

Creating an Engaging Online Learning Environment

Faculty Development Workshop
January 26, 2016

Main Points that will be considered:

- What does an online classroom look like?
- How do you connect to the online classroom.
- How to communicate with students in the classroom.
- How to use PDF Annotator.
- How to use GeoGebra.
- Using other applications: R-Studio

What does an online classroom look like?

The screenshot shows an online classroom interface. On the left, there is a sidebar with 'AUDIO & VIDEO' controls and a 'PARTICIPANTS' list. The 'PARTICIPANTS' list shows a 'MAIN ROOM (20)' with participants from #10 to #21. Participant #13 is the 'Moderator'. Below the participants list is a 'CHAT - Supervised' section with messages from participants #16, #22, and #9.

The main area displays a PDF document titled '23110_Day6_9_14_Completed.PDF'. The document contains a probability problem and its solution. The problem is: 'Example 4: You have a group of students and each must do a presentation. You have 7 girls and 9 boys. You choose two students at random to do their presentation.' The solution is a probability distribution for the number of girls chosen (X). The distribution is shown in a table with columns for the number of girls (0, 1, 2) and rows for the probability P(X=x). The probabilities are calculated using combinations: $P(X=0) = \frac{C(9,2)}{C(16,2)} = 0.3$, $P(X=1) = \frac{C(7,1) * C(9,1)}{C(16,2)} = 0.525$, and $P(X=2) = \frac{C(7,2)}{C(16,2)} = 0.175$. To the right of the table, there are two vertical arrows with numbers 0, 1, 2, indicating the possible outcomes for the number of girls chosen.

Example 4: You have a group of students and each must do a presentation. You have 7 girls and 9 boys. You choose two students at random to do their presentation.

a. Create a probability distribution for the number of girls you chose.

# of girls : X	0	1	2
$P(X=x)$	$\frac{C(9,2)}{C(16,2)} = 0.3$	$\frac{C(7,1) * C(9,1)}{C(16,2)} = 0.525$	$\frac{C(7,2)}{C(16,2)} = 0.175$

b. Find the mean for your distribution.

$\mu = 0.3$

Good things to have in an online classroom

X	1	2	3	4
$P(X)$	0.31	0.22	0.15	x_4

0.32

$\sigma^2 = \text{Var}(X) = E(X^2) - (E(X))^2$ ← Variance

$\sigma_X = \sqrt{\text{Var}(X)}$ ← standard deviation

Find the Standard Deviation

$$\sigma = \sqrt{\text{Var}(X)} = \sqrt{E(X^2) - (E(X))^2}$$

X	1	2	3	4
X^2	1	4	9	16
$P(X)$	0.31	0.22	0.15	0.32

Given the following sampling distribution:

X	-16	-13	-7	11	14
P(X)	2/25	1/25	2/25	7/100	

$$1 - \left(\frac{2}{25} + \frac{1}{25} + \frac{2}{25} \right)$$

3. $P(X=14)$

a. 0.73

b. 0.08

c. 0.27

d. none of these

- Interactive questions.
- Different colored pens.
- Check for understanding.
- Highlight main points.
- Popper Questions.

How to connect to your online classroom

Using Blackboard Collaborate, you need to click on the first link.

Letty Reza:

You are invited to attend the following Blackboard Collaborate session:

Name: West - Online Classroom
Type: None
Starts: Dec 19, 2013 09:45 PM Central (CST, North America/US)
Ends: Jan 01, 2017 10:30 AM Central (CST, North America/US)

To join the teleconference only:
Call-in number: 571-392-7703
Moderator PIN: 571 935 811 27
Participant PIN: 750 188 290 563

To join the session, please click on the link below within 30 minutes of the session start time.
[Join the Blackboard Collaborate session](#)

To invite others to join the session, e-mail the following Guest Link:
<https://sas.illuminate.com/m.inlp?sid=2012056&password=M.02C5FCE93BC0E358698C01250FC3F4>

To add this Blackboard Collaborate session to your calendar, please click the following link:
<https://sas.illuminate.com/mvc?sid=2012056&miuid=D49654630A29C361A6AAD31C98FE3DEC>

To view the hardware and software pre-requisites for Blackboard Collaborate please visit support.blackboardcollaborate.com

