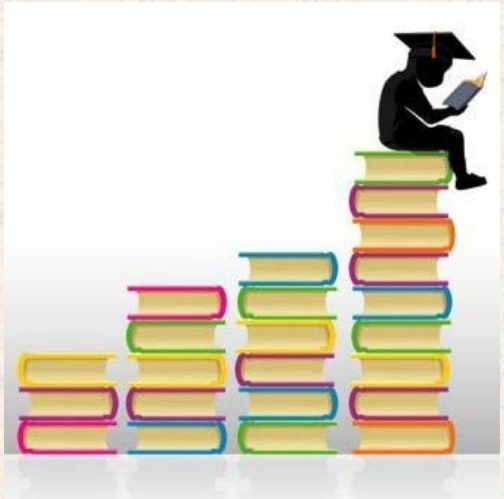
HOW LEARNING OUTCOMES, PERCEPTION AND ASSESSMENT COMPARE



Brian D. Whitaker
Department of Animal and Pre-Veterinary Studies
The University of Findlay
Findlay, Ohio
USA

University of Findlay

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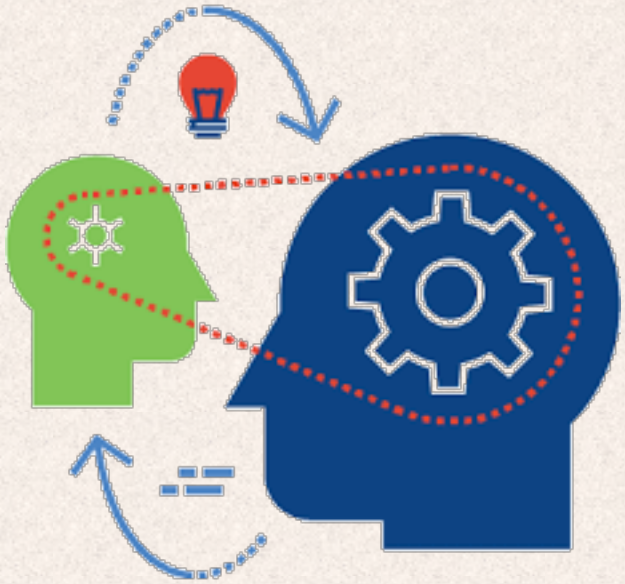
Learning Outcomes



Identify what the learner will know and be able to do by the end of a course

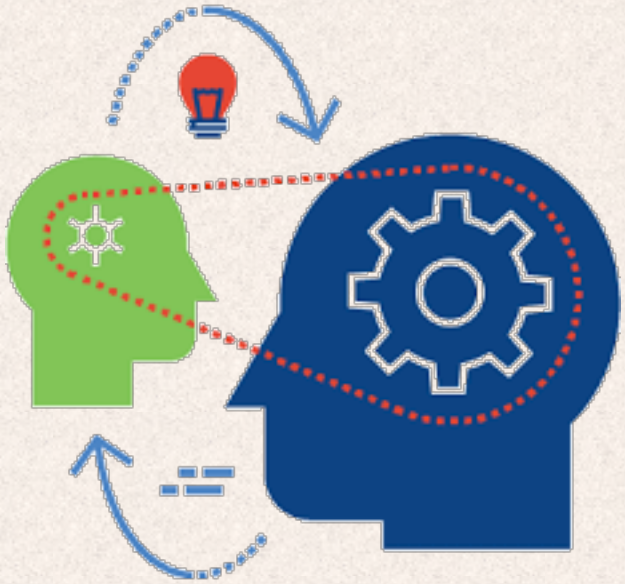
- **Traditionally focused on quantity of learning and not quality**

  (Biggs, 1979)

- **Teachers often design student learning outcomes (SLO) based on course content**

  (Dick et al., 2006)

