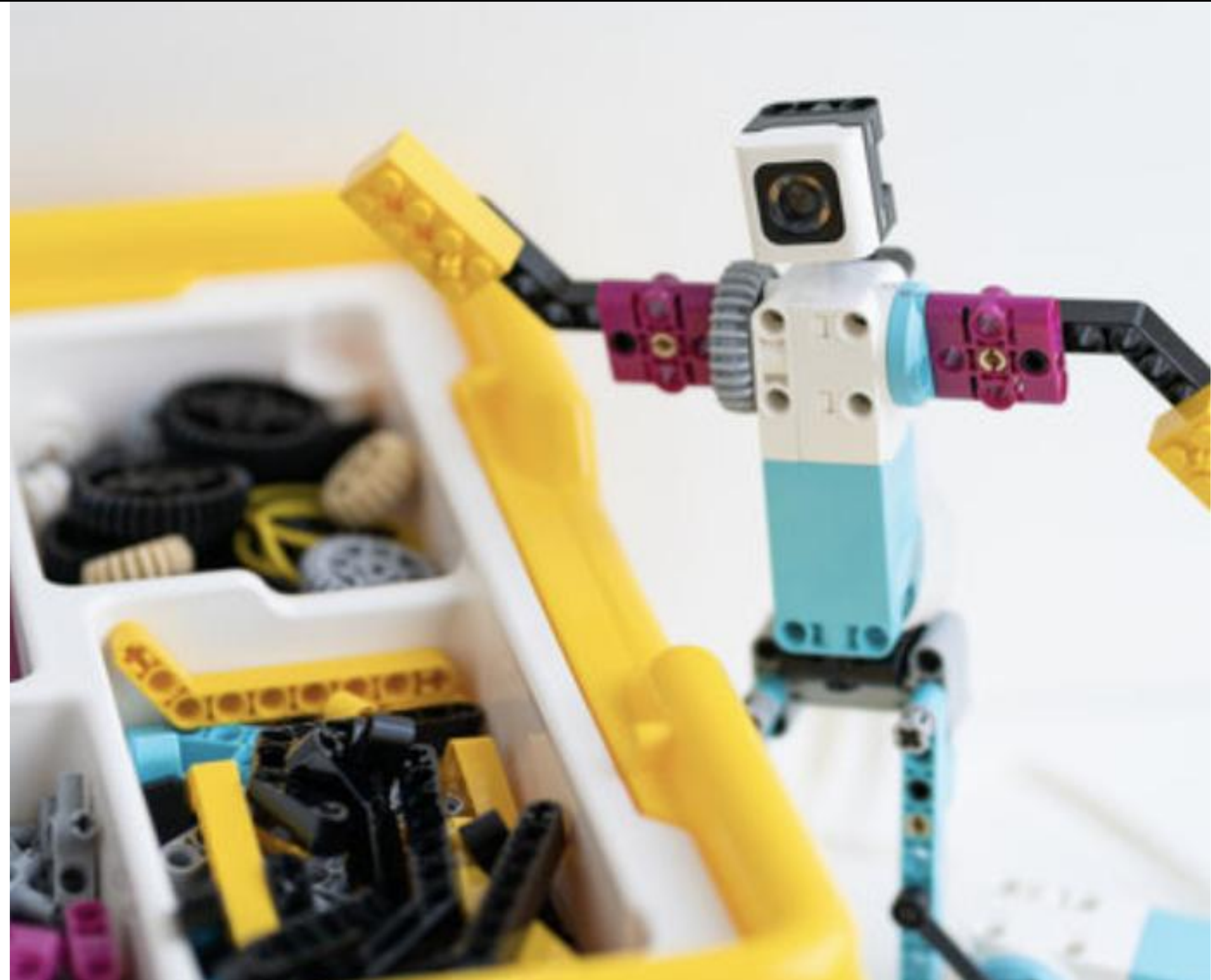
2026

Spike Challenge



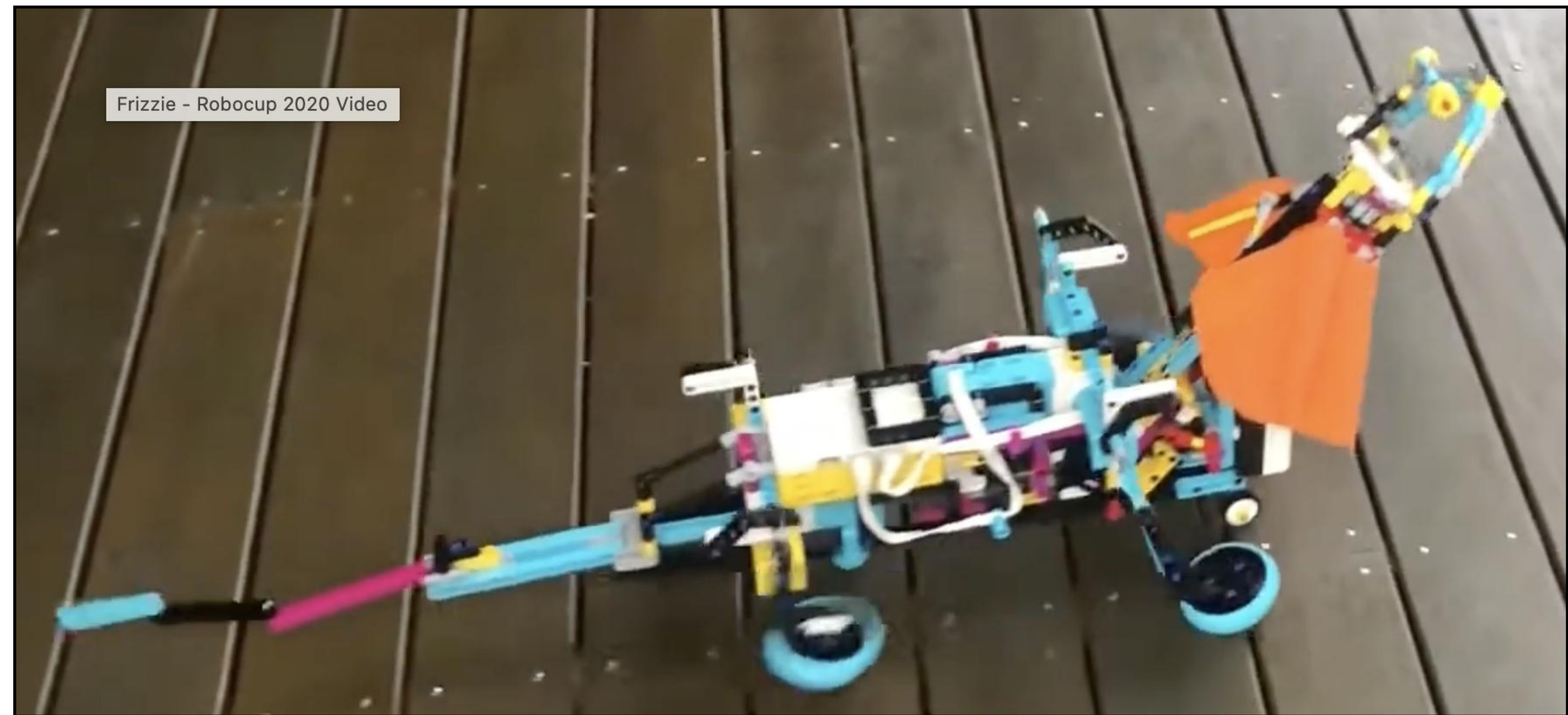
Survivors of the Future: Robots on a New World

Imagine it's the year 2050. Humans and animals must find new ways to survive as Earth's environments change and as we explore beyond our planet. Your robot is part of an exploration crew sent to a new world. Real or imagined.



Your Mission

- Explore strange new terrains.
- Build safe habitats for humans and animals.
- Collect and deliver essential supplies.
- Learn from animal adaptations to design robots that can survive in extreme conditions.
- Will your robot help the new colony adapt and thrive?



Discovery

Noun:

the action or process of discovering or being discovered.

Verb:

- find unexpectedly
- divulge (a secret)
- to find out about
- recognise
- realise for the first time



What world will you explore? Where will it take you.....

- ▶ a new frontier
- ▶ the jungle or rainforests
- ▶ the ocean
- ▶ the desert
- ▶ the mountains
- ▶ outer space
- ▶ microscopic worlds
- ▶ urban spaces
- ▶ polar regions
- ▶ or create a totally new world!



Journeys Across the Curriculum

Geography: investigate areas such as climate, topography and map skills

History: investigate past, present and future

Literacy: study a variety of text types and genres

Maths: calculate distances, time taken and the cost of journeys, algorithms

Science and Technology: Study the transport and power networks needed to make journeys; travel to different environments (micro and macro); design a vehicle to meet a need for someone, an industry, etc.

Creative Arts: translate stories of journeys into music, drama, art or dance (OnStage)

This is not an exhaustive list.



