LESSON PLANNER

Technology Book 1

Teacher Guide Pages		Lesson - Content - Exercises - Extension		Key Concepts	Lego	Other	Models	Workbook Pages	Learning Outcomes: Maths LO 1	Maths LO 2	Maths LO 3	Maths LO 4	Maths LO 5	Sci LO 1	Sci LO 2	Sci LO 3	Tech LO 1	Tech LO 2	Tech LO 3
1	Lesson 1	Intro to LEGO Pieces	Beams and Plates	Terminology / Measurement				1 - 3			●	●		●			●		
2 - 3	Lesson 2	Intro to LEGO Pieces	Connectors / Axles	Terminology / Measurement Joining Techniques				4 - 7			●	●		●			●		
4 - 6	Lesson 3	Intro to LEGO Pieces	Bushings / Joining Techniques	Terminology Joining Techniques				8 - 11			●	●		●			●		
7 - 9	Lesson 4	Intro to LEGO Pieces	Vertical Beams	Using plates for spacing				12 - 16			●	●		●			●		
10	Lesson 5	Intro to LEGO Pieces	Design, Make and Test	Tallest Tower			DMT	17	●				●	●	●		●	●	●
11	Lesson 6	What is Technology ?	Technological Process	Needs / Wants Designs / Problem Solving				18 - 20	●							●	●		
12	Lesson 7	Graphical Communication	Pictures to communicate	Pattern / Tessellation				21 - 24	●	●	●						●		
12	Lesson 8	Graphical Communication	Using grids to draw pictures	Grids / Scale Enlarge / Reduce				25 - 26	●	●	●	●					●		
12	Lesson 9	Graphical Communication	Sketches & Designs	Sketch / Design Scale / Labels / Key				27 - 28	●		●						●		
13 - 15	Lesson 10	Intro to Structures	Types of Structures - and what they do	Shell / Frame Natural / Manmade				29 - 32			●				●			●	●
16	Lesson 11	Intro to Forces	Types of Forces - and how they work on structures	Push / Pull / Load			A 1 - 5 Concepts	33 - 34			●				●			●	●
17	Lesson 12	Structures and Forces	Shapes in structures	Rigid / Flexible			Blue Card 1 Deck Chair	35			●		●		●			●	●
18	Lesson 13	Structures and Forces	Rigid and Flexible Structures	Rigid / Flexible			Blue Card 2 Drawbridge	36			●		●		●			●	●
19	Lesson 14	Structures and Forces	Walk around the school - completing a structures table	Rigid Shapes / Flexible Shapes Forces				37			●		●		●			●	●
20	Lesson 15	Structures and Forces	Design, Make and Test	Builder's Scaffolding			DMT	38	●				●	●	●		●	●	●
21	Lesson 16	Structures and Forces	Design, Make and Test	Folding Table			DMT	39	●				●	●	●		●	●	●