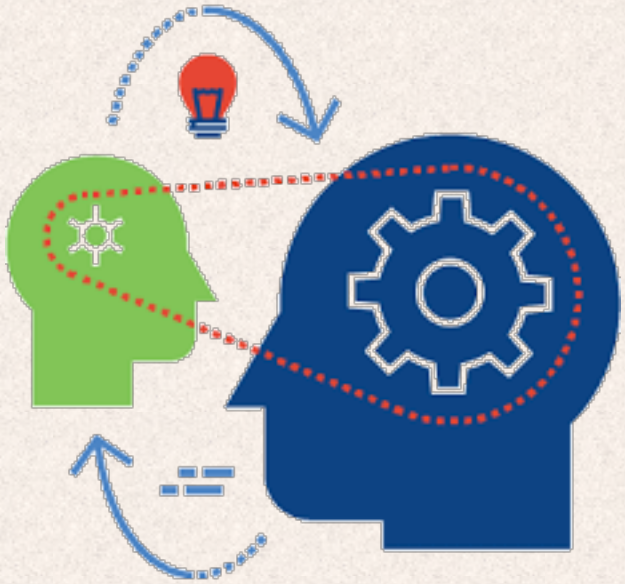
Learning Outcomes



Identify what the learner will know and be able to do by the end of a course

How do “we” know the learning outcomes have been successfully achieved?

Learning Outcomes



- **Earned grades are often the measure used**
- **Not much literature linking student perception of meeting learning outcomes to the grade earned**
- **Perceived student learning used as a tool to measure student satisfaction of the course**

(Eom et al., 2006)

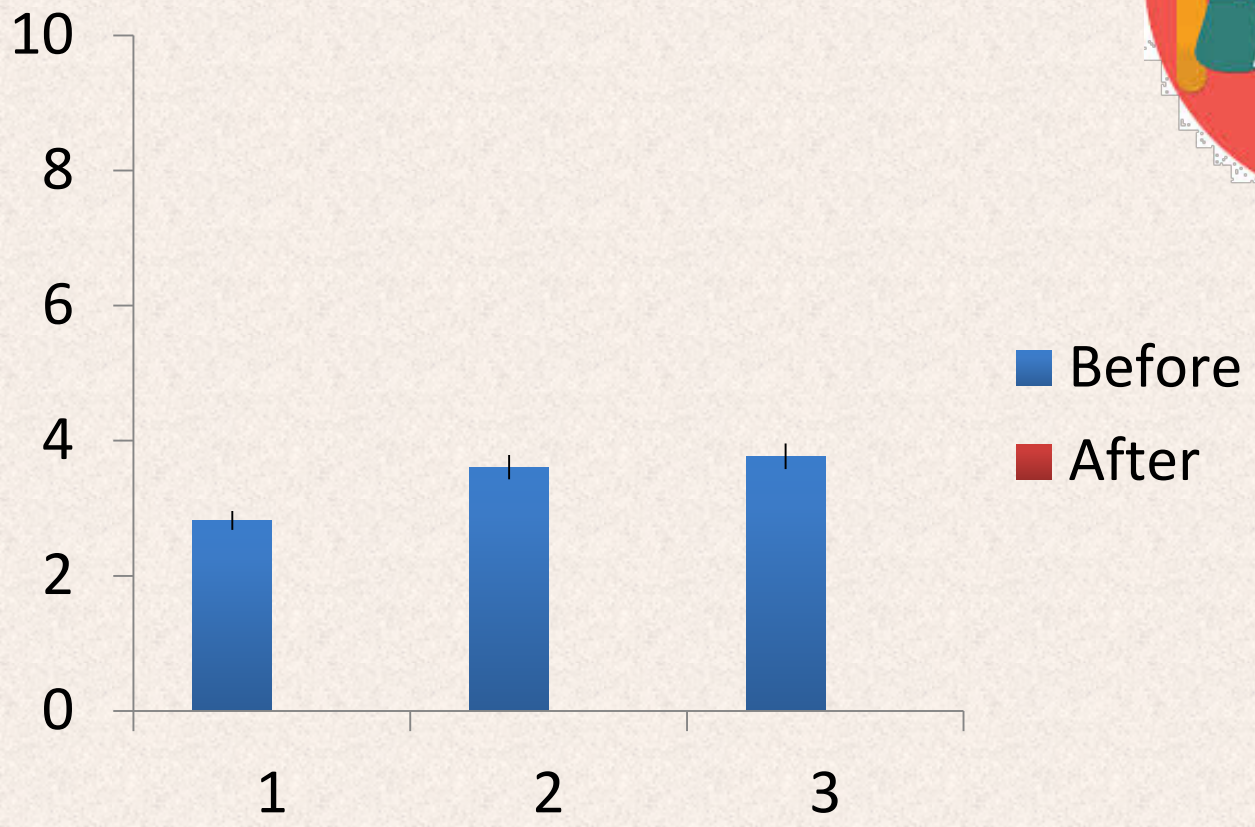
Perceived Learning

- Introductory Course
- 4 years (2010-2014)
- n=683
- Anonymous pre- and post-course Likert-scale survey

