DTM4260

Materials Design and Technology

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Lesson 4

Theme: Potential energy

Overall Task: students create an elastic band powered car to demonstrate and show potential energy transformed into kinetic energy.

This is the design stage of the learning program where students build their cars using a step by step method.

Lesson 4

Year: 7

Learning Area: Design and Technologies – processes and production skills

Focus: Generating, developing and evaluating ideas

Content descriptor: 8.8 Generate, develop, communicate, test, evaluate and communicate design ideas, plans and processes for identified needs and audiences using manual and digital technologies and collaborative technologies.

Lesson 4 - sequence

Learning Area: *Technologies – Design and Technology* ***Link*** *Science* **Learning Experience Focus:** Generating, developing and evaluating ideas	**Date: 13th March 2014**	**Time: 10.00 – 11.00**	**Year Level: 7**
Content Descriptor: 8.8 Generate, develop, communicate, test, evaluate and communicate design ideas, plans and processes for identified needs and audiences using manual and digital technologies and collaborative technologies.			
Specific Learning Goals: *At the conclusion of this learning experience each student should be able to:* • *Follow a design procedure to build a model car powered by elastic energy.*			
Assessment: What will you monitor? • Students ability to follow a design brief and produce a car model collaboratively		**Recording: How** will you monitor? • Formative assessment – through observations, anecdotal notes. • Summative assessment – the car model	
Students' Prior Knowledge: • Kinetic energy • Potential energy • Elastic potential energy • Construction of elastic cars (youtube video) • Following a design brief			
Time: **3 minutes** **10 minutes**	**Teaching and Learning Strategies:** **Introduction:** • Recap on previous lesson o Look at the investigation recording sheet o Answer questions that students have • Here students can form into their groups straight away – have students look over their design plan and make any changes they need to.	**Focus Questions:** ➢ What have we looked at previously? ➢ What are your first steps? ➢ How will you approach the construction?	**Preparation and Resources:** ➢ Investigation recording sheets

Lesson 4 - Sequence

	• The teacher will go around to each group and discuss:
	  ○ What materials students are needing to use
	  ○ How they will begin construction
	  ○ What their final design will look like
	  ○ Discuss any problems.
	
	Note: throughout lesson, teacher uses cue signals.
		➢ Do you think you will face any challenges.	

40 minutes	**Body:** • As the teacher finishes discussions with each group, students will then collect the materials they need – the equipment manager will go and get the materials. • Students will then begin construction of their cars – here students will have an option to use their tablets to look at the youtube video previously viewed – however students are expected to use their design plans to construct their cars. • The teacher will attend each group, making suggestions and answering questions.	➢ How are you going to put the car together? ➢ What will you start with? ➢ Who will be doing what?	**Teacher will provide:** ➢ Bottles ➢ Boxes ➢ Cd's ➢ Skewers ➢ Tape ➢ Scissors ➢ Cardboard ➢ Elastic bands ➢ Each groups design plan ➢ Tablets **Students will be required to supply any special materials.**
2 minutes **5 minutes**	**Conclusion:** • Inform the students when they have 5 minutes to complete – after this time ask students to pack up their areas, making sure all their parts and cars are marked with their group names. • Bring students back together as a class – discuss how the construction of the cars went and any implications they have faced this far. • Students have this time to ask further questions, make clarifications, or share advice and findings. • Inform students that the next lesson they will be testing their elastic cars against their peers and recording the results in the	➢ Are there any questions you still need answered? ➢ What issues did you run into? ➢ How did you over come any challenges? ➢ Where to from here?	➢ Permanent marker

