

7.9 Smart Bots Ideas.

Design Your own Robot that responds to at least one sensor

Some possible design activities:

1. Welcoming Robot. Design one that says something and shakes your hand when you come near.
2. Design a Robot that dances to Music. The sensor could be used to hear sound and start when music starts. Stop when music stops.
3. Design a scaredy robot light avoider. The robot finds the darkest spot and then hides.
4. Design a Maze Follower. Set up a maze (of black lines or walls) and the robot can work its way around it.
5. Design a robot that stays on a table.
6. Design two Sumo Bots that will wrestle each other. The one left standing wins. Use touch sensors to move the arms.
7. Design a walking robot (no wheels), that stops and reverses when it sees a wall.
8. Design a pattern drawing robot. The robot could respond to a touch sensor as you guide it to draw.
9. Make a musical robot. It can play different tones based on the colours it sees.
10. Design a measuring robot. It writes on its screen how far it goes. You can use the distance or touch sensors.
11. Make a robot animal complete with noises and senses.
12. Make a music box with parts that move to music.
13. Make a gumball machine that reads money.

Assessment Criteria Next Page

Criteria		Standards				
Objective	Outcome	A	B	C	D	E
Science Understanding						
Collecting, organising and using data for a successful construction.	Knowledge and skills in construction and assembly.	Excellent demonstration of working knowledge and skills in the process of the design and construction.	Good demonstration of working knowledge and skills in the process of the design and construction	Satisfactory demonstration of working knowledge and skills in the process of design and construction	Some demonstration of working knowledge and skills in the process of design and construction	Little demonstration of working knowledge and skills in the process of design and construction
	Details knowledge in explaining workings of mechanical and electrical systems.	Includes a large number of core engineering and programming concepts.	Includes a fair number of core engineering concepts.	Includes a few core engineering concepts.	Includes some core engineering concepts	Fails to demonstrate much knowledge.
Science Investigation						
Elements of Design	Proposes an outcome and design that fulfils specifications.	Design meets specified outcomes. System requirements of inputs and outputs are met.	Design meets most specified outcomes. System requirements of inputs and outputs are met.	Design meets some outcomes. System requirements of inputs and outputs are attempted.	Design attempted but few requirements met	Little or no elements of design shown.
Investigation and Analysis.	Tests components and determines most effective usage	Correctly measures and test all aspects. Tests and adjusts components for most effective usage.	Measures and tests most aspects. Tests and adjusts components for effective usage.	Does some measuring and testing of components.	Little time spent testing project.	No testing time done.
	Redesigns and modifies to improve performance	Demonstrates good reasoning and adjustments to improve performance with success.	Reasoning and adjustments evident to improve performance with some success.	Some attempts evident to improve performance	Little evidence to improve performance	No evidence.
Justification	Justifies reasons for component choices.	Clearly justifies all aspects of design in terms of performance and safeguarding against possible problems.	Justifies most aspects of design in terms of performance and safeguarding against possible problems.	Justifies some aspects of design in terms of performance and safeguarding against possible problems.	Justifies few aspects of design in terms of performance and safeguarding against possible problems.	Does not justify reasons for choice.
Communication and Human Endeavour Criteria						

Communicate information in various contexts	Presentation of folio	Diagrams and pictures are clear and in appropriate logical order. Overall presentation is of a very high standard.	Diagrams and pictures are generally clear and in appropriate logical order. Overall presentation is of a high standard.	Diagrams and pictures are present and easy to identify. Overall presentation is of a satisfactory standard.	Some diagrams and pictures present. Overall presentation is a low standard.	Little attempt has been made to display diagrams and pictures. Overall presentation is poor.
	Evaluates Project as a real world device and how it meets Societal Needs	Practical Applications of Project is explained clearly How it meets Societal Needs identified as well as any ethical issues.	Practical Applications of Project is explained. How it meets Societal Needs identified.	Adequate explanations of practical usage	Some practical application but not well explained.	Little or no explanation made.