- **Students perceive they are learning during the semester**
- **Students perceive they are meeting the learning outcomes of the course**

(Whitaker, 2017)

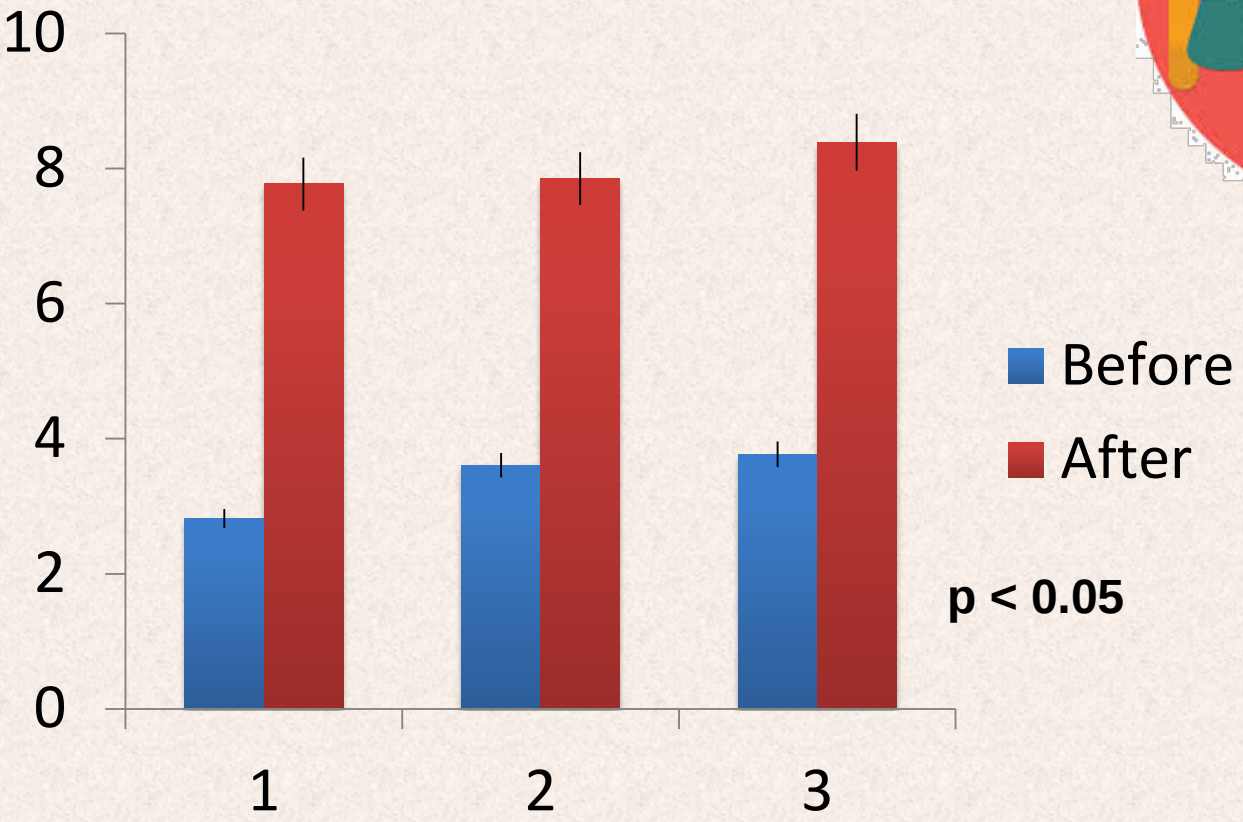
Perceived Learning



<u>Student Learning Outcome #1</u>: Knowledge

(Whitaker, 2017)

