



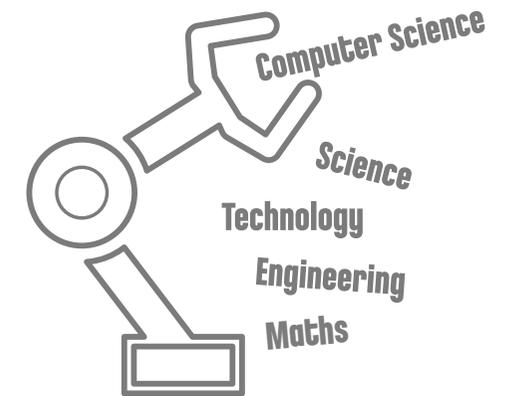
# EV3 and STEM Curriculum Grids

Design and Technologies 5 - 10

Digital Technologies 5 - 10

Maths 5 - 10

Science 5 - 10



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Strand	Thread	Grade	Content Descriptions	EV3 Core Software	EV3 Design Engineering Projects Activity Pack	EV3 Science Activity Pack	EV3 Space Challenge Activity Pack	EV3 Coding Activities	
Knowledge and Understanding	Technologies and society	5, 6	Examine how people in design and technologies occupations address competing considerations, including sustainability in the design of products, services, and environments for current and future use (ACTDEK019)						
		9, 10	Explain how products, services and environments evolve with consideration of preferred futures and the impact of emerging technologies on design decisions (ACTDEK041)						
	Technologies contexts	Engineering principles and systems	5, 6	Investigate how electrical energy can control movement, sound or light in a designed product or system (ACTDEK020)					
			7, 8	Analyse how motion, force and energy are used to manipulate and control electromechanical systems when designing simple, engineered solutions (ACTDEK031)					
			9, 10	Investigate and make judgments on how the characteristics and properties of materials are combined with force, motion and energy to create engineered solutions (ACTDEK043)					
		Materials and technologies specialisation	5, 6	Investigate characteristics and properties of a range of materials, systems, components, tools and equipment and evaluate the impact of their use (ACTDEK023)					
			7, 8	Analyse ways to produce designed solutions through selecting and combining characteristics and properties of materials, systems, components, tools and equipment (ACTDEK034)					
			9, 10	Investigate and make judgments on how the characteristics and properties of materials, systems, components, tools and equipment can be combined to create designed solutions (ACTDEK046)					
			9, 10	Investigate and make judgments, within a range of technologies specialisations, on how technologies can be combined to create designed solutions (ACTDEK047)					
			9, 10	Investigate and make judgments, within a range of technologies specialisations, on how technologies can be combined to create designed solutions (ACTDEK047)					
Processes and production skills	Investigating and defining	5, 6	Critique needs or opportunities for designing, and investigate materials, components, tools, equipment and processes to achieve intended designed solutions (ACTDEP024)						
		7, 8	Critique needs or opportunities for designing and investigate, analyse and select from a range of materials, components, tools, equipment and processes to develop design ideas (ACTDEP035)						
		9, 10	Critique needs or opportunities to develop design briefs and investigate and select an increasingly sophisticated range of materials, systems, components, tools and equipment to develop design ideas (ACTDEP048)						

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	Generating and designing	5, 6	Generate, develop and communicate design ideas and processes for audiences using appropriate technical terms and graphical representation techniques (ACTDEP025)					
		7, 8	Generate, develop, test and communicate design ideas, plans and processes for various audiences using appropriate technical terms and technologies including graphical representation techniques (ACTDEP036)					
		9, 10	Develop, modify and communicate design ideas by applying design thinking, creativity, innovation and enterprise skills of increasing sophistication (ACTDEP049)					
	Producing and implementing	5, 6	Select appropriate materials, components, tools, equipment and techniques and apply safe procedures to make designed solutions (ACTDEP026)					
		7, 8	Select and justify choices of materials, components, tools, equipment and techniques to effectively and safely make designed solutions (ACTDEP037)					
		9, 10	Work flexibly to effectively and safely test, select, justify and use appropriate technologies and processes to make designed solutions (ACTDEP050)					
Processes and production skills	Evaluating	5, 6	Negotiate criteria for success that include sustainability to evaluate design ideas, processes and solutions (ACTDEP027)					
		7, 8	Independently develop criteria for success to evaluate design ideas, processes and solutions and their sustainability (ACTDEP038)					
		9, 10	Evaluate design ideas, processes and solutions against comprehensive criteria for success recognising the need for sustainability (ACTDEP051)					
	Collaborating and managing	5, 6	Develop project plans that include consideration of resources when making designed solutions individually and collaboratively (ACTDEP028)					
		7, 8	Use project management processes when working individually and collaboratively to coordinate production of designed solutions (ACTDEP039)					
		9, 10	Develop project plans using digital technologies to plan and manage projects individually and collaboratively taking into consideration time, cost, risk and production processes (ACTDEP052)					