22	Lesson 17	Materials	Properties of Materials	Hard / Soft / Waterproof / Light Strong / Resistant / Conductor				40						●	●	●		●	●	●
23	Lesson 18	Materials	Design, Make and Test	Tall Straw Model			DMT	41		●				●	●	●		●	●	●
24	Lesson 19	Materials	Design, Make and Test	Jelly Tots and Toothpicks			DMT	42		●				●	●	●		●	●	●
25	Lesson 20	Materials	Design, Make and Test	Marshmallow and Spaghetti			DMT	43		●				●	●	●		●	●	●
26	Lesson 21	Intro to Wheels and Axles	Use & development of wheels	How wheels assist in moving				44-45						●				●	●	
27	Lesson 22	Wheels and Axles	Wheels, Hubs & Axles	Rollers / Disc / Wheel Axle / Hub / Tyres				46 - 50					●	●			●	●	●	●
28 - 29	Lesson 23	Wheels and Axles	Size and position of wheels	Larger wheels turn for longer			C 1 - 3 Concepts	51 - 52				●	●	●				●	●	
30	Lesson 24	Wheels and Axles	Exploring wheels	Larger wheels turn for longer			C 1 - 3 Concepts	53 - 54			●	●	●	●	●			●	●	
31	Lesson 25	Wheels and Axles	Design, Make and Test	Testing Vehicles on Ramp			DMT	55					●	●	●	●		●	●	●
32	Lesson 26	Wheels and Axles	Design, Make and Test	Pricing / Budget DMT			DMT - Pricing	56					●	●	●	●		●	●	●
33 - 34	Lesson 27	Intro to Levers	How do levers help us ?	Lever / Pivot / Effort Load / Fulcrum / Resistance			B 1 - 6 Concepts	57 - 60				●	●	●				●	●	
35	Lesson 28	Levers	Levers for balancing	Balanced / Pivot Turning Force				61 - 62				●	●	●				●	●	
36	Lesson 29	Levers	Build everyday examples of simple levers.	Pivot / Effort / Load				63										●	●	
37	Lesson 30	Levers	Design, Make and Test	Jelly Tot Lever Launcher				64		●				●	●	●		●	●	●
38 - 39	Lesson 31	Intro to Pulleys	How to change direction using pulleys.	Pulley Wheel / Belts / Rope			E 1 - 2 Concepts	65 - 68				●	●	●				●	●	

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Technology Book 2

Teacher Guide Pages		Lesson - Content - Exercises - Extension		Key Concepts	Lego	Other	Models	Workbook Pages	Learning Outcomes: Maths LO 1	Maths LO 2	Maths LO 3	Maths LO 4	Maths LO 5	Sci LO 1	Sci LO 2	Sci LO 3	Tech LO 1	Tech LO 2	Tech LO 3
1 - 2	Lesson 1	Intro to Simple Machines	Lever / Inclined Plane / Screw Pulley / Wedge / Wheel & Axle	Input / Output Mechanical Advantage				1 - 3							●		●		●
3	Lesson 2	Graphical Communication	2D and 3D Drawings	View / Depth / Dimensions				4 - 6		●	●	●					●		
4	Lesson 3	Graphical Communication	Oblique & Isometric Grids	Oblique / Isometric / Perspective				7 - 8		●	●	●					●		
5	Lesson 4	Graphical Communication	Drawing LEGO pieces	Oblique / Isometric / Perspective				9 - 10		●	●	●					●		
6 - 7	Lesson 5	Structures	Parts of Structures	Members / Beams				12 - 14			●		●	●			●		
8	Lesson 6	Structures	Design, Make and Test	Paper Support			DMT	15	●				●	●	●		●	●	●
9	Lesson 7	Structures	Types of Forces - and how they work on structures	Compression / Tension / Shear Bending / Torsion				16 - 18						●	●		●	●	
10 - 11	Lesson 8	Structures	Parts of Structures	Beams / Columns / Struts Ties / Guys / Cables				19 - 21							●			●	●
12	Lesson 9	Structures	Design, Make and Test	Cable Tower			DMT	22	●				●	●	●		●	●	●
13	Lesson 10	Structures	Design, Make and Test	Marshmallow Tower			DMT	23	●				●	●	●		●	●	●
14	Lesson 11	Structures	Triangulation in structures	Gussets & Plates				24 - 25	●		●				●		●	●	
15	Lesson 12	Structures	Design, Make and Test	Marshmallow Bridge			DMT	26 - 27	●				●	●	●		●	●	●
16	Lesson 13	Wheels and Axles	Types of Axles	Independent / Shared			C 6 - C 7 Concepts	28						●			●	●	
17	Lesson 14	Wheels and Axles	Flywheels	Potential Energy			Blue Card 5 Flywheel	29					●	●		●	●	●	
18	Lesson 15	Wheels and Axles	Motors and Wheels	Speed vs Torque Tyres and friction			Blue Card 5 Flywheel	30					●	●		●	●	●	
19	Lesson 16	Wheels and Axles	Design, Make and Test	Go-Cart			DMT	31	●				●	●	●		●	●	●
20	Lesson 17	Wheels and Axles	Design, Make and Test	Wheel Barrow			DMT	32	●				●	●	●		●	●	●

