Addressing Barriers to Teaching & Learning *Statistics* at a Distance

QUALITY MATTERS REGIONAL CONFERENCE
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Agenda

1. Welcome & Introductions

2. Presenting the Context
   a) Barriers of learning at a distance
   b) A look at a Unit of Study

3. Recommendations for Improvement (Activity)

4. Applying the Standards to redesign the unit (Activity)

5. Wrap Up/Q & A

Expected Outcomes

- ❑ Identify some possible barriers to learning statistics and other quantitative courses online.

- ❑ Write recommendations to improve the learning activities, instructional materials, and course technology.

- ❑ Apply QM standards to redesign at least one unit of a Statistics course.

The Context

☐ Marginal academic achievement in online introductory statistics courses.

☐ Faculty's concern about the extent to which students participate and learn in the online introductory statistics courses.

☐ Students' dissatisfaction with the online statistics course content and delivery format.

Significance of Case

❑ Inform possible revisions to the curriculum, online course design, and teaching practice.

❑ Address how to reduce possible barriers to teaching and learning in the online environment.

❑ Increase the level of statistical literacy and proficiency in mathematics, college algebra, statistics and other quantitative courses.

Barriers of Learning at a distance

Cognitive load

"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."

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

Time Commitment

"For working parents too much time is required to be online. Its'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."

Additional Barriers

Content

Instructor Presence

Accessibility

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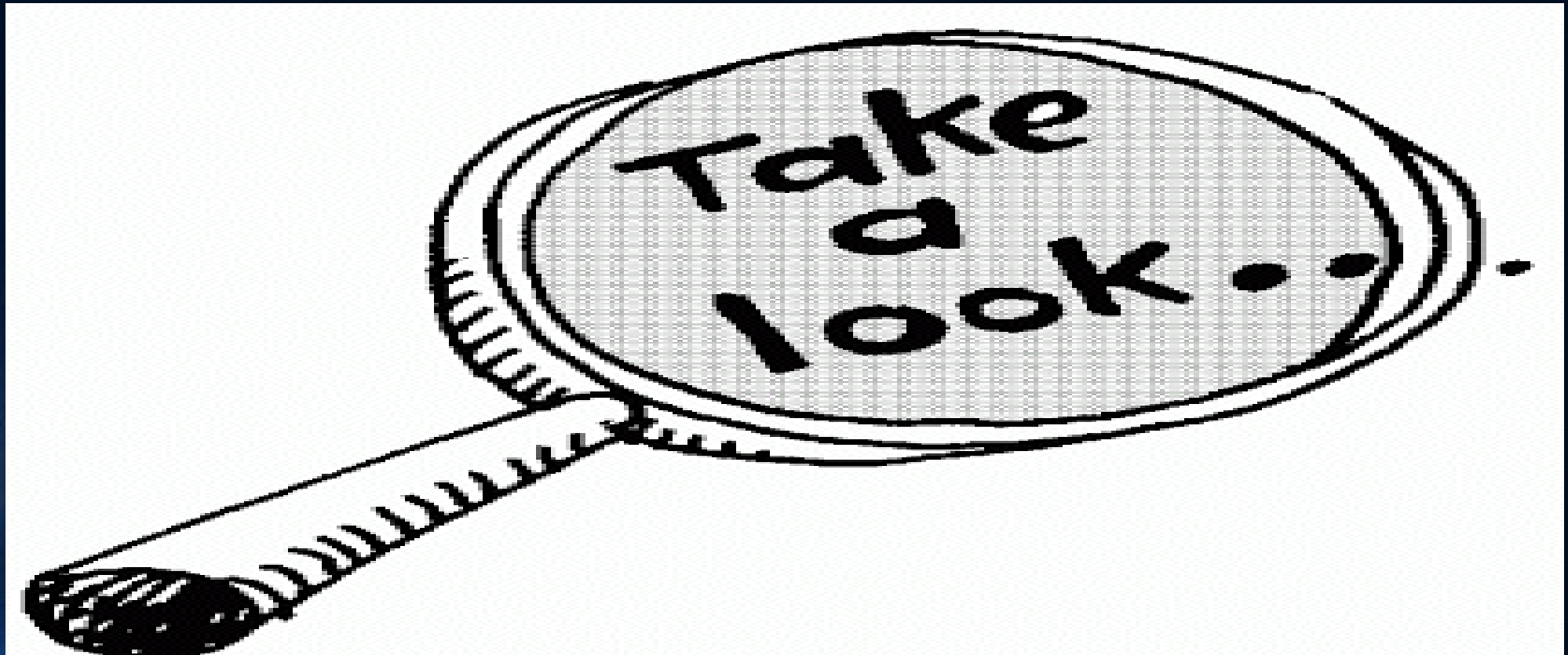
The challenge for [faculty] is on the front end in terms of sharing the content with them and figuring out **multiple ways** to do so... that they can grab that; something as simple as learning styles, but also how to make it understandable for them.
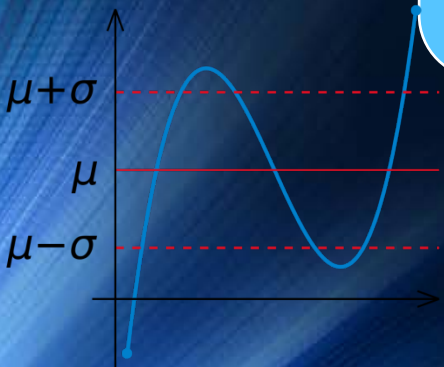
Navigation

