

Quantitative Literacy at the Post-Secondary Level: Future Directions in Research

MathFest 2016—Columbus, Ohio

Organizer: Luke Tunstall, *Michigan State University*

Panelists:

- Semra Kilic-Bahi, *Colby-Sawyer College*
- Catherine Crockett, *Point Loma Nazarene University*
- Gregory D. Foley, *Ohio University*
- Victor Piercey, *Ferris State University*
- Milo Schield, *Augsburg College*

Connecting Quantitative Literacy with Statistical Literacy —
Milo Schield: Lynn took a radical approach to Q/L

Numeracy is largely an approach to thinking about issues that employs and enhances both statistics (the science of data) and mathematics (the science of patterns).

Yet unlike statistics, which is primarily about uncertainty, numeracy is often about *the logic of certainty*. And unlike mathematics, which is primarily about the Platonic realm of abstract structures, numeracy often is anchored in *data derived from and attached to the empirical world.*"

Steen (2003) *Quantitative Literacy*

Connecting Quantitative Literacy with Statistical Literacy —
Milo Schield: Dick saw statistics as central to Q/L.

"... a very large part of QL is statistics..." p.147

"one way to garner administrative support [for QL across the curriculum] and foster institutional change is to tie much of QL to the statistics curriculum, everywhere it is housed." p.149

"... statisticians would probably argue that QL is mainly statistics while mathematicians and mathematics educators tend to argue that QL is only partly statistics. p. 151

Richard Scheaffer in Steen (2003) *Quantitative Literacy*.

Connecting Quantitative Literacy with Statistical Literacy —
Milo Schield: What is relationship between Q/L & statistics?

QL & Statistical Literacy need each other.

- QL > QR. QL: Connect math with numbers in the media

Arguments for similarity or convergence:

- 2016 GAISE Update features multivariate thinking in Intro Stat course.
- Statistics textbook authors & Big Data are focusing less on inference.

Arguments for separation or divergence

- Causation is not a mathematical concept.
- Statistical confounder > a mathematical co-variate.
- Statistics are numbers in context. Numbers are statistics minus context.

Basic Issue: Does QL include (feature) data in context?

Milo: What are your thoughts on the sufficiency of a statistics course for satisfying a student's quantitative general education requirement? Is it sufficient? Should it be required?

Is a *traditional research intro statistics course* sufficient for quantitative Gen-Ed? No. Required in list? OK. Required exclusively? No

Is a *GAISE 2016 intro statistics course* sufficient for quantitative Gen-Ed? Maybe. Required in list? OK. Required exclusively? Maybe

Is a *Statistical Literacy intro statistics course* sufficient for quantitative Gen-Ed? Yes. Required in list? OK. Required exclusively? Yes

Schild's slides are available at:

www.StatLit.org/pdf/2016-Schild-MathFest-Slides.pdf

Audio of Schild's presentation (5 minutes) is available at:

www.StatLit.org/audio/2016-Schild-MathFest-Audio.mp3

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