

# You and Michael

## Utah Secondary Mathematics Core Curriculum Standards

Propose and justify inferences and predictions based on data, collecting, recording, organizing, and displaying a set of data with at least two variables, determining and characterizing linear relationships, fitting regression lines using technology

## GAISE Guidelines for Assessment and Instruction in Statistics Education

Level B Understanding – formulate questions, collect data, analyze data, and interpret the results

Teacher generated question – Do Michael Phelps’ height and “wingspan” measurements match the measurements for the class?

Student generated questions – Is there a relationship between a person’s height and “wingspan”? How do my measurements compare to Michael Phelps’?

### Learning Outcomes

- Students become interested in statistics
- Students understand how to collect, display and interpret statistical information
- Students create and conduct a statistical investigation

### Specific Skills

- Students collect and record data
- Students chart results
- Students analyze results
- Students visualize a linear relationship
- Students can use technology to learn from data

### Materials Needed

- Computers with a spreadsheet program or other analytical software
- Tape measures with centimeters longer than 200 centimeters

### Directions

First, ask the students if they think there might be a relationship between a person’s height and “wingspan” (Remember Buzz Lightyear?). Then, ask the students to propose a hypothesis. Ask the students what a graph of the data would look like if a relationship exists. Ask the students how they think an investigation should be conducted. Suggest other variables that might affect a relationship between height and “wingspan” and ask the students how to consider their possible effects. Ask the students who should measure, how the person being measured should stand, if shoes should be worn, etc. Record the measurements in centimeters for each student. Use a spreadsheet program such as Microsoft Excel<sup>®</sup> or other analytical software package to enter the students’ data and make a scatterplot. Ask the students if there appears to be evidence a relationship between a student’s height and “wingspan”. Draw a “best fit” line through the data. Then, ask what will happen if they add data for Michael Phelps. Without changing the line, enter Michael’s measurements and discuss the result on the graph.

*Created for the American Statistical Association Meeting Within a Meeting Program (2008) for Middle School Teachers*

Student	Height	Wingspan
Adam	152	151
mallory	162	162
Marianne	160	158
Patrick	154	155
Darryl	149	147
Taylor	147	145
Tasha	162	162
Wes	159	160
Amanda	154	152
Dave	163	161
Jason	157	158
Jake	149	149
Darcy	163	162
Marissa	146	147
Paul	148	148
Teal	153	154
Zac	168	166
Ian	159	159
Alan	158	157
Ambreia	148	148
Davis	149	150
Greg	160	159
Michael	193	201

Prompt the students to generate and answer data analysis questions.

*How well does a line fit the data? What does that mean?*

*Can we claim that the chart represents the relationship between height and “wingspan” in the general population? Why or why not?*

*What about Michael Phelps – is he like us or is he different? How?*

