

# Learning in Technologies

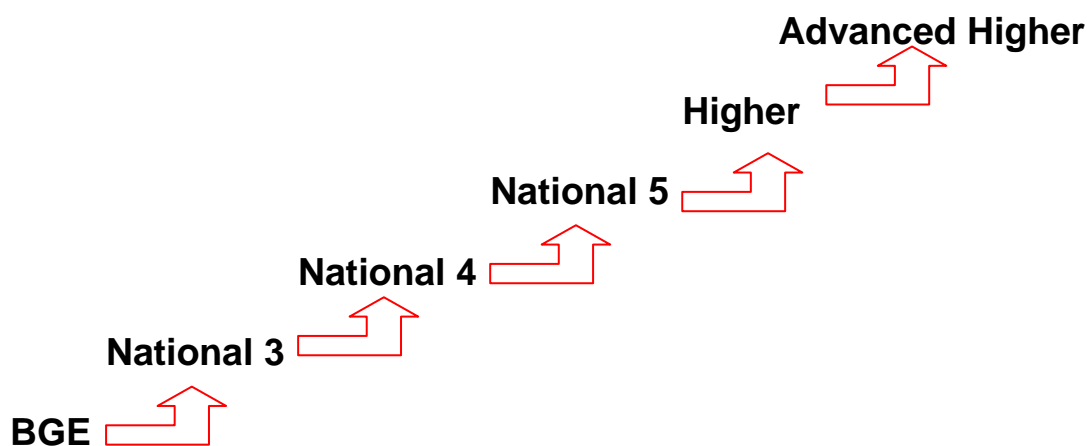
Pupils need to be skilled and knowledgeable users of technology, and that is what our courses in technology are designed to do.

Technologies are developing at an unprecedented rate. Such dramatic change brings risks as well as benefits, and pupils need to be able to assess the impact of technologies so that they can take action in an informed way. Through the Technologies area of the curriculum pupils learn from creative, practical and work-related experiences in craft, design, engineering, graphics, food, textile, and information technologies. Our courses provide opportunities to develop pupils' creativity and enterprise as they prepare to take their place in our global society and economy. It has become self-evident that skills in using a variety of technologies can support leisure activities which can be enjoyed at any age to support the well-being of the individual.

Learning through the technologies will enable pupils to:

- develop an understanding of technologies and their impact on society – in the past, present and future
- apply knowledge, understanding and practical skills to design and create products, processes and solutions that meet needs in play, work and daily life
- gain the confidence and skills to embrace and use technologies now and in the future
- evaluate technological processes and products critically and constructively, taking account of cultural, ethical, environmental and economic factors
- experience work-related learning and, for some, establish the foundation for more advanced learning and careers in the technology industry.

As pupils progress through their Broad General Education and into the Senior Phase, they will follow curricular pathways to meet their needs and aspirations which will recognise and accredit their attainment and achievements.



There will be a continued emphasis on participation in well-planned experiences in all 4 contexts of learning – within the Curriculum areas; Interdisciplinary learning; Ethos and life of the school; opportunities for personal achievement. The main lines of development for all courses within Technologies will be:

- Investigating
- Designing
- Producing
- Evaluating

# Computing Science

**The Course** provides an understanding of the technologies that underpin the digital world and develops transferrable skills. It brings together elements of technology and science and has wide-ranging social implications, providing an excellent opportunity for making links across learning in the senior phase.

**The skills** that pupils gain by successfully completing the Computing Science course will be valuable for learning, life and work.