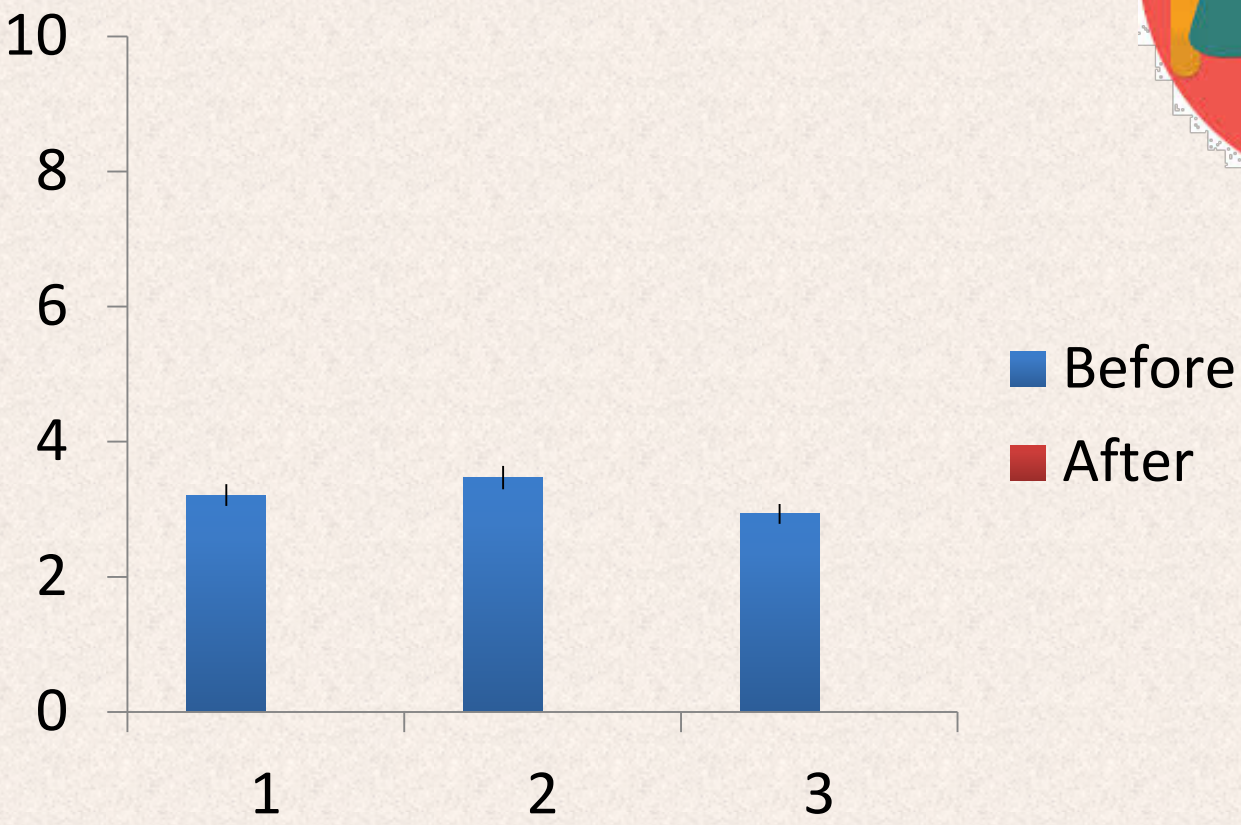
Perceived Learning



<u>Student Learning Outcome #1</u>: Knowledge

(Whitaker, 2017)