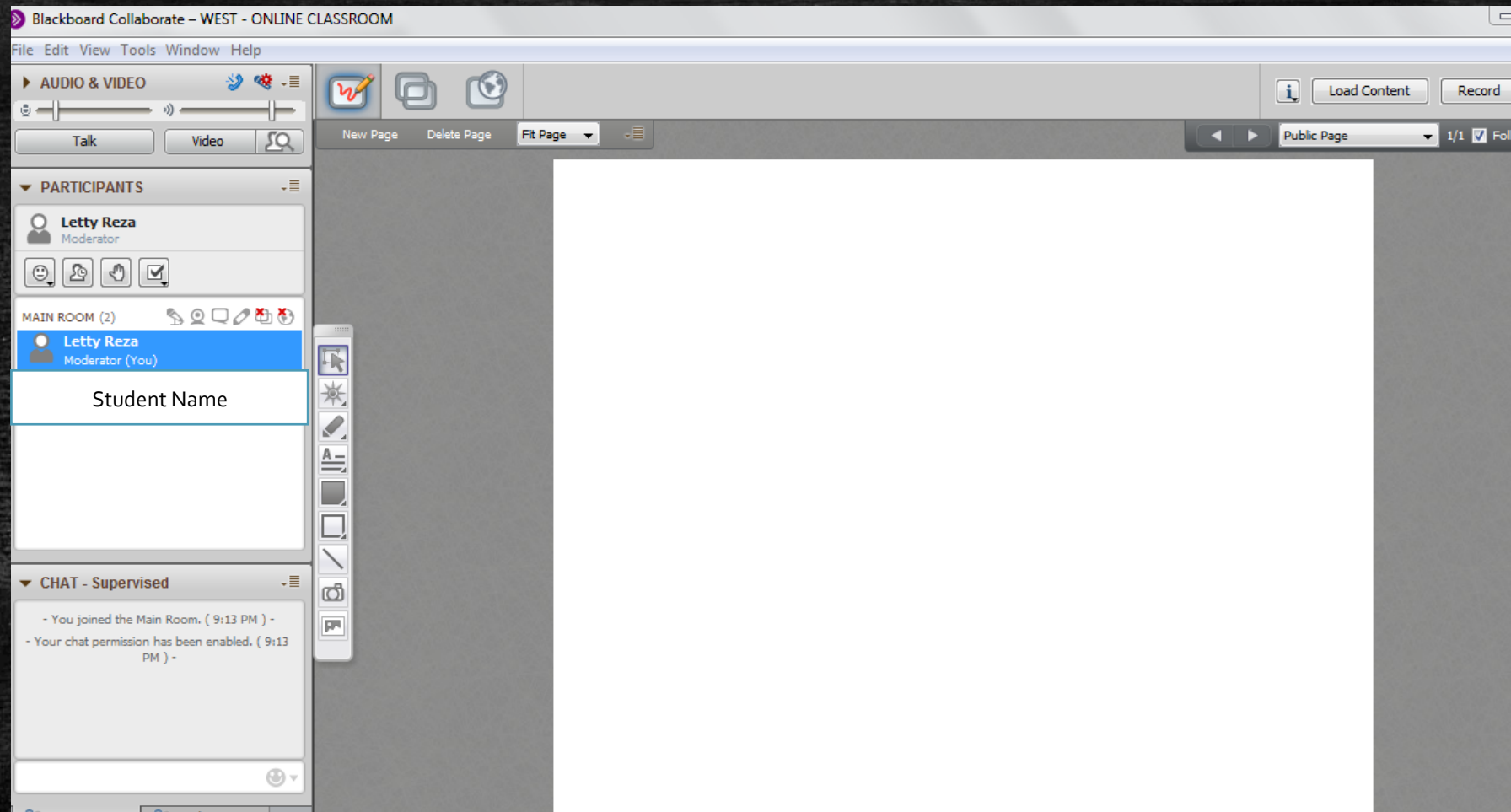
Blackboard
collaborate

Downloading Session

When the session file has finished downloading, open `meeting.collab` in your browser's Downloads folder to join the session.

If you can't open the `.collab` file, [download the Blackboard Collaborate Launcher](#).

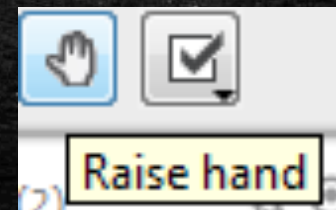
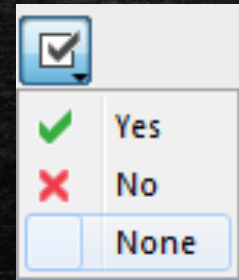
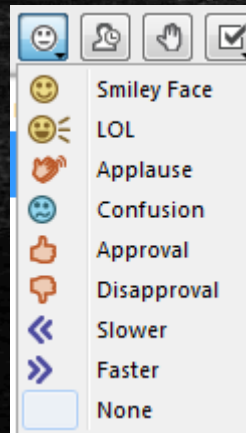
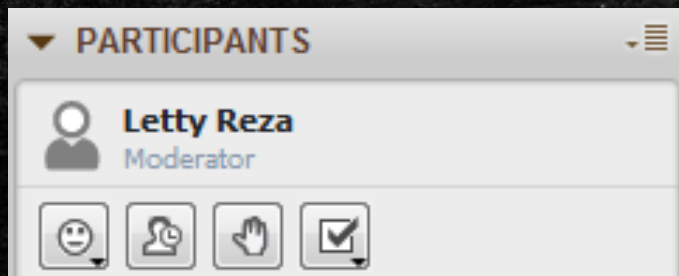
Still can't get into your session? Please [read our troubleshooting help topic](#).