**The skills** that pupils gain by successfully completing Computing Science courses will be valuable for learning, life and work. Pupils will:

- be introduced to and develop aspects of computer usage across a range of contemporary contexts, including work and personal computer based activities
- learn how to manipulate software and hardware to complete tasks efficiently and to a high standard
- develop knowledge and understanding of key facts and ideas in computing science with a few to deciding the appropriate tool for task completion
- apply skills and knowledge in analysis, design, implementation and testing to a range of digital solutions
- communicate computing concepts clearly and concisely using appropriate terminology
- develop an understanding of the impact of computing science in changing and influencing our environment and society, and the personal responsibilities that have to be considered when using computer technology

**The Learner Journey** through all levels of the course will be coherent and provide challenge and enjoyment. An integrated approach to learning will be adopted and include a mix of practical learning and knowledge and understanding of computers and computer processes. The structure of courses will ensure clear pathways and progression from BGE courses onwards through the national qualifications.

## National 4 Computing Science

The course consists of 3 mandatory Units, including the Added Value Unit. Each of the component Units of the Course is designed to provide progression to the corresponding Unit at National 5.

- Information System Design and Development
- Information System Design and Development
- Computing Science Assignment (Added Value Unit)

## National 5 Computer Science

The course consists of 2 mandatory Units and the Course Assessment. Each of the component Units of the Course is designed to provide progression to the corresponding Unit at Higher.

- Software Design and Development
- Information System Design and Development
- Course Assessments:

Component 1 — Question Paper 90 marks

Component 2 — Assignment 60 marks

## **Home learning in Computer Science**

All pupils will be required to continue their learning at home in a manner that both reinforces skills and classroom learning, as well as in terms of developing research based skills. Tasks may include:

- Completing prescribed homework questions
- Researching current technologies
- Practicing specific skills using application programs
- Using study skills in preparation for assessments

Parents/ carers can be supportive by discussing their work with them or aiding them with research, experimentation or proof reading completed work. Other ways in which parents/ carers can support pupils include:

- Considering the use of computers in the home and asking pupils for advice
- Ensuring that pupils work safely on the computer in a manner that reinforces pupils' understanding of how to support their own health and well being.

## **Supporting Pupils in Computer Science**

Throughout the course pupils will benefit from individual support from teachers and a range of professional partners.

Support strategies will include:

- discussion of overall individual strengths, areas of improvement, next steps and progress
- negotiation of individual targets and plans of actions to achieve success
- feedback on specific pieces of practical or written work
- opportunities for supported study after school and at weekends
- visits to places of interest that make extensive use of computer technology
- opportunities to discuss computer science with practitioners and partners

# Business Education

**The Courses** develop pupils' understanding of the ways in which businesses operate in the current dynamic, changing, competitive and economic environments, and to encourage enterprising attitudes and skills. Pupils learn about and apply concepts that stimulate enterprise and influence business. Pupils also gain an understanding of Scotland's contribution to a sustainable global economy. A main feature of this Course is the development of enterprise and employability skills needed to contribute to a business and enterprise environment.

**The skills** that pupils gain by successfully completing Business Education courses will be valuable for learning, life and work. Pupils will develop:

- knowledge and understanding of business concepts in a range of contexts
- awareness of the processes and procedures businesses use to ensure customers' needs are met
- enterprising skills, and adopt enterprising attributes, by participating in practical activities in realistic business situations
- financial awareness through a business context
- an insight into the impact of the economy on businesses and our daily lives, thus gaining economic awareness

**The Learner Journey** through all levels of the course will be coherent and provide challenge and enjoyment. The knowledge gained of financial and economic situations, through a business context, can be applied to personal living so that pupils can manage their own personal financial affairs with confidence, and gain a better understanding of the impact of economic issues on their lives. The structure of courses will ensure clear pathways and progression from BGE courses onwards through the national qualifications.

## National 4 Business

The course consists of 3 mandatory Units, including the Added Value Unit. Although there are no directly corresponding units from national 4 to national 5 the course prepares pupils for progression to the National 5 Business Management course.

- Business in Action
- Influences on Business
- Business Assignment (Added value Unit)

## National 5 Business Management

The course consists of 2 mandatory Units and the Course Assessment. Each of the component Units of the Course is designed to provide progression to the corresponding Unit at Higher.