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Knowledge and Understanding	Digital Systems	5, 6	Examine the main components of common digital systems and how they may connect together to form networks to transmit data (ACTDIK014)					
		9, 10	Investigate the role of hardware and software in managing, controlling and securing the movement of and access to data in networked digital systems (ACTDIK034)					
Processes and production skills	Investigating and defining:	5, 6	Define problems in terms of data and functional requirements drawing on previously solved problems (ACTDIP017)					
		7, 8	Acquire data from a range of sources and evaluate authenticity, accuracy and timeliness (ACTDIP025)					
		7, 8	Analyse and visualise data using a range of software to create information, and use structured data to model objects or events (ACTDIP026)					
		7, 8	Define and decompose real-world problems taking into account functional requirements and economic, environmental, social, technical and usability constraints (ACTDIP027)					
		9, 10	Develop techniques for acquiring, storing and validating quantitative and qualitative data from a range of sources, considering privacy and security requirements (ACTDIP036)					
		9, 10	Analyse and visualise data to create information and address complex problems, and model processes, entities and their relationships using structured data (ACTDIP037)					
		9, 10	Define and decompose real-world problems precisely, taking into account functional and non-functional requirements (ACTDIP038)					
	Generating and designing	5, 6	Design, modify and follow simple algorithms involving sequences of steps, branching, and iteration (repetition) (ACTDIP019)					
		7, 8	Design the user experience of a digital system, generating, evaluating and communicating alternative designs (ACTDIP028)					
		7, 8	Design algorithms represented diagrammatically and in English, and trace algorithms to predict output for a given input and to identify errors (ACTDIP029)					

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Processes and production skills	Generating and designing	9, 10	Design the user experience of a digital system by evaluating alternative designs against criteria including functionality, accessibility, usability, and aesthetics (ACTDIP039)					
		9, 10	Design algorithms represented diagrammatically and in structured English and validate algorithms and programs through tracing and test cases (ACTDIP040)					
	Producing and implementing	5, 6	Implement digital solutions as simple visual programs involving branching, iteration (repetition), and user input (ACTDIP020)					
		7, 8	Implement and modify programs with user interfaces involving branching, iteration and functions in a general-purpose programming language (ACTDIP030)					
		9, 10	Implement modular programs, applying selected algorithms and data structures including using an object-oriented programming language (ACTDIP041)					
	Evaluating	5, 6	Explain how student solutions and existing information systems are sustainable and meet current and future local community needs (ACTDIP021)					
		7, 8	Evaluate how student solutions and existing information systems meet needs, are innovative, and take account of future risks and sustainability (ACTDIP031)					
		9, 10	Evaluate critically how student solutions and existing information systems and policies, take account of future risks and sustainability and provide opportunities for innovation and enterprise (ACTDIP042)					
	Collaborating and managing	5, 6	Plan, create and communicate ideas and information, including collaboratively online, applying agreed ethical, social and technical protocols (ACTDIP022)					
		7, 8	Plan and manage projects that create and communicate ideas and information collaboratively online, taking safety and social contexts into account (ACTDIP032)					
		9, 10	Plan and manage projects using an iterative and collaborative approach, identifying risks and considering safety and sustainability (ACTDIP044)					

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Numbers and Algebra	Real numbers	5	Use estimation and rounding to check the reasonableness of answers to calculations (ACMNA099)					
		6	Investigate everyday situations that use integers. Locate and represent these numbers on a number line (ACMNA124)					
		7	Connect fractions, decimals and percentages and carry out simple conversions (ACMNA157)					
		8	Solve a range of problems involving rates and ratios, with and without digital technologies (ACMNA188)					
		9	Solve problems involving direct proportion. Explore the relationship between graphs and equations corresponding to simple rate problems (ACMNA208)					
	Patterns and algebra	7	Introduce the concept of variables as a way of representing numbers using letters. (ACMNA175)					
	Linear and non-linear relationships	7	Investigate, interpret and analyse graphs from authentic data (ACMNA180)					
		8	Plot linear relationships on the Cartesian plane with and without the use of digital technologies (ACMNA193)					
		9	Graph simple non-linear relations with and without the use of digital technologies and solve simple related equations (ACMNA296)					
		10	Solve problems involving linear equations, including those derived from formulas (ACMNA235)					

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Measurement and Geometry	Using units of measurement	8	Investigate the relationship between features of circles such as circumference, area, radius and diameter. Use formulas to solve problems involving circumference and area. (ACMMG197)					
		9	Investigate very small and very large time scales and intervals (ACMMG219)					
	Geometric Reasoning	5	Estimate, measure and compare angles using degrees. Construct angles using a protractor (ACMMG112)					
		6	Investigate, with and without digital technologies, angles on a straight line, angles at a point and vertically opposite angles. Use results to find unknown angles (ACMMG141)					
Statistics and Probability	Data representation and interpretation	5	Pose questions and collect categorical or numerical data by observation or survey (ACMSP118)					
		5	Describe and interpret different data sets in context (ACMSP120)					
		6	Interpret and compare a range of data displays, including side-by-side column graphs for two categorical variables (ACMSP147)					
		7	Identify and investigate issues involving numerical data collected from primary and secondary sources (ACMSP169)					
		7	Calculate mean, median, mode and range for sets of data. Interpret these statistics in the context of data (ACMSP171)					
		7	Describe and interpret data displays using median, mean and range (ACMSP172)					
		8	Investigate techniques for collecting data, including census, sampling and observation (ACMSP284)					
		9	Compare data displays using mean, median and range to describe and interpret numerical data sets in terms of location (centre) and spread (ACMSP283)					
		10	Use scatter plots to investigate and comment on relationships between two numerical variables (ACMSP251)					
		10	Investigate and describe bivariate numerical data where the independent variable is time (ACMSP252)					

