

# Activity: Shoreline Shuffle

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**CONCEPT:** Illustrate how sand movement on beached follows predictable paths and patterns.

**CONCEPT STATEMENT:** sand along the beach will move or migrate in a set pattern driven by forces of wind, waves, and gravity.

**KEY WORDS:** sand particles, beach slope, gravity, wave action, littoral drift.

**EQUIPMENT:** an area to play a game of pass the beach ball; 10 beach balls.

**TIME:** 15 to 20 minutes.

**LOCATION:** beat outdoors; ideally on a beach; alternatively in a gymnasium.

## **ACTIVITY:**

- 1) Divide the group up into multiple lines of three people; the lines and people face the lake, or a feature which represents the shore (line on the gym floor, a wall)
- 2) Describe to the participants that the beach balls will be passed from one person to the other without the participants moving. Illustrate the path or maze which the balls will take; being handed from one person to the next in the direction toward the shore; then thrown from the last person in one line to the opposite end of the next line, and repeat until the ball comes to the end.
- 3) Designate one person to “feed the beach balls to the starting point and one person to collect them at the end point. Start passing the beach balls to one person at the end of the first line.
- 4) Accumulate the beach balls that are finished going through the maze at the other end. Make sure they are contained all in one location (or in a basket or enclosure).
- 5) Discuss how the movement reflects two different speeds and processes; hand to hand down the line is a smooth movement whereby throwing the ball to the end of the next line is random and less precise. (This could be documented by getting participants to count how many times the ball is “fumbled” going down the line or going from end to end of lines)



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- 6) Discuss how some lines move the ball more quickly than others; (compare the speed with the slope of the beach on a shoreline example).
- 7) Discuss how some areas of the maze send the ball from one line to the next more erratically (participant is a poor aim) and how this mimics the erratic nature of breaking waves sending sand particles up the beach.
- 8) Discuss how the process stops when the person feeding the balls runs out of beach balls to pass; is this situation reflected in nature along the shore? What may cause these interruptions in sand supply?
- 9) Discuss how the accumulation of beach balls at the other end of the maze causes a build up or log jam of balls if there is action to continue them moving along the beach. Is this situation reflected in nature along the shore? What may cause these accumulations of sand along the beach?
- 10) As a variation on this game, the participants could move in the same pattern as that which the beach balls were passed. To ensure that the two forces are highlighted, use music with a definite beat to indicate when the movement is down the line and when the movement is from one line to the next.
- 11) Use a video camera to film the activity to show participants how the pattern looks from a distance (especially helpful if the camera angle is from above such as on the top of the bluff or from a gym stage).

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