- Understanding Business
- Management of People and Finance
- Management of Marketing and Operations

Component 1 – course assignment  
Component 2 – question paper

To gain the award of the Course, pupils must pass all of the Units as well as the Course assessment components.

## **Home learning in Business Education**

All pupils will be required to continue their learning at home. Tasks may include:

- Completing prescribed homework questions
- Researching course content
- Practicing specific skills using application programs
- Using study skills in preparation for assessments

Parents/ carers can be supportive by discussing their work with them or aiding them with research. Other ways in which parents/ carers can support pupils include:

- discussing how pupils manage personal budgets
- encouraging pupils to be enterprising through creating their own income
- discussing the implications of business closures reported through the media

## **Supporting Pupils in Business Education**

Throughout the course pupils will benefit from individual support from teachers and a range of professional partners.

Support strategies will include:

- discussion of overall individual strengths, areas of improvement, next steps and progress
- negotiation of individual targets and plans of actions to achieve success
- feedback on specific pieces of practical or written work
- opportunities for supported study after school
- visits to businesses and discussions with visiting practitioners.

# ADMINISTRATION AND IT

**The Course** is designed to develop pupils' administrative and IT skills and, ultimately, to enable them to contribute to the effective functioning of organisations. While the skills, knowledge and understanding it develops reflect current administrative practice, the course is sufficiently flexible to take account of emerging technologies, and this will ensure its continuing relevance. The Course makes an important contribution to general education through developing a range of essential skills which will stand pupils in good stead regardless of the career path they ultimately choose. The course opens up progression to a range of careers in administration as well as supporting the wider curriculum through its emphasis on IT.

**The skills** that pupils gain by successfully completing Administration and IT courses will be valuable for learning, life and work. Pupils will:

- develop a basic understanding of administration in the workplace and key legislation affecting employees
- develop an appreciation of good customer care
- develop IT skills and use them to perform straightforward administrative tasks
- acquire organisational skills in the context of organising and supporting small-scale events

**The Learner Journey** through all levels of the course will be coherent and provide challenge and enjoyment. An integrated approach to learning will be adopted and include a mix of practical learning and knowledge of administration processes and tools in the workplace. The structure of courses will ensure clear pathways and progression from BGE courses onwards through the national qualifications.

## **National 4 Administration and IT**

The course consists of 3 mandatory Units, and the Added Value Unit. Each of the component Units of the Course is designed to provide progression to the corresponding Unit at National 5.

- Administrative Practices
- IT Solutions for Administrators
- Communication in Administration
- Administration and IT Assignment (Added Value Unit)

## **National 5 Administration and IT**

The course consists of 3 mandatory Units and the Course Assessment. Each of the component Units of the Course is designed to provide progression to the corresponding Unit at Higher.

- Administrative Practices
- IT Solutions for Administrators
- Communication in Administration

## **Home learning in Administration and IT**

Practical work using application programs will require additional input at home in order for deadlines to be met and to develop skills. Pupils will also work on assignments to develop their understanding of the theory components of the course. Tasks may include:

- working on application packages to develop skills
- working timed pieces to complete tasks
- working on past paper assignments
- preparation for all class assessments.

Parents/ carers can be supportive by discussing their work with them or aiding them with opportunities to work independently on assigned tasks. Other ways in which parents/ carers can support pupils include:

- asking pupils to create documents on the computer, such as lists or diagrams
- discussing the work of parents and other adults and how Administration and IT skills are central to the job
- taking time to share skills with pupils as they work to complete various IT tasks.

## **Supporting Pupils in Administration and IT**

Throughout the course pupils will benefit from individual support from teachers and a range of professional partners.

Support strategies will include:

- discussion of overall individual strengths, areas of improvement, next steps and progress
- negotiation of individual targets and plans of actions to achieve success
- feedback on specific pieces of practical or written work
- opportunities for supported study after school
- visits to businesses and discussions with visiting practitioners.