21	Lesson 18	Levers	Levers for Balancing	Balanced / Pivot Turning Force			Blue Card 3 Piano Model	33 - 35			●	●	●	●				●	●	
22 - 23	Lesson 19	Levers	Levers for Movement	Pivot / Effort / Load			Blue Card 3 Piano Model	36 - 37				●	●	●	●	●		●	●	
24	Lesson 20	Hinges	Everyday hinges	Pivot / Joint				38		●		●				●			●	
25	Lesson 21	Hinges	Design, Make and Test	Cat Flap Door			DMT	39		●				●	●	●		●	●	●
26	Lesson 22	Levers	Design, Make and Test	Catapult			DMT	40		●				●	●	●		●	●	●
27	Lesson 23	Levers	Design, Make and Test	Straw Catapult			DMT	41		●				●	●	●		●	●	●
28	Lesson 24	Levers	Design, Make and Test	Spoon Catapult			DMT	42		●				●	●	●		●	●	●
29	Lesson 25	Levers	Design, Make and Test	Catapult Wars			DMT	43		●				●	●	●		●	●	●
30 - 32	Lesson 26	Pulleys	Changing rotation speed and force	Turning speed / Torque			E 3 - E 6 Concepts	44-46			●	●	●	●				●	●	
33 - 34	Lesson 27	Pulleys	Conveyor Belt	Slippage / Belt Drive			Blue Card 9 Conveyor Belt	47 - 49						●	●			●	●	
35	Lesson 28	Pulleys	Design, Make and Test	Garage Door			DMT	50		●				●	●	●		●	●	●
36	Lesson 29	Pulleys	Design, Make and Test	Pulley System			DMT - Pricing	51 - 52		●				●	●	●		●	●	●
37	Lesson 30	Pulleys	Design, Make and Test	Television Set			DMT	53		●				●	●	●		●	●	●
38	Lesson 31	Intro to Gears	How to connect gears	Bevel / Crown / Worm / Spur Mesh / Gear train / Pinion			D 1 Concepts	54 - 57			●	●	●	●	●			●	●	
39 - 41	Lesson 32	Gears	Changing direction of Gears	Meshing / Gear train / Idler			D 2 Concepts	58 - 60			●	●	●	●	●			●	●	
42 - 43	Lesson 33	Gears	Changing speed of Gears	Driver / Follower			D 3 Concepts	61 - 62				●	●	●	●			●	●	
44	Lesson 34	Gears	Design, Make and Test	Handmixer			DMT	63		●				●	●	●		●	●	●
45	Lesson 35	Gears	Design, Make and Test	Geared Walker			DMT - Pricing	64 - 65		●				●	●	●		●	●	●
46 - 47	Lesson 36	Gears	Changing motion using gears	Crown Gear / Bevel Gear Pawl and Ratchet			D 6 - 7 Concepts	66 - 67				●	●	●	●	●		●	●	
48	Lesson 37	Gears	Design, Make and Test	Boat Winch			DMT	68		●				●	●	●		●	●	●