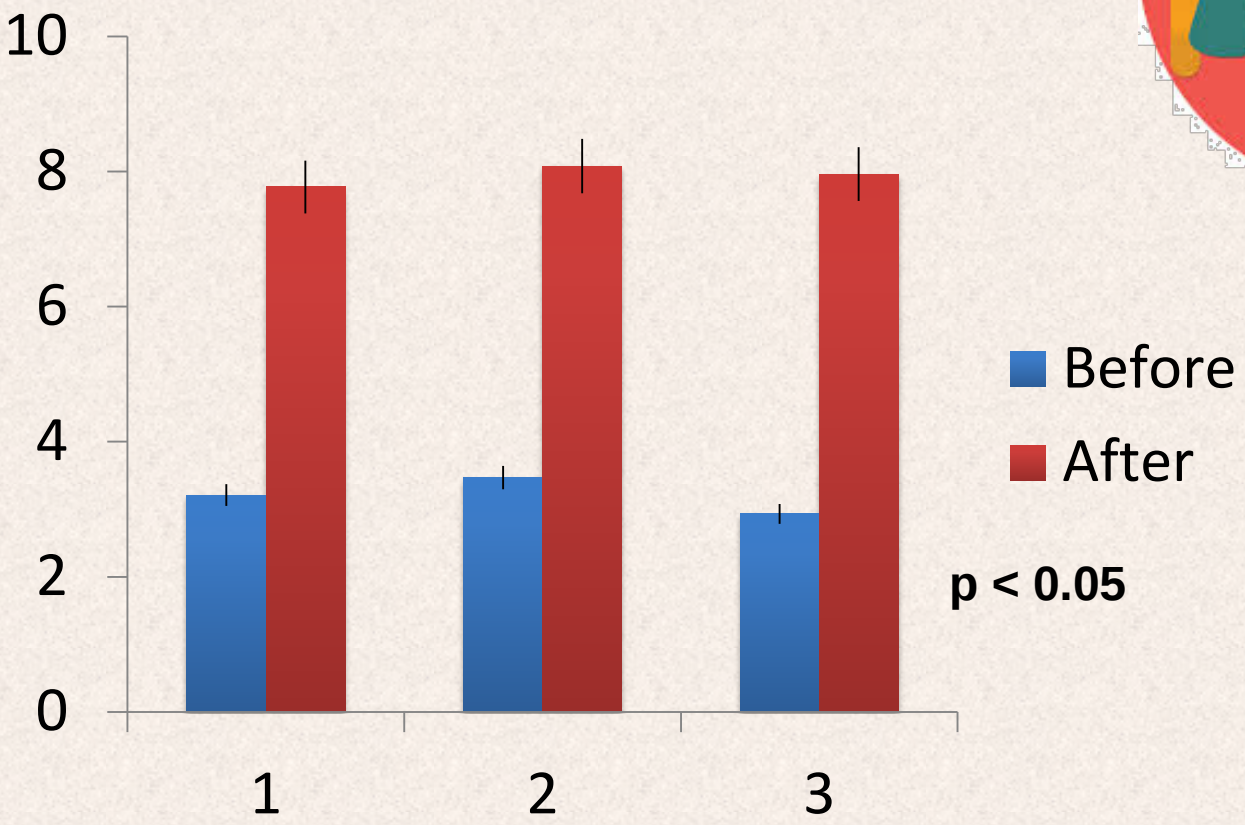
Perceived Learning



<u>Student Learning Outcome #2</u>: Comprehension

(Whitaker, 2017)

