

Lesson Plan

Lesson: Sampling Distribution

Timeframe: Approximately 2 hours

Materials needed:

Text book
Blackboard access

Objectives:

Basic:

1. Understand difference between Statistic and Parameter
2. Understand the concept of sampling distribution
3. Specifically know the characteristic of sampling distribution of the sample mean.
4. Understand central limit theorem and its role in sampling.

Advanced:

1. Find mean and standard deviation of the sampling distribution.
2. Describe the distribution of the sample mean for samples obtained from normal distribution.
3. Describe the distribution of sample mean for samples obtained from a population that is not normal.

Background:

- For a given population mean μ , standard deviation σ , and sample size n , need to find probability of sample mean in a certain range:
- Need to know sampling distribution of sample mean and its mean and standard deviation.
- Approaches to Understanding distribution of means

Introduction to Lesson:

Sampling distribution of sample statistic tells probability distribution of values taken by the statistic in repeated random samples of a given size. In this section we summarized probability distribution of sample mean by reporting its center, spread, shape. Also we will learn about central limit theorem.

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

Pre-Class Individual Space Activities and Resources:

| Steps | Purpose | Estimated Time | Learning Objective |
|--|--|-----------------------|--|
| Step 1: Read the section on sampling distribution in your textbook. (pages x-y) | Introducing the concept | 15 min | Becoming familiar with the basic terms |
| Step 2: Watch the videos on sampling distribution (link provided on blackboard) | Using alternative resources to strengthen concept | 5 min | Support of the text |
| Step 3: Complete the worksheet provided on blackboard using the textbook or the videos | Create understanding and implementing concepts learned | 10 min | Reinforcement of concepts |
| Step 4: Write 5-8+ sentences explaining the main points of the lesson | Solidifying lessons objectives | 10 min | Strengthen understanding of key concepts |
| Step 5: Take quiz related to reading and worksheet | Testing understanding of lesson | 10 min | Reinforcement of lesson |

In-Class Group Space Activities and Resources:

| Steps | Purpose | Estimated Time | Learning Objective |
|--|---|-----------------------|--|
| Step 1: <ul style="list-style-type: none">• Q&A session for students• While students are working, check their worksheets | Creating a discussion of lesson and trying to eliminate any confusion that the students might be facing | 10 min | Clarifying concepts |
| Step 2: Step by step sample application problem | Use of formulas | 15 min | Understanding how to do problems |
| Step 3: Discuss quiz | Figure out where students are struggling | 5 min | Reinforcement of application problems |
| Step 4: Form groups of 3 to 4 students and give each group an application problem to work on | Using group work to create discussion of problems | 15 min | Peer collaboration to solidify understanding of lesson |
| Step 5: For each problem a group will be asked to write their solution on the board. Other groups with the same problem will check their work. Instructor will provide their input at the end of discussion | Creating a dialog between students and instructor to clarify lesson | 15 min | Encourage discussion between peers and instructor |

Closure/Evaluation:

Analysis:

Students should be able to use normal distribution and central limit theorem to solve problems.

Post-Class Individual Space Activities:

Work out problems assigned from the textbook.

Connections to Future Lesson Plan(s):

Next we will learn about sampling distribution of sample proportion and its application.