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Technology Book 3

Teacher Guide Pages		Lesson - Content - Exercises - Extension		Key Concepts	Lego	Other	Models	Workbook Pages	Maths LO 1	Maths LO 2	Maths LO 3	Maths LO 4	Maths LO 5	Sci LO 1	Sci LO 2	Sci LO 3	Tech LO 1	Tech LO 2	Tech LO 3
1 - 2	Lesson 1	Mechanisms and Motion	Types of Movement	Linear / Reciprocating Rotary / Oscillating				1 - 4			●	●			●	●	●	●	
3	Lesson 2	Mechanisms and Motion	Mechanical Advantage	Ratio / Input vs Output				4 - 6							●		●	●	
4	Lesson 3	Technology	The Design Process & Impact of Technology on Society	Design Brief / Alternatives Prototypes / Manufacturing				7 - 10							●	●		●	●
5 - 7	Lesson 4	Structures	Stability and Centre of Gravity	Base / Stable / Unstable				11 - 14			●	●	●				●	●	
8	Lesson 5	Structures	Design, Make and Test	Cable Tower			DMT	15	●				●	●	●		●	●	●
9	Lesson 6	Structures	Design, Make and Test	Self Balancing Model			DMT	16	●				●	●	●		●	●	●
10	Lesson 7	Structures	Design, Make and Test	Self Balancing Model			DMT	17	●				●	●	●		●	●	●
11	Lesson 8	Pulleys	Pulleys for Lifting	Fixed Pulley / Moveable Pulley			E 7 - 8 Concepts	18 - 19				●	●				●	●	
12	Lesson 9	Pulleys	Winches	Windlass / Capstan / Crank Handle / Rotor / Lever Arm			C 4 - 5 Concepts	20			●	●	●				●	●	
13 - 14	Lesson 10	Pulleys	Pulleys for Lifting	Fixed Pulley / Moveable Pulley Pawl & Ratchet			Blue Card 10 Crane Model	21 - 22			●	●	●				●	●	
15	Lesson 11	Pulleys	Design, Make and Test	Curtain Mechanism			DMT	23	●				●	●	●		●	●	●
16	Lesson 12	Pulleys	Design, Make and Test	Windlass			DMT	24	●				●	●	●		●	●	●
17 - 18	Lesson 13	Levers	Lever Classification	1st Class / 2nd Class and 3rd Class Levers				25 - 28			●	●			●		●	●	
19	Lesson 14	Levers	Types of Levers	1st Class / 2nd Class and 3rd Class Levers				29									●	●	
20	Lesson 15	Levers	Lever Classification Exercise	Mechanical Advantage of Levers				30			●	●	●		●	●	●	●	●
21 - 22	Lesson 16	Wheels and Axles	Wheels as Rollers	Conveyor / Friction / Rollers			Blue Card 6 Conveyor Model	31 - 32				●			●	●	●	●	
23	Lesson 17	Wheels and Axles	Design, Make and Test	Roller Squeeze			DMT	33	●				●	●	●		●	●	●