# DESIGN AND MANUFACTURE

**The Course** provides pupils with opportunities to develop skills that are of general value for learning, life and work: the ability to read drawings and diagrams; the ability to communicate design ideas and practical details; the ability to devise and develop practical solutions to design problems; and the ability to manufacture their design ideas. It allows pupils to engage with technologies and to consider the impact that design and manufacturing technologies have on our environment and society.

**The skills** that pupils gain by successfully completing Design and Manufacture courses will be valuable for learning, life and work. Pupils will:

- evaluate existing products using a selected range of research techniques
- apply idea generation techniques leading to a simple specification and plan
- use a range of equipment and materials in designing and making prototypes
- apply creative design skills when refining and resolving simple product design tasks
- use graphic techniques to visually represent design solutions
- use 3D modelling and manufacturing techniques to represent design ideas
- evaluate the success of their own design proposals and associated manufacturing practicalities, making suggestions for improvement
- gain knowledge and understanding of a range of manufacturing processes and the properties and uses of materials
- understand the impact of design and manufacturing on our environment and society

**The Learner Journey** through all levels of the course will be coherent and provide challenge and enjoyment. An integrated approach to learning will be adopted and include a mix of practical learning and knowledge of design and manufacture processes and tools used in the workplace. The structure of courses will ensure clear pathways and progression from BGE courses onwards through the national qualifications.

## **National 4 Design and Manufacture**

The course consists of 3 mandatory Units, and the Added Value Unit. Each of the component Units of the Course is designed to provide progression to the corresponding Unit at National 5.

- Design and Manufacture: Design
- Design and Manufacture: Materials and Manufacturing
- Design and Manufacture Assignment (Added Value Unit)

## **National 5 Design and Manufacture**

The course consists of 2 mandatory Units and the Course Assessment. Each of the component Units of the Course is designed to provide progression to the corresponding Unit at Higher.

- Design and Manufacture: Design
- Design and Manufacture: Materials and Manufacturing
- Course assessment

Component 1 — Question Paper 40% marks  
Component 2 — Assignment 60% marks

To gain the award of the Course, pupils must pass all of the Units as well as the Course assessment.



## **Home learning in Design and Manufacture**

While most of the practical tasks will be completed during class time, pupils will also work on assignments to develop their understanding of the theory components of the course. Tasks may include:

- working on focused tasks to develop skills
- completing associated technology exercises
- research in preparation for design assignments
- completion of design folio tasks
- working on past paper assignments
- preparation for all class assessments.

Parents/ carers can be supportive by discussing their work with them or aiding them with opportunities to work independently on assigned tasks. Other ways in which parents/ carers can support pupils include:

- encouraging pupils to watch TV programs that deal with Design and Manufacture
- pointing out good or inferior Design and Manufacture of household items, and the implications for that items functionality for the user
- encouraging pupil involvement in any DIY task around the home in terms of how an item should be designed and what needs to be done to create or repair items.

## **Supporting Pupils in Design and Manufacture**

Throughout the course pupils will benefit from individual support from teachers and a range of professional partners.

Support strategies will include:

- discussion of overall individual strengths, areas of improvement, next steps and progress
- negotiation of individual targets and plans of actions to achieve success
- feedback on specific pieces of practical or written work
- opportunities for supported study after school
- visits to businesses and discussions with visiting practitioners.

# GRAPHIC COMMUNICATION

**The Course** provides skills that are complementary to other curricular areas, such as expressive arts, sciences and mathematics. It introduces pupils to the diverse and ever-increasing variety of presentation methods employed in graphic communication. Pupils are encouraged to exercise imagination, creativity and logical thinking. They will develop an awareness of graphic communication as an international language. It provides opportunities for pupils to gain skills in reading, interpreting, and creating graphic communications. Pupils will initiate, develop and communicate ideas graphically and develop spatial awareness and visual literacy through graphic experiences.

