



STEM Day

Support your learners' *Careers Related Learning* with this carousel of curriculum linked STEM activities

Throughout the day learners will rotate around 5 different STEM workshops, led by our team of education communicators. We have selected these workshops because they are designed to work with this age group but these activities can be substituted for any in our wider range of [STEM workshops](#) upon request.

These engaging workshops get learners to take part in interactive activities. They include:

- Apply their understanding of atoms, molecules, and compounds to build models of medical drugs (using molymod® kits) and learn about the drug discovery process. (Molecules to medicine)
- Recognise how structures in the brain interact to enable different functions and the importance of these functions in day to day life (Biology of Brains)
- Using their creativity and innovation students consider a biomimicry as they design a product of the future (Design and Deliver)
- Learners develop their problem-solving skills by learning from this foundations of computer science in this team based workshop. (Computational Thinking).
- Work in small teams as they take on an interactive quiz and learn about careers in STEM and how their learning relates to the real world (STEMployment)

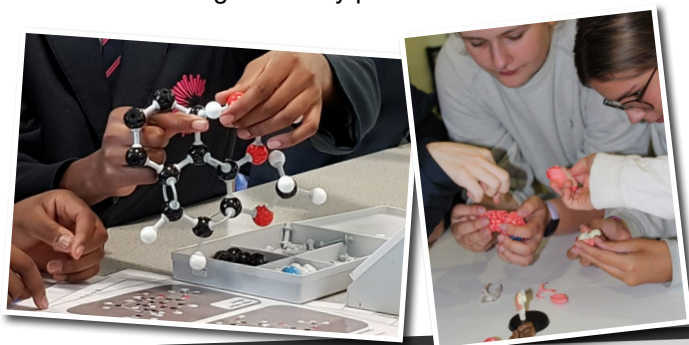
By the end of these activities' students will

- Understand how their skills and learning in school related to real world careers and challenges.
- Develop teamwork, problem solving, speaking, listening creativity, and aiming high skills.
- Recognise that STEM careers are for everyone.

Content:

Molecules to medicine

- Introduction to atoms, molecule, and compounds.
- Understand what different medicines are used for.
- In pairs learners build a series of molecules of medical drugs.
- Discussion around careers linked to biochemistry.
- Build a large molecule as a class whilst learning about the drug discovery process.



Approx.
150-180
learners



KS4



Full Day
5 workshops

Biology of Brains

- Introduction to the brain and the main cell types (neurons and glia).
- The class is then split into two teams that compete to earn as main points through a series of challenges and quick-fire questions.
- Challenges cover reaction speed, balance, concentration, language and spatial memory.
- Focus is given to the different careers linked to biology and our brain from mental health nursing pharmacologists.

Design and Deliver

- Introduction to what we mean by innovation
- Discussion around the engineering design process, innovation and biomimicry and how to come up with ideas.
- Working in team (2 or 3) learners use their creativity to design an innovative product that tackles real world problems.
- Teams present their ideas back to the class.

Computational Thinking

- The session begins with an introduction to what is computational thinking.
- Learner then take part in a series of experiences that break down the concepts of decomposition, pattern recognition, abstraction and algorithms.
- In teams, learners then put together what they have learnt to complete a series of logic puzzles and team challenges.
- The session finishes with an overview of the different careers in computer science and the benefits of computational thinking.

STEMployment QUIZ

- Short introduction to the session and its aims
- Learners compete in pairs in this highly interactive quiz that uses Quizdom remotes. They score points based on correct answers.
- Each question is explained to increase learners understanding around different STEM subjects, essential and transferable skills, and STEM careers.

Watch for more information on [Biology of Brains](#)



SCAN ME

[Or click here](#)



STEM Day Keystage 4

Gatsby benchmarks

- Linking curriculum learning to careers (4)
- Encounters with employers (5)

Curriculum links

Molecules to medicine (S)

- Science - Atoms, elements, and compounds:
 - » A simple (Dalton) atomic model.
 - » Differences between atoms, elements, and compounds.
 - » Chemical symbols and formulae for elements and compounds.

Biology of Brains

- Develop and learn to apply observational, practical, modelling, enquiry, problem-solving skills and mathematical skills.
- Developing their use of scientific vocabulary.
- Students should be helped to understand the fundamental units of living organisms are cells, which may be part of highly adapted structures including tissues, organs and organ systems, enabling life processes to be performed more effectively.
- Evolution and differences between species.
- Cell Biology:
 - » [pg.72] cells as the basic structural unit of all organisms; adaptations of cells related to their functions.
- Coordination and Control:
 - » [pg. 73] principles of nervous coordination and control in humans.
 - » [pg. 73] the relationship between the structure and function of the human nervous system.
 - » [pg. 73] the relationship between structure and function in a reflex arc.

Design and Deliver

- Design and Technology: Understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists
- Design and Technology: Develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations.
- Design and Technology: Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups

Computational thinking

- Develop and apply their analytic, problem-solving, design, and computational thinking skills
- Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- Understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem

Logistics and planning:

All sessions are designed for around 30 learners. Some activities can be run with larger groups if requested.

We ask that a teacher is always present throughout the activities, to support learner engagement and manage behaviour.

Set up:

All these activities can be run in a classroom with a projector and screen.

Timetable example for full year group with 5 education communicators:

	Period 1	Period 2	Period 3	Period 4	Period 5
Computational Thinking	Group 1	Group 2	Group 3	Group 4	Group 5
Design and Deliver	Group 5	Group 1	Group 2	Group 3	Group 4
Biology of Brains	Group 4	Group 5	Group 1	Group 2	Group 3
STEMployment	Group 3	Group 4	Group 5	Group 1	Group 2
Molecules to Medicine	Group 2	Group 3	Group 4	Group 5	Group 1

Why Choose Learn by Design?

We have been delivering workshops into schools since 1995 and have a team of Education Communicators with a range of scientific and educational backgrounds. We can involve ambassadors into the day if requested.

For further learning this activity goes well with:

- [Engineering Our Future day](#)
- [Destination Rail – Stations to success day](#)