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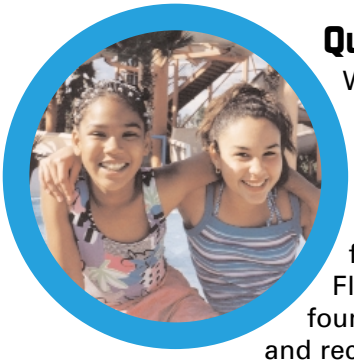
Water – Get Wet!
Episode 104

Investigations To Explore Waterslides

Valerie and Margie love the slippery fun of waterslides, and wanted to learn more about them.



Question

What factors make a great waterslide?

Investigation

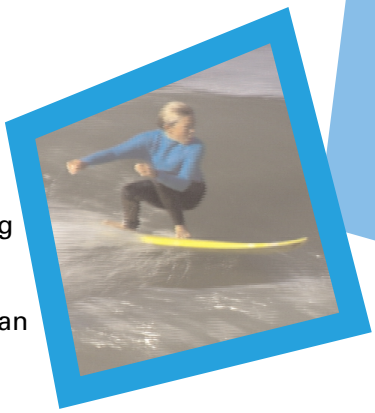
Valerie and Margie rode two different waterslides, the "Flash Flood" and the "Salsa Twist." They found out how long each ride was, and recorded the duration of each ride several times with a stopwatch. They also used a home-made 'mazometer' to measure how wild the ride was. The mazometer was a simple maze, drawn on paper and laminated. As the girls rode the slides, they tried to draw inside the lines of the maze. The more messy their drawings were, the "wilder" the ride!

Results

	Flash Flood	Salsa Twist
Slide length	86 m	80 m
Ride time	19 sec.	20 sec.
Speed	4.5 m/s	4.0 m/s
Mazometer	neat	messy

Conclusion

They found that the Flash Flood was faster than the Salsa Twist, but the messy mazometer reading meant the Salsa Twister was wilder. That explained why they enjoyed the Salsa Twist more than Flash Flood!



Surfing

Carsten is 12 years old and has been surfing six years. He wanted to learn everything he can about surfing.

Question

Where are waves better for surfing: at a beach break, or at a reef break?

Investigation

Carsten and his friends recorded three things:

- How long his ride lasted;
- How many maneuvers he did;
- How fast he felt he was going.

Conclusion

Carsten found he got the longest rides with most maneuvers on a beach break.

Find out more: pbskids.org/dragonflytv.

Scientist: Carlos de la Rosa

Carlos studies insects living in the waters of the Kissimmee River. His research helps restore the health of this river. Carlos has been interested in insects and things that live in water since he was a young boy, growing up in Venezuela.

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Classroom Inquiry

1) Getting Started

- Have you ever been on a waterslide? What's the best slide you've ever ridden?
- Can you say what makes a good ride? How would you investigate this? (Collect ideas on a chart or the blackboard.)

2) Going Deeper

- What features of a waterslide can we measure or observe? (e.g. length, duration, speed, # of turns, types of turns, slipperiness, "wildness")?
- Which of those features should we select? How will we measure/observe them? How many measurements should we make?
- What will we do with the data we collect (e.g. tabulate, graph, compare, average)?

3) Investigate With DragonflyTV

- Watch the video and see how Margie and Valerie investigated waterslides – OR – give your students data from the video (see opposite page) and have them draw their own conclusions.
- How do you convert the stopwatch readings to speed (speed = length of slide/time)?
- What do the mazometer results tell you?
- Which property (speed or wildness) explains why Margie and Valerie like the Salsa Twist?
- What would you do differently?

4) Investigate On Your Own

- Using Waterslides or Surfing as a model, ask your students to design their own investigations. These challenge cards for student teams may help!

Challenge Cards

1) Build Your Own Mazometer

Draw a circular maze on a piece of paper and laminate it if you plan on getting it wet. For each of the different motions below, draw and test different mazometers and find the one that works best in each category:

- side-to-side motion
- up-and-down motion
- sudden jolts

Test your mazometers on a local waterslide, roller coaster, or even a bus ride.

2) Is Water Slippery?

Use a garden hose to turn a regular slide into a waterslide. Is the water slide faster, or just more fun than a dry slide?

Think of a way to measure if a wet slide is more slippery than a dry slide. If so, how much more slippery? Is running water more slippery than standing water?

3) Ocean In A Sand Box

You can explore waves by making a depression in a sandbox and lining it with a sheet of plastic. Then just pour in water. How will you create a wave?

Investigate how the length and the angle of the "beach" influences the shape of waves. What happens when you add rocks, change the water depth, or make other changes?

Tip: You can use corks or food coloring to better observe how the water moves.

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Inquiry Tips

Take the Dragonfly Q.U.E.S.T.

Question and Observe

Ouestions lead to observations, and observations lead to better questions.

Look Closer. Observe, draw, and measure such details as size, texture, and sound.

What is the Same/What's Different? Ask students to observe similarities and differences.

Revealing Patterns. When students observe events in detail, have them look for possible patterns. Can they categorize the objects they observed? For example, after rolling skateboards down a ramp, they might classify the boards by speed: fast, medium, and slow. Do all the slow boards have larger wheels? Harder wheels?

Uncover Comparative Questions

Help students move from careful observations to finding just the right question to investigate. Often the first questions your students ask are purely descriptive. Suppose someone asks, "How many creatures are under that rock?" You look and find four pillbugs. The question is answered, but it doesn't lead to any meaningful information.

Turn descriptive questions into comparative questions. A good comparative question would be: "Which type of rock has more animals under it – big rocks or small ones?" This comparative question leads to others: Do more animals live under big rocks just because of size? Or is there more moisture under big rocks? A wonderful investigation can be launched with just one simple comparative question.

Explore Predictions

Help cultivate solid reasoning behind your students' predictions. The reasoning is as important as the predictions. When asking for predictions, also ask: "Why do you think so?" Challenge them to find more information on their topic and refine their predictions. Some predictions are more testable than others. Is there enough time available to test the prediction? Do you have the right equipment?

Start Action Plan and Gather Data

Have your students create an action plan that shows each step they will take to get the information they need. Action plans help focus investigations. Students should think about what materials they need. What should be measured? How many times? For how long? Have students design a data sheet to record their findings.

Don't be surprised if your students need to change their original plan. Revising is part of every creative endeavor.

Think Hard about Findings and Share Discoveries.

Thinking hard about what it all means is an exciting process. Everyone may not agree on a single interpretation. Your students may change their minds about what the information means after talking with others. Sharing your discoveries is part of the fun. What is the most important information to share? How should it be shown? For example, should skateboard speed be shown in a sketch? A bar chart? A pie chart? A combination? Don't stop there. Be imaginative. For example, a group that investigated skateboards might hold a skateboard demonstration for their classmates and parents.

Going Further. Questions are a renewable resource!

What Makes a Great Dragonfly Inquiry?

Great inquiries arise when students trust their own questions and discover answers for themselves. As a teacher, you don't have to be an expert, all you need is a willingness to join children in the questions they ask.

If your students have great investigations, visit our Web site at pbskids.org/dragonflytv and tell us about them. Your students could be on DFTV!

For graduate-credit teacher workshops, visit www.DragonflyWorkshops.org

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