24	Lesson 18	Materials	Natural Woods vs Manufactured Boards	Properties / Suitability				34 - 38							●	●		●	●
25	Lesson 19	Materials	Finishing Wood	Stain / Oil / Polish / Varnish Paint / Preservatives				39							●	●		●	●
26	Lesson 20	Materials	Materials in our Homes	Woods / Metals / Plastics				40 - 41					●		●	●	●	●	●
27	Lesson 21	Materials	Design, Make and Test	Land Yacht			DMT	42		●			●	●	●		●	●	●
28	Lesson 22	Materials	Design, Make and Test	Pricing Land Yacht			DMT - Pricing	43 - 44		●			●	●	●		●	●	●
29	Lesson 23	Materials	Design, Make and Test	Sails			DMT	45		●			●	●	●		●	●	●
30 - 32	Lesson 24	Gears	Gearing Up and Gearing Down	Gearing Arrangements			D 3 - 4 Concepts	46 - 48				●			●		●	●	
33 - 34	Lesson 25	Gears	Gear Ratios	Teeth / Circumference				49 - 51		●	●	●	●	●	●		●	●	
35 - 36	Lesson 26	Gears	Compound Gearing	Turning speed / Torque			D 5 Concepts	52 - 53		●		●	●				●	●	
37	Lesson 27	Gears	Compound Gearing	Build and Explore			*Build & Explore*	54 - 55			●	●	●				●		
38	Lesson 28	Gears	Design, Make and Test	Compound Geared Machine			DMT	56		●			●	●	●	●		●	●	●
39	Lesson 29	Gears	Design, Make and Test	Pricing Geared Machine			DMT - Pricing	57 - 58		●			●	●	●	●		●	●	●
40	Lesson 30	Gears	Design, Make and Test	Powered Screwdriver			DMT	59		●		●	●	●	●	●		●	●	●
41 - 42	Lesson 31	Gears	Changing motion using gears	Crown Gear / Bevel Gear			Blue Card 7 Merry-go-round	60 - 61					●			●		●	●	
43	Lesson 32	Gears	Pawl & Ratchet	Pawl and Ratchet / Counter			Blue Card 8 Turnstile Model	62			●	●	●			●		●	●	
44	Lesson 33	Gears	Design, Make and Test	Raising Mechanism			DMT	63		●			●	●	●	●		●	●	●
45	Lesson 34	Gears	Design, Make and Test	Gear Driven Car			DMT	64		●			●	●	●	●		●	●	●
	Lesson 35	Pulleys vs Gears	Pulleys vs Gears	Slippage / Chain Drive / Noise			F 4 - 6 Concepts	65 - 67					●	●		●		●	●	●
	Lesson 36	Pulleys	Belt Drive Slippage	Build and Explore			*Build & Explore*	68								●		●	●	

LESSON PLANNER

Technology Book 4

Teacher Guide Pages		Lesson - Content - Exercises - Extension		Key Concepts	Lego	Other	Models	Workbook Pages	Maths LO 1	Maths LO 2	Maths LO 3	Maths LO 4	Maths LO 5	Sci LO 1	Sci LO 2	Sci LO 3	Tech LO 1	Tech LO 2	Tech LO 3
1 - 2	Lesson 1	Wheels and Axles	Cranks	Crank / Lever / Rotating				1 - 3							●		●	●	
3 -4	Lesson 2	Wheels and Axles	Cranks	Ratio / Input vs Output			*Build & Explore*	4 - 6		●	●	●			●		●	●	
5	Lesson 3	Wheels and Axles	Crankshafts	Crankshaft / Pistons			*Build & Explore*	7 - 9							●		●	●	
6	Lesson 4	Wheels and Axles	Design, Make and Test	Trajde			DMT - Pricing	10 - 11	●				●	●	●		●	●	●
7	Lesson 5	Wheels and Axles	Design, Make and Test	Pedal Cart			DMT - Pricing	12 - 13	●				●	●	●		●	●	●
8	Lesson 6	Pulleys	Block and Tackle	Self Balancing Model				14 - 16				●			●		●	●	
9	Lesson 7	Pulleys	Design, Make and Test	Self Balancing Model			DMT	17	●				●	●	●		●	●	●
10	Lesson 8	Materials & Processing	Types of Metals	Ferrous and Non Ferrous Alloys				18 - 21							●	●		●	●
11	Lesson 9	Materials & Processing	Metals in our homes	Aluminium / Cast Iron / Steel Copper / Brass / Tin / Zinc				22							●	●		●	●
12 - 17	Lesson 10	Materials & Processing	Industrial manufacturing with metals	Die / Sheet metal / Billet / Slugs Thread / Extrusion / Turning /			Research	23							●	●		●	●
18 - 20	Lesson 11	Materials & Processing	Types of Plastics	Polythene // Acrylics / PVC / Nylon Polystyrene / Melamine / Resin				24 - 26							●	●		●	●
21 - 24	Lesson 12	Materials & Processing	Industrial manufacturing with metals	Extrusion / Injection Moulding Vacuum Forming / Blow Moulding			Research	27							●	●		●	●
25 - 26	Lesson 13	Levers and Linkages	Linkages	Reverse Motion / Parallel Motion Bell Crank Linkage				28 - 30			●				●		●	●	
27	Lesson 14	Levers and Linkages	Linkage Black Box Problems	Fixed Pivot / Moving Pivot				31			●				●		●	●	
28	Lesson 15	Levers and Linkages	Design, Make and Test	Extension Tongs			DMT	32	●				●	●	●		●	●	●
29	Lesson 16	Levers and Linkages	Design, Make and Test	True or False Sign · Materials			DMT	33	●			●	●	●	●		●	●	●
30	Lesson 17	Levers and Linkages	Design, Make and Test	True or False Sign · LEGO			DMT	34	●			●	●	●	●		●	●	●
31	Lesson 18	Levers and Linkages	Design, Make and Test	Pantograph			DMT	35	●	●	●		●	●	●		●	●	●
32 - 33	Lesson 19	Levers and Linkages	Levers for moving	Changes to movement · type and amplification			Blue Card 4 Conveyor Model	36 - 37				●					●	●	
34	Lesson 20	Levers and Linkages	Design, Make and Test	Drum Pedal			DMT	38	●			●	●	●	●		●	●	●
35	Lesson 21	Levers and Linkages	Design, Make and Test	Lever Car Launch			DMT	39	●			●	●	●	●		●	●	●