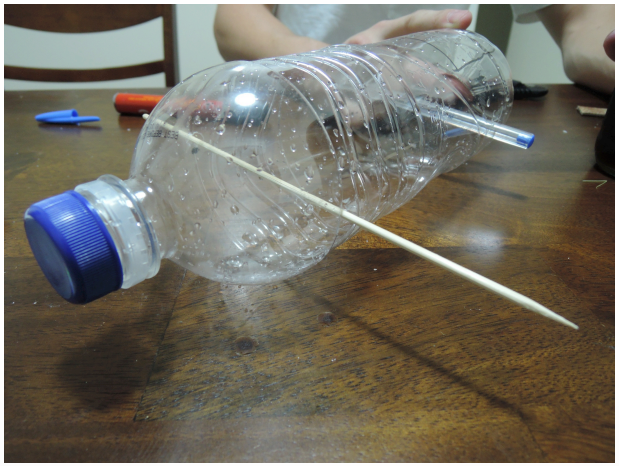
Lesson 4 - Sequence

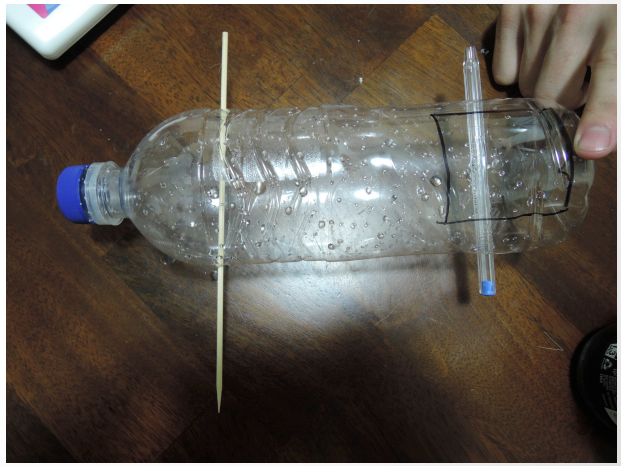
	investigation recording sheets.		

Learning and Teaching adjustments:

- ✓ Weaker students: students are working in mixed ability groups to scaffold ZPD.
- ✓ Weaker students/groups: the teacher will be available to work with groups explicitly.
- ✓ Stronger students: these students are encouraged to problem solve and continue adapting their cars to combat challenges.

Images





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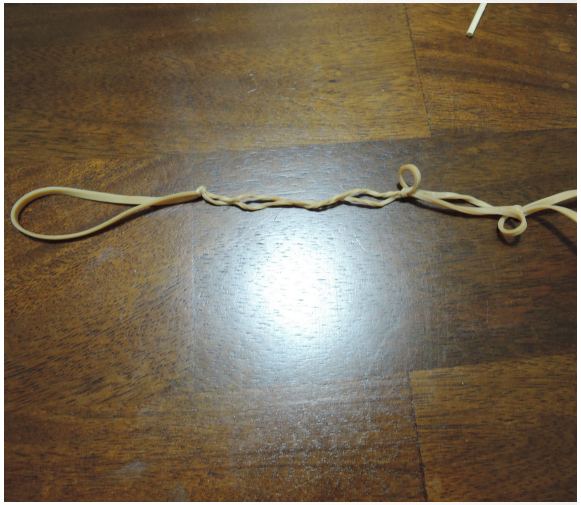

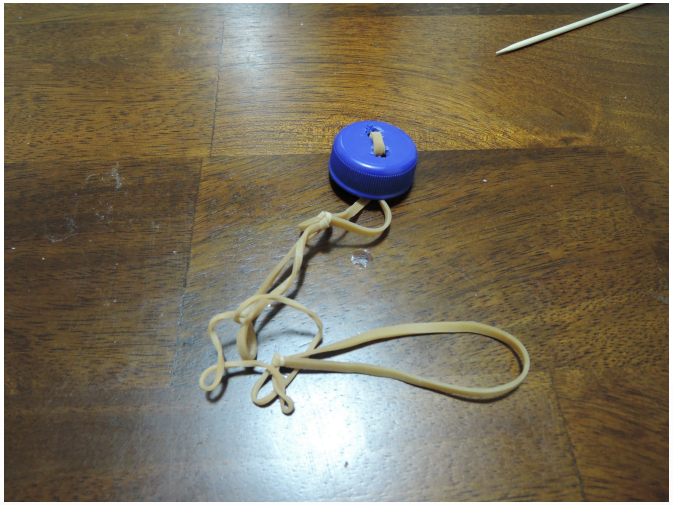

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