SCIENCE
TECHNOLOGY
ENGINEERING
MATHEMATICS

TEACHER EDUCATION IN SCOTLAND

AT A GLANCE

POP. TOTAL
5,438,100

POP. CHILDREN 0-15 YEARS
919,502

2015 PISA RANK FOR SICENCE

Scotland	UK
24	15

THE CURRICULUM (AGES 13-15 YEARS)

REVISIONS IN THE LAST 25 YEARS:

- Curriculum for Excellence (ages 3-18): a process of education reform started in 2002 and implemented officially in 2010

IMPLEMENTATION OF THE CURRICULUM

- A national CfE Management Board
- A CfE Implementation Group chaired by Education Scotland

FRAMING OF SCIENCE – WHY IS IT IMPORTANT?

"Science and the application of science are central to our economic future and to our health and wellbeing as individuals and as a society."

- Interest in and understanding of the living, material and physical world
- Skills to become creative, inventive and enterprising adults
- Skills for learning, life and work

APPROACHES TO TEACHING

- Interdisciplinary and active learning
- Problem solving skills and analytical thinking skills
- Scientific practical investigation and inquiry
- Use of relevant contexts, familiar to students' experiences
- Use of technology, real materials and living things
- Collaborative learning and independent thinking
- Emphasis on students explaining their understanding of concepts, informed discussion and communication

TEACHING LEARNING OUTCOMES

- Inquiry and investigative skills
- Scientific analytical thinking skills
- Skills and attributes of scientifically literate citizens
- Specific outcomes for: planet earth, forces, electricity and waves, biological systems, materials, topical science

TEACHER RESOURCES FOR ASSESSMENT

- Assessment should follow rather than lead the curriculum
- Experiences and Outcomes: Sciences (20p)
- Using Benchmarks for Assessment: Sciences (2017) (46p)
- A Framework for Assessment (2011) (63p)

SCIENTIFIC PRACTICES

Inquiry and investigative skills by 13-15yrs:

- Plan and design scientific investigations - aims, predictions, hypotheses
- Carry out practical activities - control of risks/hazards, data collection, control experiment
- Analyse findings - establish relationship between variables and link to hypothesis, draw conclusion
- Present scientific findings

STEM/SCIENCE TEACHER EDUCATION

YEARS REQUIRED PRE UNIVERSITY

11

REQUIREMENTS TO BECOME A SCIENCE TEACHER

- Secondary-level Maths & English
- A 4yr combined degree in education and the science subject OR an undergraduate degree in the subject plus 1-yr Professional Graduate Diploma in Education (PGDE)

EDUCATION LENGTH (YEARS)

4 or 4+1

EXAMPLE COURSE

PGCE Secondary Education with Supported Induction Route (SIR) (52 weeks) for STEM subjects
Modules: Intro to Learning and Teaching, Professional Practice Placement, Developing Practice, 2nd Professional Practice Placement
37-week school experience placement with a mentor

GOV'T PROMOTION OF STEM

MINISTRY OF EDUCATION

Education Scotland https://education.gov.scot

- Five-year STEM Education and Training Strategy for Scotland published Oct 2017
  - STEM Strategy key performance indicators to measure and monitor progress
  - STEM Strategy Implementation Group
  - Annual Report provided to Parliament (first Annual Report in 2019)
- Funding to the *Scottish Schools Education Research Centre* for teaching and learning support for STEM education
- Young STEM Leaders programme launching in 2019 (peer mentoring)
- Working with colleges to bring the number of full-time college places in STEM subjects in line with regional employment needs.
- £135,000 investment in four Scotland-wide, school-based science engagement initiatives

"we aspire to be the inventor and manufacturer of the innovations that will shape the future."

"The Scottish Government is committed to ensuring we have a highly educated and skilled population equipped with the STEM skills, knowledge and capability required to adapt and thrive in the fast-paced changing world and economy around us."

"we must strive to lead that innovation in the world."