36 - 37	Lesson 22	Gears	Gear Ratios	Gear Ratio Formula Mathematics				40 - 43					●			●		●	●	
38 - 39	Lesson 23	Gears	Worm Gears	Pinion / Rack / Worm / Linear			F 1 - 2 Concepts	44 - 45					●					●	●	
40 - 42	Lesson 24	Gears	Gear Rack	Gear Rack / Rack & Pinion			F 3 Concepts	46 - 48			●	●			●		●	●	●
43	Lesson 25	Gears	Design, Make and Test	Security Gate			DMT	49		●		●	●	●	●		●	●	●
44	Lesson 26	Gears	Design, Make and Test	Motorised Security Gate			DMT	50		●		●	●	●	●		●	●	●
45	Lesson 27	Gears	Gear Housing	Gear Box / Motor Block			G & H Concepts	51							●		●	●	
46	Lesson 28	Gears	Motor Block	Motorizing wheels and axles			H Concepts	52			●							●	
47 - 48	Lesson 29	Gears	Governor	Centrifugal Forces / Valves			*Build & Explore*	53 - 54			●	●			●	●	●	●	●
49	Lesson 30	Gears	Design, Make and Test	Sails			DMT	55		●		●	●	●	●		●	●	●
50	Lesson 31	Gears	Design, Make and Test	Number Wheel			DMT	56		●		●	●	●	●		●	●	●
51	Lesson 32	Gears	Design, Make and Test	Slide Weight Scale			DMT	57		●		●	●	●	●		●	●	●
52 - 53	Lesson 33	Cams	An intro to Cams	Rise / Fall / Dwell Cam / Follower / Slide			F 7 - 8 Concepts	58 - 61					●			●		●	●	
54	Lesson 34	Cams	Cams for changing movement	Pear Shaped / Drop Cam Eccentric Cam			*Build & Explore*	62 - 63					●			●		●	●	
55	Lesson 35	Cams	Using cams to produce a specific movement	Rise / Fall / Dwell Cam / Follower / Slide			*Build & Explore*	64								●		●	●	
56 - 57	Lesson 36	Cams	Design, Make and Test	Windmill			DMT	65		●			●	●	●	●		●	●	●
58	Lesson 37	Cams	Design, Make and Test	Window Opener			DMT	66		●			●	●	●	●		●	●	●
59	Lesson 38	Combo Mechanisms	Design, Make and Test	Scissor Lift			DMT	67		●			●	●	●	●		●	●	●
60	Lesson 39	Combo Mechanisms	Design, Make and Test	Bicycle Brake System			DMT	68		●			●	●	●	●		●	●	●