

Pre-show Activities Teacher Instructions



The following optional activities are designed to be implemented prior to your roadshow visit. You may choose to use one, none or all of the activities. They can also be used as standalone tasks or delivered after the incursion. Feel free to modify and adapt them to suit your students.



Activity 1: Card Sort

Print and cut out the cards in Appendix 1.

Have students work in small groups (2-4 students)

Instruct students to sort the skill cards to match the areas of opportunity in the Defence Industry. They do not need to use all of the cards. Ask students to come up with examples of how these skills would be used in a job in that area, and/or justify why they have put them in each area.

Inform students that they need to come to an agreement as a group, and all be prepared to share their reasons.

Use a sharing strategy for students to compare answers with others.

E.g. Stay and stray (Kagan, 2009). One member of the group stays with their work, while the others move to other groups. The 'stayer' explains their response to the 'strayers' who then return to their original groups and share what they learnt from the other groups.

Alternatively, you could simplify and shorten the activity by having each group work on ONE Defence Industry area and share back to the class.

NOTE: there is no correct answer to this task. The STEM skills listed are essential components of many occupations in the Defence Industry and there is a large amount of crossover.



Activity 2: STEM Skill Self Assessment

Have students complete the STEM Skill self assessment individually in Appendix 2.

This is designed to get students thinking about what STEM skills are and reflecting on what skills they already have. You could use this as a starting point to discuss why the skills are important and how they can be developed.

Remind students that even if they are not currently considering a career in STEM, these skills are highly sought after by employers in most industries.

Keep this document so that students can return to it after the roadshow.

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Activity 3: Design your Defence Industry team

With students working in groups (2-4 students), explain to them that they work in Human Resources and are tasked with hiring a team to work on a new project to solve a problem for the Defence Industry. They need to work out who they want to hire and what skills they should have. They don't need to solve the problem but produce a team of people who would be able to work together to solve it effectively.

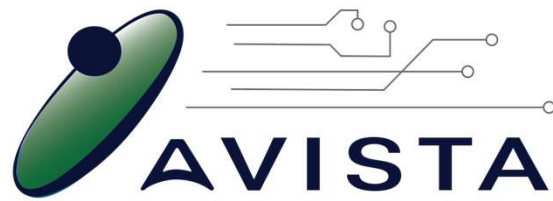
The 'Design your Defence Industry Team' worksheet (Appendix 3) walks students through the process. There are some suggested answers below that may help you guide your students if they get stuck. Depending on your cohort, you may prefer to guide your students to finding actual occupations (as below) or more general roles (like 'building expert'). There is no correct answers for this task.

Scaffold: provide students with a list of occupation examples (below). Students may need to research what these do so that they can determine who to include on their team.

Extension: give students a budget for their team's salary and get them to research average salaries of the roles they want on their team and ensure they stay within budget.

Project Manager	Communications Technician	Naval Architect	Software/AT developer
Systems Designer	ICT support technician	Logistics coordinator	Product Tester
Mechanic	Cybersecurity Specialist	Field medical officer	Clothing production technician
Rescue Operations Expert	Industrial designer	Biomedical Engineer	CAD (Computer Aided Design) designer
UX/UI Designer (User Experience / Interface)	Remote Healthcare Expert	Materials Engineer	Artist
Structural engineer	Military Advisor	Mechanical engineer	Electrical engineer-
Welder	Sensor specialist	Naval architect	Data analyst
Electronics technician	Procurement manager	Electrician	Telecommunications Specialist
Textile/Fashion Designer	Scheduler	Environmental Scientist	Robotics engineer

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Activity 3: Design your Defence Industry team scenarios

A robot for search-and-rescue missions: develop a robot that can help find and rescue people in dangerous environments like collapsed buildings.

- Mechanical engineer: designs the robot's body, joints, and movement systems.
- Software/AI specialist: programs the robot's sensors, controls, and decision-making processes
- Communications technician: sets up remote control systems
- Rescue Operations Expert: Shares knowledge on what is needed in real search-and-rescue scenarios.
- Tester: helps test and build prototypes
- Structural engineer: Advises how the robot should move safely through unstable environments

Upgrade a Navy Ship: upgrade a Navy ship with new technology for modern systems of communication and running efficiency

- Naval architect: modifies ship structure
- Electrical engineer: designs and installs modern power and electrical systems
- Cybersecurity expert: protects communication and control systems from cyber attacks
- Systems designer: designs and integrates new technology into the ship's existing system
- Logistics coordinator: manages the transport, installation, and supply of new parts and equipment
- Project Manager: oversees the upgrade process, balancing technical needs, timelines, and resource constraints.

Medical Support in Remote Areas: design a portable medical support system for use in remote areas, including telemedicine capabilities.

- Biomedical Engineer- designs and tests the portable medical devices (e.g. monitors, diagnostic tools).
- Telecommunications Specialist- ensures the system can send and receive data, even in areas with poor signal.
- Logistics coordinator- plans how the equipment will be transported, stored, and set up quickly and safely.
- Cybersecurity Specialist- protects patient data and communications between doctors and remote teams.
- Project Manager- oversees the development process, balancing technical needs, timelines, and field constraints

A new camouflage uniform: design a functional defence uniform with a camouflage pattern suited to a new environment (e.g. snow, rainforest, desert).

- Textile/Fashion Designer – designs the cut, fit, and features of the uniform to suit movement and comfort.
- Environmental Scientist – advises on terrain and colours of the surroundings
- Camouflage pattern artist- creates a pattern that blends with the specific environment
- Military Advisor – ensures the uniform meets defence needs (e.g. movement, visibility)
- Materials Engineer – selects fabric that is durable and comfortable
- Project Manager – coordinates testing, feedback, and delivery