Activity 6

Building a Motor/Generator Toy

GOALS
In this activity you will:
• Design, construct and operate a motor/generator.

What Do You Think?
You may have heard the following expression used before: “The difference between men and boys is the cost of their toys.”

• What characteristics make an item a toy?
Write your answer to this question in your Active Physics log. Be prepared to discuss your ideas with your small group and other members of your class.

For You To Do
1. Confer within your group and between your group and your teacher about whether you will pursue, as a basis for the motor/generator kit for the Assessment, the motor design presented in this activity, an alternate design, or both. Whatever design(s) your group chooses to pursue, you are encouraged to be creative.
Most designs can be improved in some way or another by substituting materials or making other changes. There is no single “best way” to go about designing the motor/generator and making it function within a toy or to produce electrical energy from another form of energy. The best way for your group is the way that the group can get the job done.

a) When you have decided on a design, submit your design to your teacher for approval.

2. In your group decide how you will make the motor/generator fascinating to children. You may wish to use some of the ideas you generated in answering the What Do You Think? question.

a) Record your ideas in your log.
b) Describe and make a sketch of your final design, and submit it to your teacher for approval.

3. Use the design for a DC motor as shown in the diagram as a basis to begin your construction. It can be adapted, as required, for the Chapter Assessment, to power a toy. Also as required, the motor could be adapted to be driven “backwards” by an external energy source to function as a DC generator.

[The motor design shown was adapted from the following public domain work: Educational Development Center, Inc., Batteries and Bulbs II (New York: McGraw-Hill, 1971), pp. 85-88.]
Reflecting on the Activity and the Challenge

You are now well on your way to completing the Chapter Challenge. You have decided on the design for your motor/generator and the toy it will power.

Physics To Go

Your assignment is to prepare to meet the criteria of the Assessment of the Chapter Challenge.