Curriculum Links

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

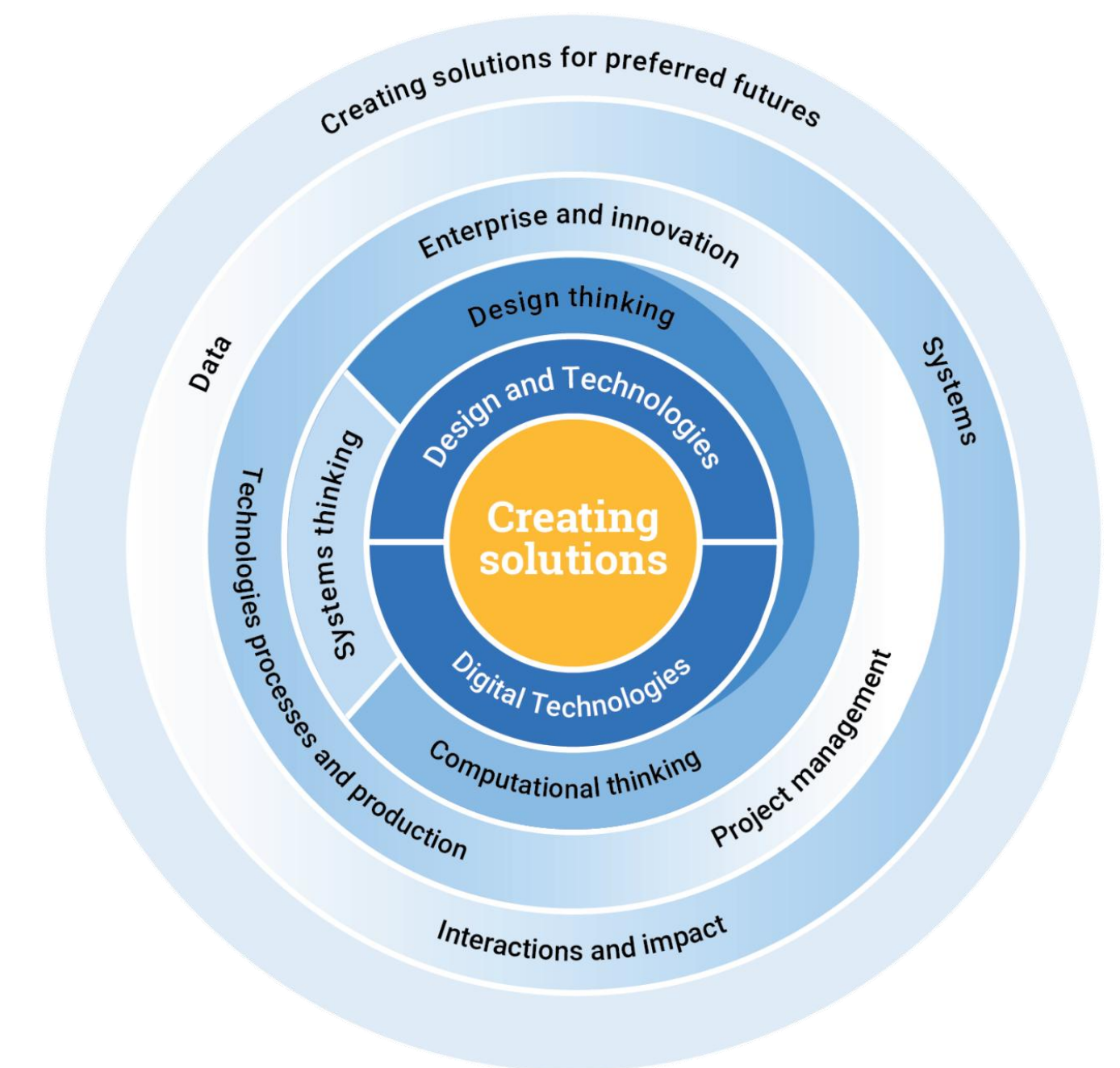
Years 7–8:

- 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

General Capabilities:

- Critical & Creative Thinking
- Digital Literacy
- Ethical Understanding
- Personal & Social Capability

All state curriculum links are in the Teacher Guide.



Industry Links

Space Exploration & Robotics:

- NASA and ESA (European Space Agency) use robots like the Mars Rovers (Curiosity, Perseverance) to explore new environments.
- Australian Space Agency supports projects such as lunar rovers and partnerships with international missions.

Disaster Response & Humanitarian Engineering:

- Drone and robotic systems used in bushfire recovery, flood response, and earthquake search-and-rescue mirror what students program their Spike robots to do.
- Links to Engineers Without Borders and CSIRO Robotics for real-world applications in remote or dangerous environments.

