Pre-Service Teacher Responses to Technology-Specific Items from the Self-Efficacy to Teach Statistics Instrument
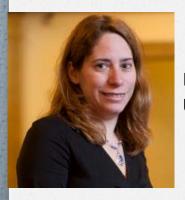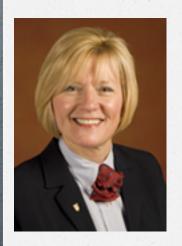
The Research Team

Supported in part by CAUSE
(under NSF DUE #0618790)

Leigh M. Harrell-William s
University of Memphis

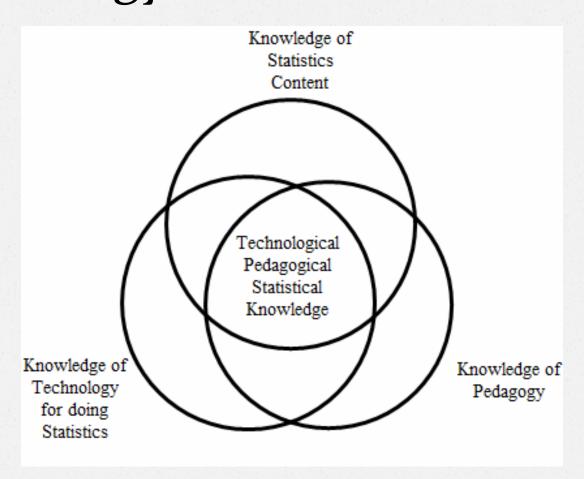M. Alejandra Sorto
Texas State University

Rebecca L. Pierce
Ball State University

Lawrence M. Lesser
The University of Texas
at El Paso

Technology & Statistics Education

Knowledge of Statistics Content

Technological Pedagogical Statistical Knowledge

Knowledge of Technology for doing Statistics

Knowledge of Pedagogy

Lesser & Groth, 2009

Technology &
the Pre-K-12 GAISE Report

O " Level A students should master the computation (by hand or using appropriate technology) of the mean so more sophisticated interpretations of the mean can be developed at Levels B and C." p.30

O "....students should be able to evaluate probabilities using the normal distribution (preferably with the aid of technology)." p.85

Franklin et al (2007)

4

The SETS Instruments

O Middle Grades: 26 items, levels A & B of GAISE Pre-K-12 Report

O High School: 44 items, levels A, B & C of GAISE of GAISE Pre-K-12 Report and 2 data analysis strands of CCSSM for High School

O Open-ended items to investigate reasons for ratings embedded after each subset of questions (levels A, B & C)

The SETS HS Instrument

Item Format

Please rate your confidence in teaching high school students the skills necessary to complete the following tasks successfully:

Scale of

1 "Not at all confident" to 6 "Completely confident"

Technology-Specific Items on the SETS HS Instrument

O 29. Estimate a specified area under the normal curve using technology or a statistical table.

O 33. Fit an appropriate model (e.g., linear, quadratic, or exponential) using technology for a scatterplot of two quantitative variables.

O 36. Calculate, using technology, the correlation coefficient between two quantitative variables.

The SETS HS Instrument

Open-Ended Question C:

Please review your responses to **items 27 – 44 (on the previous 2 pages).**

a) Looking at one or two items from **items 27 – 44 (on the previous 2 pages)** that you feel **LEAST** confident about teaching high school students, think about the reason(s) you feel this way. Use the space below (and the back of this paper, if necessary) to explain your reason(s), identifying which reason goes with which item number. If you have more than one reason, please explain as many as you can.

b) Looking at the one or two items from **items 27 – 44 (on the previous 2 pages)** that you feel **MOST** confident about teaching high school students, think about the reason(s) you feel this way. Use the space below (and the back of this paper, if necessary) to explain your reason(s), identifying which reason goes with which item number. If you have more than one reason, please explain as many as you can.

Convenience Sample

O 2 Universities: Midwest & Southwest

O 48 Pre-service Teachers

- O Gender – 75.6% Female
- O Native English Speaker – 93.3%
- O Ethnicity/Race
  - O 81.4% White
  - O 16.3% Hispanic
  - O 2.3% Black
- O Certification Status
  - O 87.5% Working toward certification

Current Investigation

O Questions:

    O How do pre-service teachers rate the 3 technology-related items as compared to other Level C subscale items in terms of their self-reported efficacy levels?

    O How frequently are these 3 items mentioned as "easiest" or "hardest" in the open-ended questions embedded in the HS SETS instrument?

    O Were the reasons given when these 3 items were mentioned in the open-ended questions related to the use of technology?
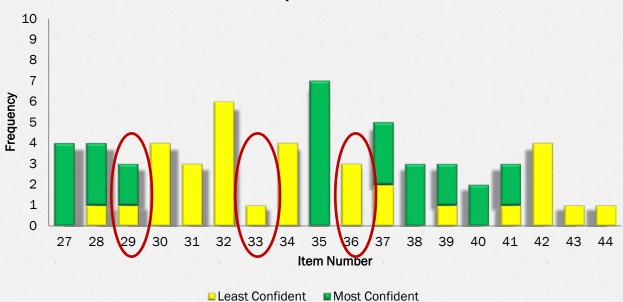
Q1: Item Ratings for Level C

Item Number	Item Mean
32	2.9
31	3.04
42	3.08
44	3.18
30	3.23
34	3.3
43	3.38
37	3.4
36	**3.58**
28	3.66
29	**3.7**
40	3.77
33	**3.81**
39	3.97
41	4
27	4.09
38	4.18
35	4.7

Most Difficult Items to Endorse using "Completely Confident"

Easiest Items to Endorse using "Completely Confident"

Q2: Frequency in Open-Ended Questions

Frequency of Mention
in Level C Open-Ended Items

Q3: Reasons in Open-Ended Questions

ITEM 36

CORRELATION COEFFICIENTS

O "When it says to use technology I am a little iffy on this because in my class the teacher barely uses any technology. And in most of my other class I barely use any so I need more practice with technology."

O "I would not feel confident teaching because I don't know a lot about using technology."
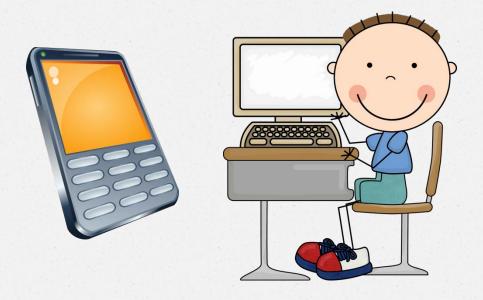
Q3: Reasons in Open-Ended Questions

O "Without technology, finding the model of best fit may be difficult, and I am not quite sure about the formulas. However with technology those inferences are easy."

MODEL FIT

ITEM 33

14

Closing Thoughts

SET — STATISTICAL EDUCATION OF TEACHERS

Contact Us

O To use the SETS instrument:

   Rebecca Pierce

   rpierce@bsu.edu

O For questions regarding instrument development, psychometric properties:

   Leigh Harrell-Williams

   leigh.williams@memphis