

SONY

Play. Code. Create



Educator Kit



1. Introduction to Designing Robots

LESSON	MISSION	CHALLENGE	CODE LEARNED	TIME	NOTES
Make a police car				Total: 28 min 33 sec	
		Introduction		33 sec	
		1 – Building	N/A	28 minutes	
How to use the LED & the Buzzer				Total: 11 min 37 sec	
		Introduction		33 sec	
		1 – Coding	LED V2, Wait_Sec, Forever, LED on/off	10 min 39 sec	
		2 – Challenge	Quiz on Wait_Sec	15 sec	
		3 – Summary	LED on/off, Wait_Sec	10 sec	
How to use the DC motor & the IR Photoreflector	Combining buttons & the light sensor			Total: 13 min 9 sec	
		Introduction		1 min 3 sec	
		1 – Coding	DC motor, IR Photoreflector	11 min	
		2 – Challenge	N/A	27 sec	
		3 – Summary	Control block – if then, or else	28 sec	
How to use functions in your code	Detecting distance & expressing sound			Total: 15 min 16 sec	
		Introduction		41 sec	
		1 – Coding	All coding learned to this point put together	14 min	
		2 – Summary	N/A	35 sec	
				TOTAL TIME: 1 hr 8 min 35 sec	



2. Become a KOOV Block Master / *Difficulty: Level 1*

LESSON	MISSION	CHALLENGE	CODE LEARNED	TIME	NOTES
Getting Used to KOOV Blocks	1. Mushroom			Total: 45 min	
		Play with KOOV blocks		20 min	*Flexible
		Master the block remover		5 min	*Flexible
		Make a small masterpiece		20 min	*Flexible
The 360 Connector & the Center of Gravity	2. Monkey & Tree			Total: 36 min	
		Use the 360 Connector	360 Connector	11 min	
		Design the up & down motion	Crank	20 min	
		Center of gravity		5 min	
Strengthening Boards	3. Treasure Chest			Total: 50 min	
		Make a board		10 min	
		Strengthening Boards		15 min	
		Make a treasure box		25 min	
Learn by Watching & Copying	4. Duck			Total: 55 min	
		KOOV and "pixels"		5 min	
		Simplifying an image		10 min	
		Let's observe an object		40 min	
How to Place and Balance	5. Pony			Total: 50 min	
		Let's think about how to place a robot		5 min	
		Let's experiment with balance		10 min	
		Let's make a pony		35 min	
Objectives and Originality	6. Rocket Frame			Total: 41.5 min	
		Let's look at things from another angle		30 min	
		Let's think about three dimensional projects		6 min	
		Let's learn some tips on project making		5.5 min	*No building
				TOTAL TIME: 4 hrs 37.5 min	

3. My First Coding / Difficulty: Level 2

LESSON	MISSION	CHALLENGE	CODE LEARNED	TIME	NOTES
Coding concepts	1. My First Programming	Quiz		4 min	
Getting into electronics	2. LED			Total: 33.5 min	
		1 – Make an LED light up	LED V2, Wait _ Sec	10 min	
		2 – Make an LED blink	“forever” block	7.5 min	
		3 – Use 2 different color LEDs	Repeat	10.5 min	
		4 – Learn how to use the app	Test/Connection settings	5.5 min	<i>*Free production</i>
Combining buttons & the light sensor	3. Lantern			Total: 39.5 min	
		1 – Build a lantern		18 min	
		2 – Use the Core Buttons	If, then block	8 min	
		3 – Learn how to use a light sensor	Less than block	8.5 min	
		4 – Rewrite code	Control block – if then, or else	5 min	
Detecting distance & expressing sound	4. Camera			Total: 49.5 min	
		1 – Build a camera		13 min	
		2 – Use an IR photoreflexor	Wait until block	10 min	
		3 – Ring the buzzer	Buzzer frequency, wait secs	6.5 min	
		4 – Code a robot camera	“function” block, “call function”	20 min	
Round & round with the DC motor	5. Tractor			Total: 42 min	
		1 – Build a tractor		18 min	
		2 – Use the DC motor	DC motor block	6.5 min	
		3 – Link the motion of DC motor and sensors	If then or else, repeat until	8 min	
		4 – Use variables	Variable block	9.5 min	
Step in with the servo motor	6. Penguin			Total: 1 hr 11 min	
		1 – Build a penguin		40 min	
		2 – Use the servo motor	Servo motor block	8 min	
		3 – Use the Multi LED	Multi LED block	9 min	
		4 – Use random numbers	Pick random	14 min	
				TOTAL TIME: 3 hrs 55.5min	