Biomimicry & Sustainability:

- Engineers are inspired by animals when designing technology — e.g., gecko-inspired climbing robots, beetle-inspired water collectors.
- CSIRO's bio-inspired robotics research provides authentic STEM connections.

Logistics & Transport:

- Robots are central in Amazon warehouses, ports, and medical drone deliveries in Africa and remote Australia (e.g., Royal Flying Doctor Service's delivery projects).
- These directly align with supply delivery missions in the theme.

Specifications

1. The robot needs to be **your design**. You are encouraged to research and find examples of what others have done, but your final product should be your own, not a copy of someone else's idea.
2. You will create a **Technical Paper** to show evidence of:
 - ✓ **Research**. Show links, images, notes, sketches, and your builds (did they change?). What features of the LEGO® Education SPIKE™ did you enjoy using when designing and building your robot and for its exploration?
 - ✓ **Planning** your design and programming – justify your decisions. Think about why you chose this design and how it will work.
 - ✓ **Features of your new world robot**. What makes it worthwhile, what special features, and what environment does it explore? For example, an exploration to Mars to, an exploration deep into the ocean using powerful propellers... a unique robot that explores somewhere?
 - ✓ **Programming** - explain how the motors and sensors add interest to your robot. Anything else that you think would be important?

Remember that your robot **can not be remote-controlled**; you should use the LEGO® SPIKE™ software and write a program that **enables it to be autonomous**. You may only use parts from a Lego Spike Prime or Expansion kit.

To succeed, you must research types of robots and create your **own robot** using the LEGO® Education SPIKE™ Prime set. You may also use the Spike Prime expansion set. You will need to:

- Work as a team to research, design and build a prototype of your robot.
- Document your research, designs and programming (show us your design thinking throughout the process).
- Submit images and a video of your robot exploring the new world or completing a task there. You will also need to submit a copy of your code.
- Present your documentation through a video. Include slides, short videos of how it works, the design, how it might move and its functions.
- Be creative. Showcase how it works and its unique features.

This challenge is for LEGO® Education SPIKE™ Prime robots only.



What to Submit:

What to include in your submission:

1. A copy of your code.

2. A video (max 3 minutes) of you demonstrating your robot as it explores.

3. An introduction/overview where each team member discusses their role. What roles did each team member have during the challenge – designer, engineer, builder, programmer? Did the roles change?

- Discuss why you think your robot is a good example of a **robot for a new world**.
- Describe the interesting design features of the **new world robot**: Did you use motors, sensors, and LEGO® elements, and how did they add interest?
- Each team member should discuss what they found challenging and what they enjoyed the most (e.g. the build, designs, research, programming).
- Your robot in action. Zoom in and out to show your **new robot in action**.

A technical paper document (a .pdf is best) or shared link to your Google Doc/ Folder with all your supporting evidence is outlined in the specifications. (Make sure sharing permissions are working.)

RoboCup Junior Spike – Scoring Rubric

Total is out of 60

Category	0-2	3-5	6-8	9-10
Creativity & Innovation	Limited originality, design copied or incomplete.	Some creative ideas, limited application to challenge.	Creative design with clear links to theme and adaptations.	Highly original, imaginative, strongly aligned to theme.
Coding & Technical Accuracy	Robot does not run or code incomplete.	Basic coding works but inconsistent; limited use of sensors/loops.	Code runs reliably, uses sensors, loops, and decisions effectively.	Sophisticated coding, efficient algorithms, optimised use of Spike features.
Problem-Solving & Adaptation	Little evidence of testing or problem-solving.	Some attempts to solve issues, limited refinement.	Clear testing and refinement; robot adapts to obstacles/conditions.	Excellent evidence of iteration; robot adapts seamlessly to new or changing conditions.
Teamwork & Communication	Teamwork minimal, tasks unevenly shared.	Some collaboration, roles unclear or unequal.	Effective teamwork, roles mostly clear, good communication.	Exceptional collaboration, shared leadership, clear roles, respectful communication.
Task Success	The robot is unable to complete the task successfully. Some progress is demonstrated in the video.	The completion of a simple task works sometimes. This is demonstrated in the video.	Successful completion of a simple task. This is demonstrated in the video.	Completion of complex task(s). This is demonstrated in the video.
Video Presentation	Did not submit a video or the video did not meet the rules specification, ie it was too long, did not show a working robot.	Beginner presentation skills demonstrated in the video.	Intermediate presentation skills demonstrated in the video.	Advanced presentation skills demonstrated in the presentation.





Celebrate

Wherever your journey takes you
Go Boldly!