

Mechanizing Technology—Critters

Context

Strange things have happened. Electronic pets have been escaping and running wild. Are they real creatures or electronic creatures? It doesn't matter right now. Have you ever cared for a Furbee? It's easy, but most kids forget about them. That's why the pets run away. They feel bad and have low self-esteem. The only things that can make them feel better are mechanical critters. Mechanical critters, you see, are a class below the electronic pets. Maybe the pets are not really "above" the critters, but they think they are. Pair a mechanical critter with an electronic pet and there is an immediate change in personality-- the pet is feeling good. The critters are not so sensitive, or do not care. Our task is to make more critters to keep the pets happy!

Problem

Design and construct a kinetic, mechanical critter.

Design Constraints

- The critter must be kinetic and designed so it moves in more than one direction.
- The critter must be powered by at least one mechanical wind-up motor.
- The critter must fit into a size 8 shoebox.
- The critter must produce an audible sound.
- The critter must not be threatening to small children and pets.
- The critter must be free of electronic components.



Design Considerations

- Pay close attention to the balance and stability of the critter.
- Consider a wide range of possible designs.
- Consider the relation between power, sound and extensions (i.e., arms, legs, wheels, etc).
- Think of the critter as a real creature.

Construction Sequence

- Brainstorm ideas for the critter's operation and appearance.
- Sketch four or five designs and choose appropriate features, forms and materials.
- May use 2D computer aided design (CAD) or 3D modeling techniques to lay out mechanisms and parts.
- Locate recycled materials or new materials.
- Assemble materials for the mechanical processes.
- Assemble and finish the critter.
- Final assembly and test of the critter.

Management Issues

- End of Day 1: Approval of critter ideas.
- End of Day 2: Critter design on paper completed and approved.
- End of Day 3: Begin construction of critters.
- End of Day 5: Critters completed
- End of Day 7: Trials with critters.

Related Studies

- Cybernetics
- Sciences
- Mathematics
- Social Studies
- Sociology
- Psychology
- Engineering

Honest Self (Group) Evaluation

1. We stayed within the design constraints and deadlines	_____ out of 5 marks
2. Our critter is unique in its design	_____ out of 5 marks
3. Our critter has makes effective use of at least one mechanical power source	_____ out of 5 marks
4. Most of the materials used are recycled	_____ out of 5 marks
5. Our use of materials was creative, economic and efficient	_____ out of 5 marks
6. Our critter successfully satisfies all the design brief requirements (i.e., kinetic, one motor, makes sound, moves in at least one direction)	_____ out of 5 marks
7. The demonstration of our critter was creative and entertaining	_____ out of 5 marks
Total	_____ out of 35

Assessment

Group's Self Assessment	_____ Total/ 35
Design Principles	
Features and Form	_____ out of 10
Originality	_____ out of 10
Economics and Ecology	_____ out of 10
Craft and Quality	_____ out of 10
Working parts	_____ out of 15
Deadlines, Safety and Participation	_____ out of 10
Total	_____ out of 100