Class: Math 54
Date assigned: October 25, 2018
Date due: November 1, 2018
Time estimate to complete this assignment: 105 minutes

Overview/Introduction

Constructing hypothesis testing to test a claim about a proportion.
Hypothesis testing is a statistical procedure used to evaluate statement about a population parameter to determine whether the statement is best supported by the sample data and whether or not the finding is statistically significant.

Learning Objectives

Basic objectives (to be practiced *prior* to class):

- o Formulate H_0 and H_a

- o Describe possible type I and type II errors

- o Define the P-value

Advanced objectives (to be mastered *during* and *after* class):

- o Perform a complete hypothesis test

- o Describe how conducting hypothesis testing helps one make an educated decision on the claim.

- o Give an instance where hypothesis testing can be used in daily life.

Preparatory Activities and Resources:

The following are suggested learning materials in this lesson:

- Text: Read the sections on "Basics of Hypothesis Testing" pages 358 – 370 and "Testing a Claim about a Proportion" pages 373 – 382.
  Video: Watch the videos for pertinent sections on MyStatLab.

  Exercises:
- The exercises for this lesson are at Google Form: Hypothesis Testing part 1. Your work will be graded on correctness and due at midnight the day before November 1, 2018.

Questions?

Please email me if you have any question. Make sure you do not do your work last minute.

Lesson Plan

Lesson: _Hypothesis Testing for Population Proportion_____

Timeframe: **Note how long will it take the learner to complete all of the activities from pre-class to post-class activities.**

_105 minutes_____

Materials needed: **Describe what items will be needed to complete the in-class activities.**

i-clicker and two handouts

Objectives: **List out the basic objectives tied to pre-class activities and the advanced objectives tied to in-class and post-class activities.**

Basic:
1. Formulate H_0 and H_a

2. Describe possible type I and type II errors

3. Define the P-value

Advanced:
1. Perform a complete hypothesis test

2. Describe how conducting hypothesis testing helps make one an educated decision on the claim.

3. Give an instance where hypothesis testing can be used in daily life.

Background to the Lesson: **Note the typical composition of learners in the class, how this lesson fits into the course design/schedule, prerequisite knowledge required, and typical challenges that learners face with this content area.**

Students often know how to follow steps of hypothesis testing but unable to piece together all the concepts that have been learned previously to conduct the testing. The lessons on basics of hypothesis testing and testing a claim about a proportion usually take three hours but it will now take about 55 minutes.

Other challenges: students normally have difficulties drawing conclusions as well.

Introduction to Lesson: **Describe the purpose of this content area for learners and an overview of the activities and resources for the flipped lesson.**

Students will read assigned pages from the book, then take an online quiz afterwards to ensure preparation before class. Students hopefully have an early exposure to important concept and vocabularies needed for the rest of chapters.

Procedure [Time needed, include additional steps if needed].

Pre-Class Individual Space Activities and Resources: Outline the major steps for the preparatory activities and be sure to tie the steps to the basic learning objectives you have noted above. Note resources required for learner preparation.

Steps	Purpose	Estimated Time	Learning Objective
Step 1: Reading assigned pages from the book: page 358 - 370 page 373 - 382	Early exposure to concepts and vocabulary	30 mins	Formulate H_0 and H_a. Describe possible type I and type II errors. Define P-value.
Step 2: Take an online reading quiz.	To make sure students do necessary preparations.	10 mins	Formulate H_0 and H_a. Describe possible type I and type II errors. Define P-value.
Step 3:			
Step 4:			
Step 5:			

In-Class Group Space Activities and Resources. Outline the major steps for the in-class activities and be sure to tie the steps to the advanced learning objectives you have noted above. Also note any resources needed/developed to provide effective active learning activities within class.

Steps	Purpose	Estimated Time	Learning Objective
Step 1: In-class quiz on readings assigned	To check the depth of understanding using i-clicker.	10 mins	Formulate H_0 and H_a. Describe possible type I and type II errors. Define P-value.
Step 2: Review activities as an opening	To refresh students' memories.	10 mins	Formulate H_0 and H_a. Describe possible type I and type II errors. Define P-value.
Step 3: Think Pair Share	To emphasize on advanced learning outcomes	30 mins	Complete hypothesis testing

			Describe how conducting hypothesis testing helps make an educated decision on the claim. Give an instance where hypothesis testing can be used in daily life.
Step 4: Closing activities	To expand concepts learned in class.	5 mins	To introduce next section on testing a claim about a mean.
Step 5:			

Post-Class Individual Space Activities and Resources. Outline the major steps for the post-class activities and be sure to tie the steps to the advanced learning objectives you have noted above. Also note any resources learners will need to complete any post-class activities assigned after the group space activities.

Steps	Purpose	Estimated Time	Learning Objective
Step 1: Do homework on given handout.	To recap what was learned in class.	10 mins	Formulate H_0 and H_a. Describe possible type I and type II errors. Define P-value. Complete hypothesis testing Describe how conducting hypothesis testing helps make an educated decision on the claim. Give an instance where hypothesis testing can be used in daily life.
Step 2:			

Evaluation:

Analysis. In this section, note what you think will work, and what challenges you think you may face in implementation.

I will have to show my students the outlines of my plans, how long it will take them to do online homework in general, and that the amount of homework has been adjusted to allow them to complete individual space activities.

Students will have difficulties managing their times to do individual space activities and homework. It is important for students to know ahead of time what to expect in my class and that we discuss time management skill on the first day of school.

Connections to Future Lessons. In this section, note how you think this lesson plan connects to your next topics in the course.

This lesson plan is very well connected to my next topics in the course which are literally the next 7 sections! Creating this lesson plan will make it so much easier to create the next seven lesson plans.