



# Seven Things Students want Faculty to know about Learning Statistics Online

OLC Accelerate 2016

November 16, 2016

Discovery Session #4  
3:45 – 4:30pm



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# Purpose of the case study



The purpose of this qualitative case study was threefold:

- ❑ To examine faculty and students' perspectives about the introductory statistics curriculum design and online delivery methods.
- ❑ To explore the barriers to meeting learning objectives of online statistics courses.
- ❑ To document ways to create inclusive, accessible, culturally relevant, and developmentally appropriate online learning environments.

# The Local Context

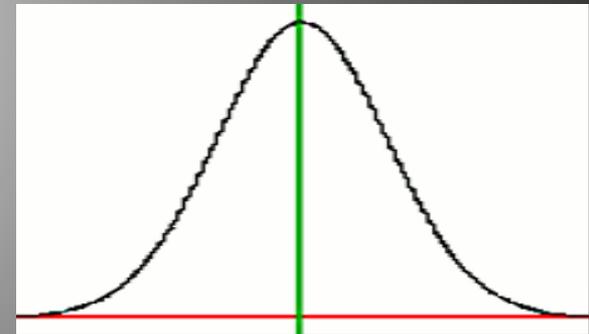


- ❑ Privately owned college
- ❑ Located in northeastern United States
- ❑ Student population of between 1,000 and 1,500 (National Center for Educational Statistics [NCES] College Navigator, 2014)
- ❑ Traditional 16-week courses on campus
- ❑ 8-week distance learning courses for adults

# The Local Problem

Sub-standard academic performance in online statistics courses

- Bell curve final exam scores (2011)
- 24% (online) vs. 10% (hybrid) failure rate
- Lack of retention and transfer



Due to:

- Anxiety, Phobias, & Fears
- Low pre-requisite skillset
- Challenging course
- "Absentee" faculty

# Stages of Data Collection & Analysis



## Phase 1

- Review course evaluation data for statistics courses
- Review grade distribution reports for statistics course
- Identify patterns/themes, describe data, document findings (field notes, analytic memo, Nvivo database)



## Phase 2

- Examine online course template in the LMS
- Summarize and interpret observations & findings (field notes/analytic memo, Nvivo Database)

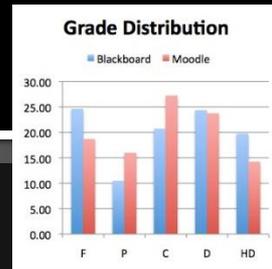


## Phase 3

- Set up interviews with participants (informed consent)
- Transcribe audio recordings, member check
- Code & categorize the data to identify themes (Nvivo)
- Note similarities and differences between faculty and student responses
- Interpret data, member check, and report findings