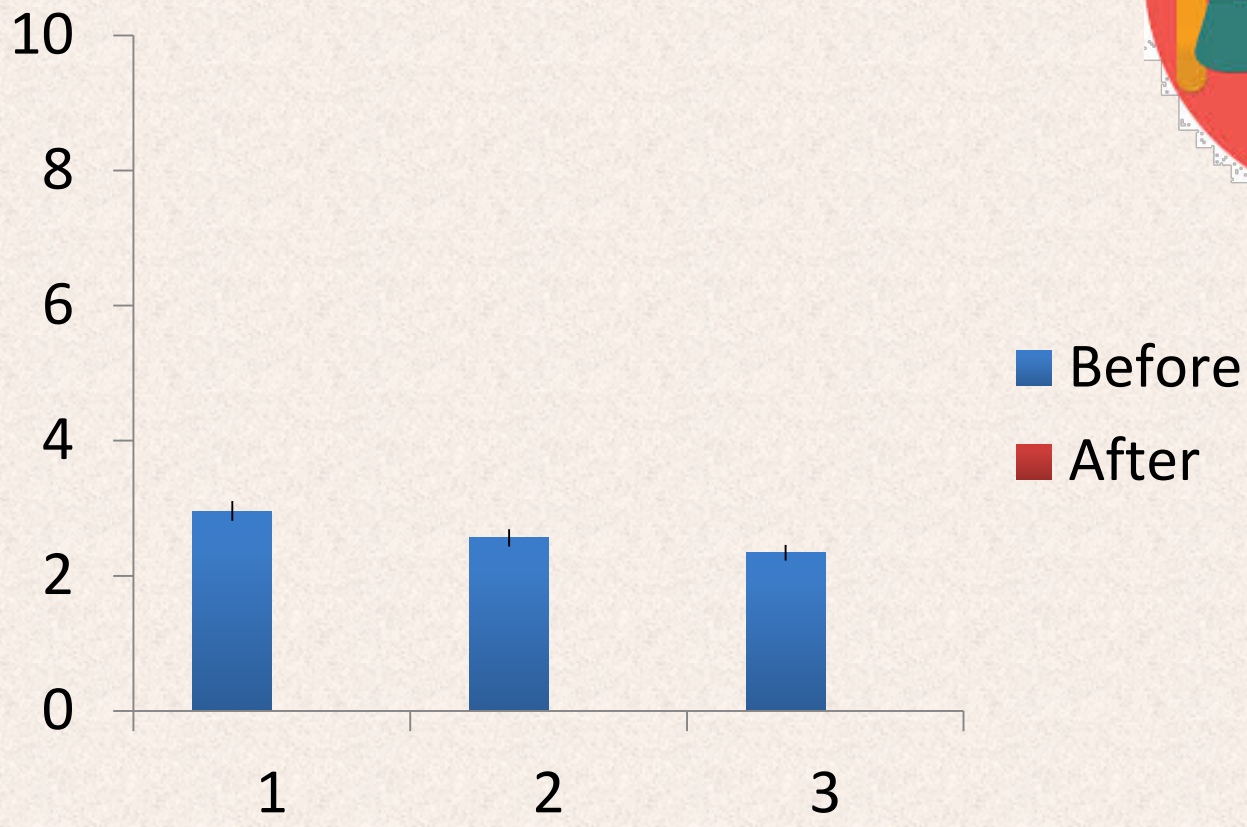
Perceived Learning



Student Learning Outcome #2: Comprehension

(Whitaker, 2017)

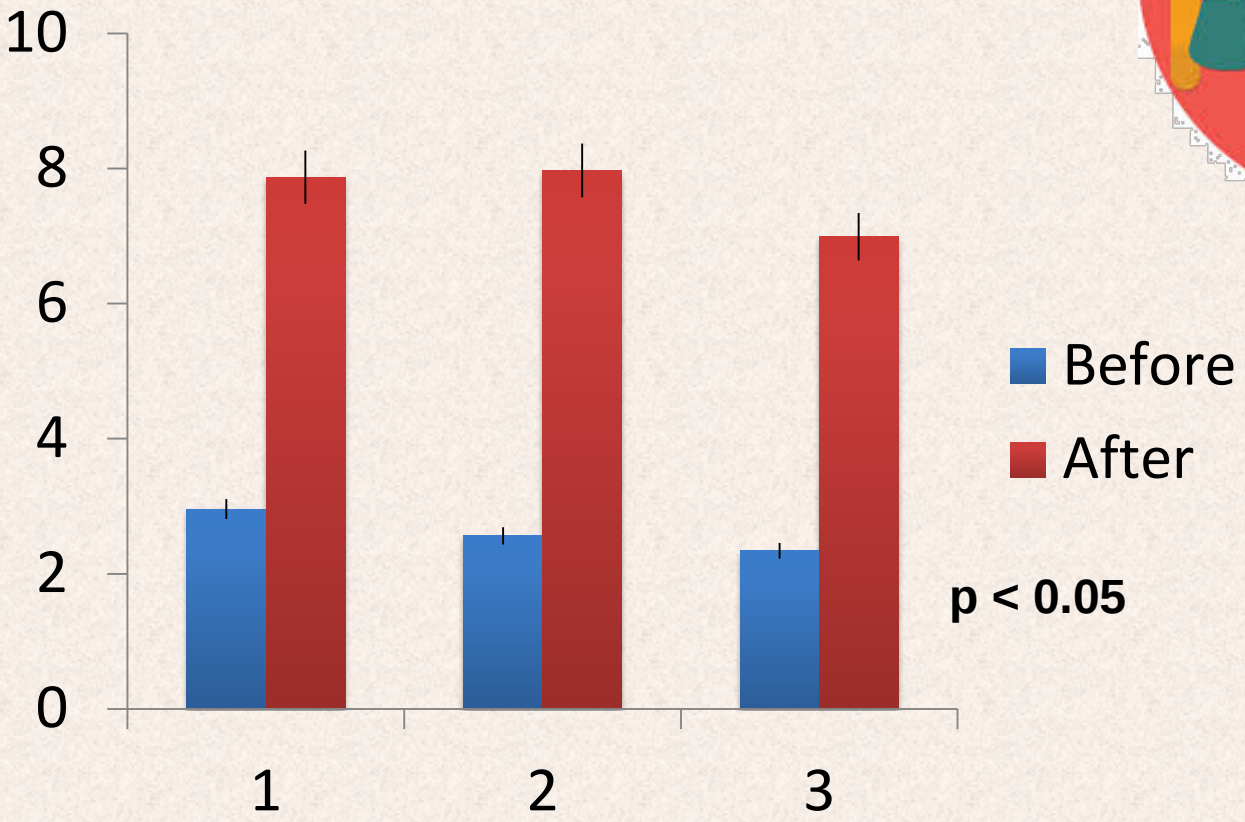
Perceived Learning



<u>Student Learning Outcome #3</u>: Application

(Whitaker, 2017)