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Science Understanding	Earth and space sciences	7	Predictable phenomena on Earth, including seasons and eclipses, are caused by the relative positions of the sun, Earth and the moon (ACSSU115)					
		7	Some of Earth's resources are renewable, including water that cycles through the environment, but others are non-renewable (ACSSU116)					
	Physical sciences	5	Light from a source forms shadows and can be absorbed, reflected and refracted (ACSSU080)					
		6	Electrical energy can be transferred and transformed in electrical circuits and can be generated from a range of sources (ACSSU097)					
		7	Change to an object's motion is caused by unbalanced forces, including Earth's gravitational attraction, acting on the object (ACSSU117)					
		8	Energy appears in different forms, including movement (kinetic energy), heat and potential energy, and energy transformations and transfers cause change within systems (ACSSU155)					
		9	Energy transfer through different mediums can be explained using wave and particle models (ACSSU182)					
		10	Energy conservation in a system can be explained by describing energy transfers and transformations (ACSSU190)					
		10	The motion of objects can be described and predicted using the laws of physics (ACSSU229)					
		Science as a Human Endeavour	Use and influence of science	5, 6	Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE083, ACSHE100)			
7, 8	People use science understanding and skills in their occupations and these have influenced the development of practices in areas of human activity (ACSHE121, ACSHE136)							
9, 10	People use scientific knowledge to evaluate whether they accept claims, explanations or predictions, and advances in science can affect people's lives, including generating new career opportunities (ACSHE160, 194)							

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Science Inquiry Skills	Questioning and predicting	5, 6	With guidance, pose clarifying questions and make predictions about scientific investigations (AC SIS231, AC SIS232)					
		7, 8	Identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge (AC SIS124, AC SIS139)					
		9, 10	Formulate questions or hypotheses that can be investigated scientifically (AC SIS164, AC SIS198)					
	Planning and conducting	5, 6	Identify, plan and apply the elements of scientific investigations to answer questions and solve problems using equipment and materials safely and identifying potential risks (AC SIS086, AC SIS103)					
		5, 6	Decide variables to be changed and measured in fair tests, and observe measure and record data with accuracy using digital technologies as appropriate (AC SIS087, AC SIS104)					
		7, 8	Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed (AC SIS125, AC SIS140)					
		7, 8	Measure and control variables, select equipment appropriate to the task and collect data with accuracy (AC SIS126, AC SIS141)					
		9, 10	Select and use appropriate equipment, including digital technologies, to collect and record data systematically and accurately (AC SIS166, AC SIS200)					
	Processing and analysing data and information	5, 6	Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies as appropriate (AC SIS090, AC SIS107)					
		5, 6	Compare data with predictions and use as evidence in developing explanations (AC SIS218, AC SIS221)					
		7, 8	Construct and use a range of representations, including graphs, keys and models to represent and analyse patterns or relationships in data using digital technologies as appropriate (AC SIS129, AC SIS144)					
		7, 8	Summarise data, from students' own investigations and secondary sources, and use scientific understanding to identify relationships and draw conclusions based on evidence (AC SIS130, AC SIS145)					
		9, 10	Analyse patterns and trends in data, including describing relationships between variables and identifying inconsistencies (AC SIS169, AC SIS203)					
		9, 10	Use knowledge of scientific concepts to draw conclusions that are consistent with evidence (AC SIS170, AC SIS204)					

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Science Inquiry Skills	Evaluating	5, 6	Reflect on and suggest improvements to scientific investigations (ACSIS091, ACSIS108)					
		7, 8	Reflect on scientific investigations including evaluating the quality of the data collected, and identifying improvements (ACSIS131, ACSIS146)					
		7, 8	Use scientific knowledge and findings from investigations to evaluate claims based on evidence (ACSIS132, ACSIS234)					
		9, 10	Evaluate conclusions, including identifying sources of uncertainty and possible alternative explanations, and describe specific ways to improve the quality of the data (ACSIS171, ACSIS205)					
	Communicating	5, 6	Communicate ideas, explanations and processes using scientific representations in a variety of ways, including multi-modal texts (ACSIS093, ACSIS110)					
		7, 8	Communicate ideas, findings and evidence based solutions to problems using scientific language, and representations, using digital technologies as appropriate (ACSIS133, ACSIS148)					
		9, 10	Communicate scientific ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language, conventions and representations (ACSIS174, ACSIS208)					



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