# Online Statistics: Grade Distribution

## 2011 - 2014

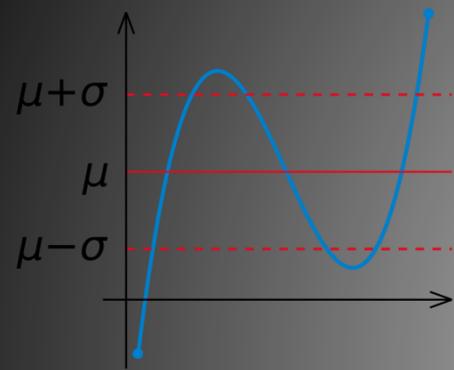


*Statistics 1-Online Aggregate Grade Distribution (2011 – 2014)*

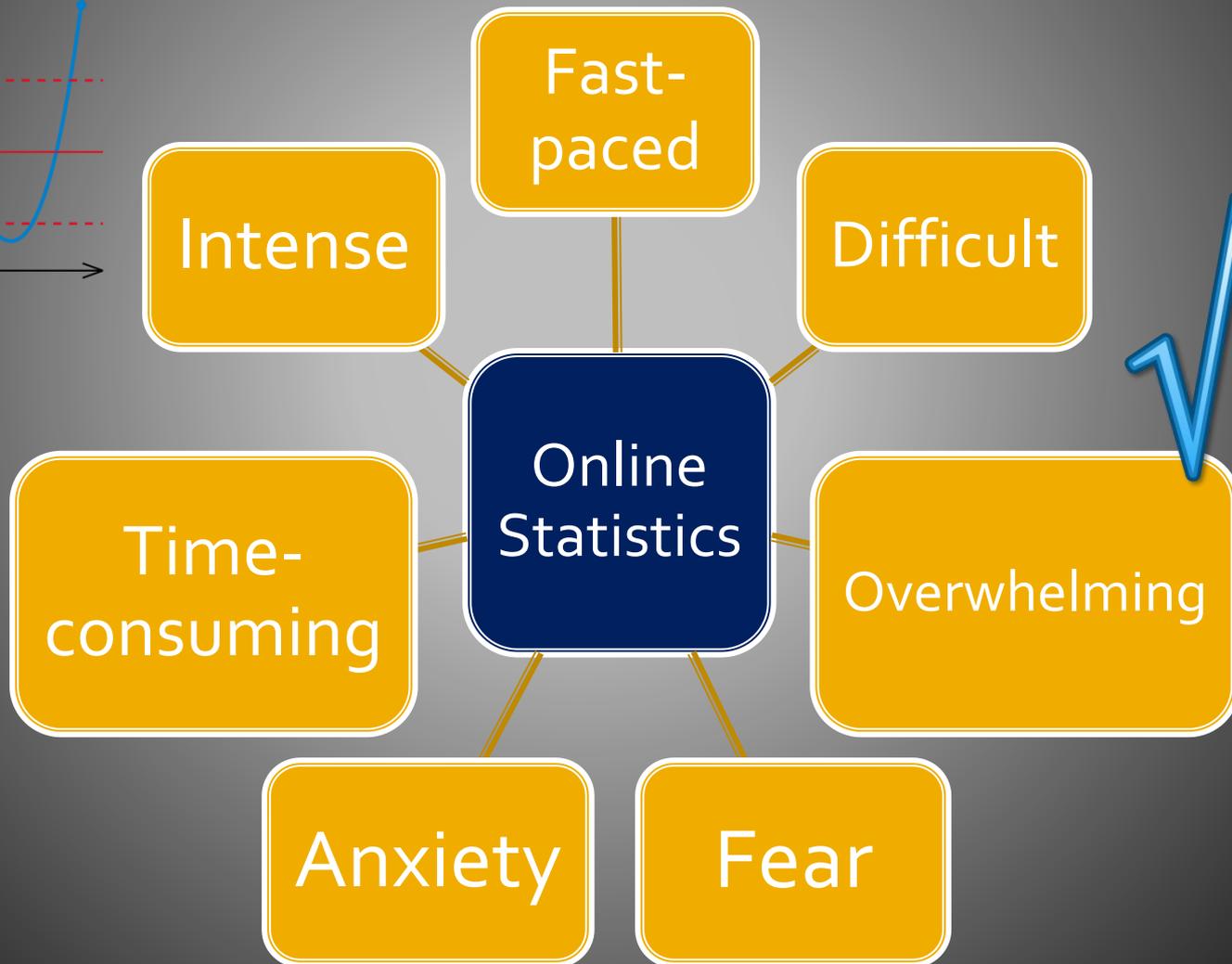
| Year         | Letter Grades Earned |           |          |          |           |          |          |          |           |
|--------------|----------------------|-----------|----------|----------|-----------|----------|----------|----------|-----------|
|              | A                    | B         | C        | D        | F         | UF       | WD       | DP       | Total     |
| 2011         | 4                    | 0         | 0        | 1        | 3         | 0        | 0        | 1        | 9         |
| 2012         | 1                    | 3         | 5        | 2        | 9         | 0        | 0        | 2        | 22        |
| 2013         | 4                    | 11        | 3        | 0        | 7         | 1        | 1        | 0        | 27        |
| 2014         | 2                    | 8         | 1        | 0        | 0         | 3        | 2        | 3        | 19        |
| <b>Total</b> | <b>11</b>            | <b>22</b> | <b>9</b> | <b>3</b> | <b>19</b> | <b>4</b> | <b>3</b> | <b>6</b> | <b>77</b> |

Note: UF – unofficial failure; WD – Withdrew, DP – dropped the course

# What do students think and feel about online/hybrid statistics courses?



$\Sigma$



# Perspectives



Students complained ... that in different modules there were so many different delivery methods. It was confusing because sometimes students have an article to read, sometimes they had a video to watch, sometimes they had to just read part of the book, sometimes they had to do this interactive exercise, it was too much.

Students

Faculty

The challenge for [faculty] is on the front end in terms of sharing the content with them and figuring out multiple ways to do so... that they can grab that; something as simple as learning styles, but also how to make it understandable for them.

# Barriers to Learning



"The course was too short to learn so much. There was an overload of work ... There was not enough time to complete all the reading assignments, quizzes, forums, learning activities, journal entries, and etcetera. It did not feel like an online class. It felt more like a statistics boot camp where you were constantly bombarded with work to do."

## Time Commitment

## Cognitive load

"I couldn't read three chapters and then be expected to know three chapters in three weeks, doing this online...that was overwhelming."

"For working parents too much time is required to be online. It's almost impossible to keep up with reading, research, and number of exercises required. Taking [an] online course is more stressful and time consuming than taking the course on campus."

# Skillset needed for success

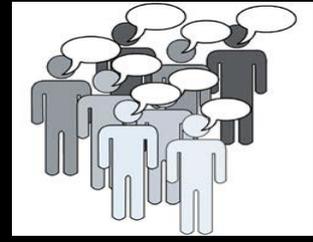
- Communication (reading, writing, and oral)
- Technical (computer)
- Computational (basic math)
- Procedural fluency
- Critical thinking & analytical



# Seven Strategies to Teaching and Learning Statistics Online



# Questions, Answers, and Dialogue



**GAISE**  
Relevance  
Project-based  
Conceptual

Understanding  
Competency  
Support  
Feedback  
Differentiation  
Scaffold  
Communication  
Chunking

Presence  
Experiential

# Session Evaluations Contest



- **Download and open OLC Conferences mobile app**
- **Navigate to specific session to evaluate**
- **Click “Evaluate Session” at the bottom of session details screen**
- **Complete session evaluation\***

Each session evaluation completed (limited to one per session) = one contest entry  
Five (5) \$25 gift cards will be awarded to five (5) individuals  
Must submit evals using the OLC Conferences mobile app or website

(As part of our “green” initiatives, OLC is no longer using paper forms for session evaluations.)

*\*Contact information required for contest entry but will not be shared with the presenters.  
Winners will be contacted post-conference.*