NSW Department of Education

Early Stage 1 to Stage 3 | STEM

Science, technology, engineering and mathematics (STEM) are essential areas of study that foster students' skills and prepare them to participate in a rapidly changing world.

What is STEM Education?

Key to STEM education is the integration of curriculum areas along with general capabilities to solve authentic, real-world problems.

When students learn within the context of authentic projects, they can see clear connections between syllabus outcomes and real-world application. Through STEM, students apply skills, knowledge and understandings the way they will be applied in the workforce and in their daily lives. know

> STEM education refers collectively to the teaching of the disciplines within its umbrella – science, technology, engineering and mathematics – and also to a cross-disciplinary approach to teaching that increases student interest in STEM-related fields and improves students' problem solving and critical analysis skills (National STEM School Education Strategy 2016-2026).

Teaching STEM

Through STEM, students develop key skills to support them to succeed at schools and beyond including:

- critical thinking
- creativity
- problem-solving
- collaboration
- communication
- independent thinking
- initiative
- digital literacy.

International research indicates that 75 per cent of the fastest-growing occupations now require STEM skills and knowledge. It is important that we equip young people with the skills needed to be successful and engaged citizens in a complex and dynamic society (Department of Education Strategic Plan 2019-2023).

Planning STEM

Effective curriculum planning and programming for STEM learning and engagement supports teachers to differentiate their practice in response to the varied ways students learn.When planning to implement a STEM program, consider the following:

- Give consideration to learning across the curriculum and having high expectations for all students.
- Students have a voice in their learning
  - in their choice of project
  - mode of communication
  - findings/solution materials
  - investigations and strategies to be undertaken.
- Length of allocated class time needs to sustain deep thinking, investigation and an integrated approach
- Co-creation of learning experiences and assessment tasks needs to include all stakeholders - classroom teacher, teacher-librarian, release from face-to-face teacher and students
- Students can experience a variety of strategies, manipulate a variety of materials and develop skills in the use of a variety of tools and equipment.
- STEM education is a way of thinking and doing which involves pedagogy, spaces and internal and external agencies.
- Opportunities to share results and/or products of project-based learning experiences with authentic audiences.

Next ➜

STEM learning frameworks – a tool to scaffold student learning

Category:

- Teaching and learning

Topics:

- STEM
- STEM

Business Unit:

- Educational Standards

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