Perceived Learning



<u>Student Learning Outcome #3</u>: Application

(Whitaker, 2017)

Problem

Students' perception of meeting the SLO is subjective data and should be backed with objective data

Objective

To link questions on exams to a specific SLO and measure the success rates of answering the questions correct and relate to the students' perceived learning

Experimental Design

4 exams given throughout the semester

- individual
- in-class
- closed book
- 50 minutes

Equal distribution of question types:

- multiple choice
- matching
- short answer
- “other”
  - + long answer
  - + math
  - + graph interpretation
  - + drawing

Experimental Design

Each question/answer was linked to an SLO:

Student Learning Outcome #1

Name, list, and define key terms and concepts currently used in the study of animal science. [KNOWLEDGE]

Student Learning Outcome #2

Locate, identify and describe the key terms/concepts and explain/discuss their significance in the animal sciences. [COMPREHENSION]

Student Learning Outcome #3

Demonstrate knowledge and comprehension by interpreting and solving problems and scenarios relative to the animal sciences. [APPLICATION]

Experimental Design

Introductory Animal Science Course
4 years (2010-2014)
n=683

Number of correct answers/question was determined

Grouped according to SLO

SLO “score” was compared to perceived student learning

Results

Rate of answering question types correct:

Multiple choice[a] > matching[b] = short answer[b] > "other"[c]

[a,b,c]p < 0.05

No differences between:

P > 0.10

- **number of questions/type question**
- **weight on type of question**
- **number of questions/linked SLO**
- **weight on type of question/linked SLO**

Results: SLO #1 – Knowledge

	Class Average on Knowledge Questions (Range)	Class Average on Exams (Range)
SLO #1 - Knowledge	90.2 (43 – 99)	79.3 (37.4 – 98.2)

Student Learning Outcome	Mean Response (standard dev.) Beginning of Semester	End of Semester
#1. Name, list, and define key terms and concepts currently used in the study of animal science. [KNOWLEDGE]	3.40 (0.89)	8.00 (0.41)

Scale: 1 = not at all, 10 = expert

Class average (knowledge questions) and perceived student learning:

***r* = 0.93**

Results: SLO #2 – Comprehension

	Class Average on Comprehension Questions (Range)	Class Average on Exams (Range)
SLO #2 - Comprehension	89.5 (35– 99)	79.3 (37.4 – 98.2)

Student Learning Outcome	Mean Response (standard dev.) Beginning of Semester	End of Semester
#2. Locate, identify and describe the key terms/concepts and explain/discuss their significance in the animal sciences. [COMPREHENSION]	3.20 (0.23)	7.94 (0.45)

Scale: 1 = not at all, 10 = expert

Class average (comprehension questions) and perceived student learning:

***r* = 0.89**

Results: SLO #3 – Application

	Class Average on Application Questions (Range)	Class Average on Exams (Range)
SLO #3 - Application	81.8 (20 – 95)	79.3 (37.4 – 98.2)

Student Learning Outcome	Mean Response (standard dev.) Beginning of Semester	End of Semester
#3. Demonstrate knowledge and comprehension by interpreting and solving problems and scenarios relative to the animal sciences. [APPLICATION]	2.63 (0.48)	7.61 (0.48)

Scale: 1 = not at all, 10 = expert

Class average (application questions) and perceived student learning:

***r* = 0.88**

Conclusions

- **Students' perception that they are learning and are meeting the SLO of the course are justified based on average class performance on specific outcome artifacts**
- **Higher success rates equate to higher student perception of learning and tighter correlation coefficients**
- **Sample not an individual**
- **Students' perception could be linked to course assessment artifacts other than exams (assignments and quizzes) to further validate student learning objectives are being met**

Questions?