4. Learning Mechanisms of Robots / *Difficulty: Level 3*

LESSON	MISSION	CHALLENGE	CODE LEARNED	TIME	NOTES
Climbing Koala	1. Koala			TOTAL: 1 hr 12 min	
		Build a tree—climbing koala	Gear	40 min	
		Use gear and rack gear		15 min	
		A review on variables and random numbers	“x and x” block	17 min	
Incorporate formula into code	2. Race Car			TOTAL: 1 hr 37 min	
		Build a race car	Push Switch, Wheel	47 min	
		Use a push switch	“mod” block	23 min	
		Incorporate formula into a code	“x or x” block	27 min	
Control a motorcycle with an accelerometer	3. Rabbit Rider			TOTAL: 1 hr 53 min	
		Build a rabbit rider		57 min	
		Use an accelerometer		26 min	
		Control a motorcycle with an accelerometer		30 min	
Create an alpaca that detects danger	4. Alpaca			TOTAL: 1 hr 38 min	
		Build an alpaca		50 min	
		Link two DC motors	“Timer” block	23 min	
		Create an alpaca that detects danger		25 min	
Make the giraffe walk in different directions	5. Giraffe			TOTAL: 1 hr 26 min	
		Build a giraffe		46 min	
		Learn the mechanism of bipedal walking		17 min	
		Make the giraffe walk in different directions		23 min	
Detect sensor with time difference	6. Balancing Meerkat			TOTAL: 1 hr 50 min	
		Build a balancing meerkat		55 min	
		Keep balance with the accelerometer		25 min	
		Detect sensor with time difference		30 min	
				TOTAL TIME: 9 hr 36 min	



5. Brushing up on Your Coding Skills / *Difficulty: Level 3*

LESSON	MISSION	CHALLENGE	CODE LEARNED	TIME	NOTES
Using a timer	1. Dolphin Kicker			TOTAL: 1 hr 45.5 min	
		Build a dolphin kicker		1 hr	
		A review on functions		25 min	
		Using a timer		20.5 min	
Separating conditions using sensor values	2. Parakeet			TOTAL: 1 hr 32 min	
		Build a parakeet		45 min	
		Using Lists	"Add to list/Item on list" block	20 min	
		Separating conditions using sensor values	"- and -" block	27 min	
Code for the roulette	3. Roulette			TOTAL: 1 hr 27 min	
		Build a roulette		40 min	
		Let's code for the roulette		20 min	
		A review on random numbers		27 min	
New Operator Block	4. Propeller Plane			TOTAL: 1 hr 10 min	
		Build a propeller plane		35 min	
		A review on making lists	"length of list —"	13 min	
		Use a new operator block	"x or x" block	22 min	
Using calculations with remainders	5. Trombone Player			TOTAL: 1 hr 4 min	
		Build a trombone player		32 min	
		Press two buttons at the same time		20 min	
		Using calculations with remainders		22 min	
Make a rhythm game	6. Rhythmic Drum			TOTAL: 1 hr 37 min	
		Build a rhythmic drum		50 min	
		Use two different sensors		20 min	
		Make a rhythm game		27 min	
				TOTAL TIME: 8 hr 35.5min	