Attitude

Skillset

A look at a Unit of Study

Recommendations for Improvement

- ☐ Constructive
- ☐ Specific
- ☐ Measurable
- ☐ Sensitive
- ☐ Balanced

Addressing the Problem

QM Standards 4, 5, 6, 7 & 8

QM Standard 4: Instructional Materials

1. **The instructional materials contribute to the achievement of the stated course and module/unit learning objectives or competencies.**

2. **Both the purpose of instructional materials and how the materials are to be used for learning activities are clearly explained.**

3. All instructional materials used in the course are appropriately cited.

4. The instructional materials are current.

5. A variety of instructional materials is used in the course.

6. The distinction between required and optional materials is clearly explained.

# QM Standard 5: Course Activities and learner Interaction

1. **The learning activities promote the achievement of the stated learning objectives or competencies.**

2. **Learning activities provide opportunities for interaction that support active learning.**

3. **The instructor's plan for classroom response time and feedback on assignments is clearly stated.**

4. The requirements for learner interaction are clearly stated.

QM Standard 6: Course Technology

1. **The tools used in the course support the learning objectives and competencies.**

2. **Course tools promote learner engagement and active learning.**

3. Technologies required in the course are readily obtainable.

4. The course technologies are current.

5. Links are provided to privacy policies for all external tools required in the course.

QM Standard 7: Learner Support
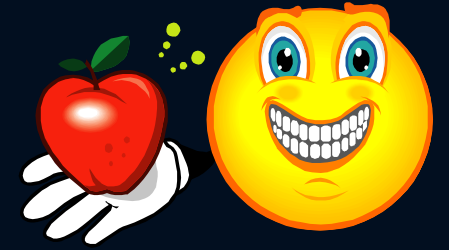
1. **The course instructions articulate or link to a clear description of the technical support offered and how to obtain it.**

2. **Course instructions articulate or link to the institution's accessibility policies and services.**

3. Course instructions articulate or link to an explanation of how the institution's academic support services and resources can help learners succeed in the course and how learners can obtain them.

4. Course instructions articulate or link to an explanation of how the institution's student services and resources can help learners succeed and how learners can obtain them.

QM Standard 8: Accessibility & Usability

1. **Course navigation facilitates ease of use.**

2. **Information is provided about the accessibility of all technologies required in the course.**

3. The course provides alternative means of access to course materials in formats that meet the needs of diverse learners.

4. The course design facilitates readability.

5. Course multimedia facilitate ease of use.

Activity: Redesigning the Unit of Study

7 Tips for teaching & learning at a distance

Experiential Learning Opportunities

Rigorous Subject Matter

Differentiated Instruction

Inclusive, Culturally Relevant, Developmentally Appropriate Learning Environments

Real World Activities

Immediate Feedback

Instructor Presence

Questions and Answers