**The skills** that pupils gain by successfully completing Graphic Communication courses will be valuable for learning, life and work. Pupils will:

- replicate and interpret basic and familiar graphic forms in 2D, 3D and pictorials
- produce simple preliminary, production and promotional and informational graphics in familiar contexts
- use standard graphic communication equipment, software and materials effectively
- gain knowledge and understanding of graphic communication standards
- apply design skills to develop solutions to simple and more complex graphics tasks
- gain knowledge and understanding of computer-aided graphics techniques and practice
- understand colour, illustration and presentation techniques in straightforward and familiar contexts
- gain knowledge and understanding of the impact of graphic communication technologies on our environment and society

**The Learner Journey** through all levels of the course will be coherent and provide challenge and enjoyment. An integrated approach to learning will be adopted and include a mix of practical learning and knowledge of design and graphic communication used in the workplace and elsewhere. The structure of courses will ensure clear pathways and progression from BGE courses onwards through the national qualifications.

## **National 4 Design and Manufacture**

The course consists of 3 mandatory Units, including the Added Value Unit. Each of the component Units of the Course is designed to provide progression to the corresponding Unit at National 5.

- 2D Graphic Communication
- 3D and Pictorial Graphic Communication
- Graphic Communication Assignment (Added Value Unit)

## **National 5 Design and Manufacture**

The course consists of 2 mandatory Units and the Course Assessment. Each of the component Units of the Course is designed to provide progression to the corresponding Unit at Higher.

- 2D Graphic Communication
- 3D and Pictorial Graphic Communication
- Course assessment

Component 1 — Question Paper 50 marks  
Component 2 — Assignment 50 marks

## **Home learning in Graphic Communication**

While most of the practical tasks will be completed during class time, pupils will also work on assignments to develop their understanding of the theory components of the course. Tasks may include:

- working on focused tasks to develop skills
- completing associated graphic exercises
- working on past paper assignments
- preparation for all class assessments.
- research as part of course tasks
- completion of project activities

Parents/ carers can be supportive by discussing their work with them or aiding them with opportunities to work independently on assigned tasks. Other ways in which parents/ carers can support pupils include:

- asking pupils to create presentation and advertising items for local events, such as church or school fetes
- asking pupils to share skills with adults who need to represent any kind of design, such as designing a new kitchen or bathroom.

## **Supporting Pupils in Graphic Communication**

Throughout the course pupils will benefit from individual support from teachers and a range of professional partners.

Support strategies will include:

- discussion of overall individual strengths, areas of improvement, next steps and progress
- negotiation of individual targets and plans of actions to achieve success
- feedback on specific pieces of practical or written work
- opportunities for supported study after school
- visits to businesses and discussions with visiting practitioners.

## Careers in Technologies

All Technology based subjects develop skills which are required in many careers to the extent that several higher education courses expect pupils to have a prerequisite qualification in a technology based subject.

: and is welcomed by further educational establishments and employers.

Below are some specific careers related to Technologies.

<b>Computing</b>	<b>Design &amp; Manufacture</b>	<b>Business &amp; Administration</b>
Programmer	Graphic Designer	Office Administrator
Web designer	Illustrator	Investment banker
Games Industry	Product Designer	Economist
Network Manager	Medical Illustrator	Accountant
Education	Engineer	Entrepreneur
Animator	Education	Education
Hardware Engineer	Interior Designer	Office Manager
Software Engineer	Architect	Data Manager
Inventor	Inventor	Project Manager
Computer repairs	Architectural Technologist	Database developer
Database developer	Production Manager	Event Planner
Computer scientist	CAD Engineer	Human Resource Manager
Systems Analyst	Advertising	Marketing Manager
Robotics Engineer	Manufacturing Systems Engineer	Advertising
Computer Retail	Mechanical Technician	Hospitality Management
Digital Imaging Specialist	Entrepreneur	Managing Director
Telecommunications Technician	Environmental Engineer	Store Manager
IT Support Worker	Ergonomist	Stock Exchange Buyer/Seller