Once the application downloads, you will be able to see the students that are in the classroom. Also, you can see chat box.

How to communicate with students

- The chat box can be a great tool to communicate with students and check for understanding.
- There are tools on Blackboard Collaborate that can signal whether you need to stop or elaborate on any given concept.



Chat Box

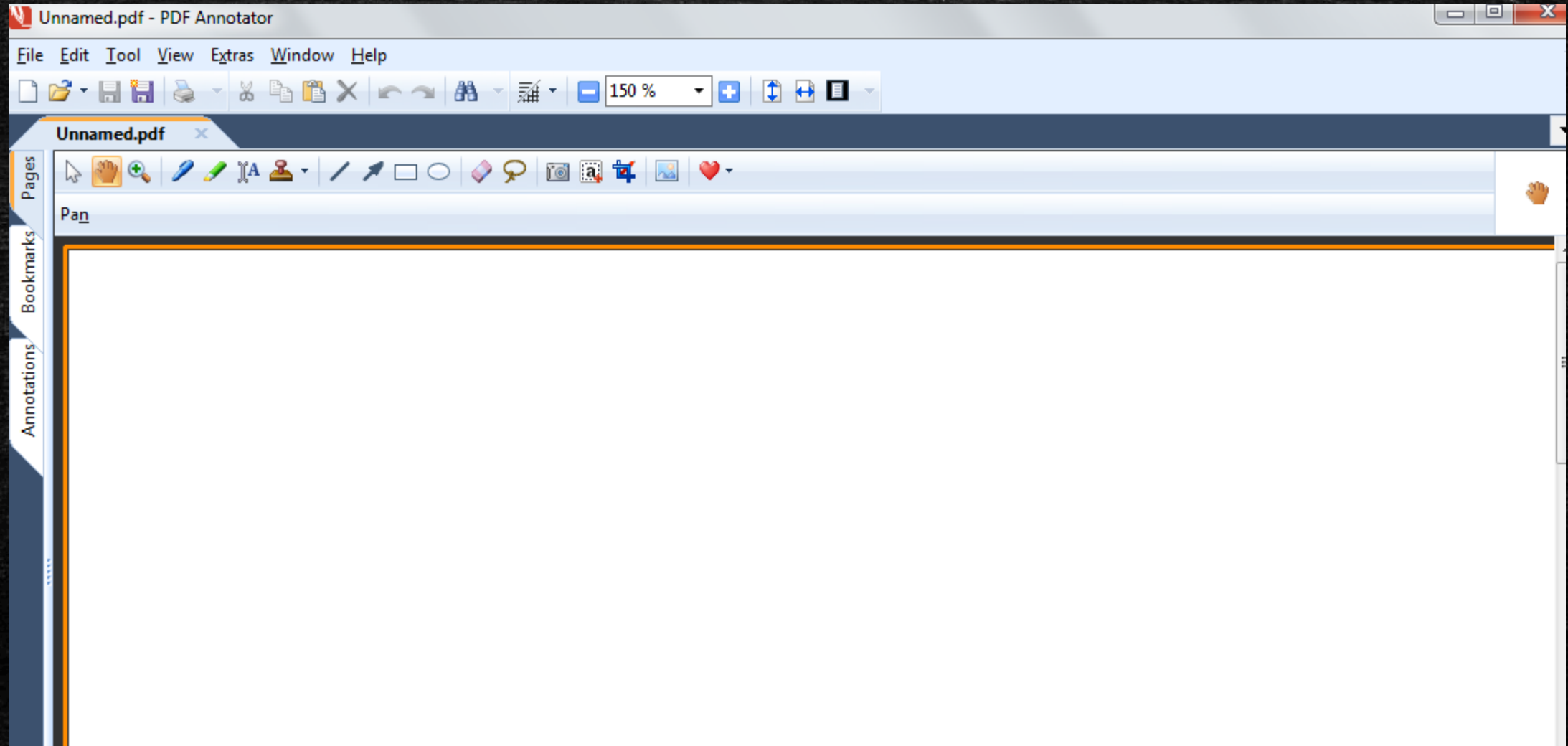
Pros

- Students may be more inclined to ask questions.
- Students can interact with the professor or students through chat.
- You can monitor ALL chat conversations.

Cons

- Students may not always ask questions material related.
- There may be some side conversations.
- There may need to be more supervision to ensure all participants are on topic.

PDF Annotator



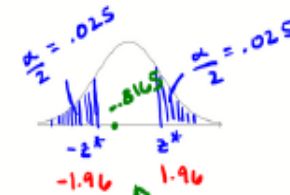
PDF Annotator best thing since paper!!

PDF annotator allows you to write in notes and also allows for students to see step by step instructions. This is one of best ways to ensure that you can stop at any point to address any concerns. By bringing in different colors you can point out different parts of problems.

$$p_0 = 0.3$$
$$n = 56$$
$$\hat{p} = 0.25$$

Test Statistic:

$$z = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0(1-p_0)}{n}}} = \frac{0.25 - 0.3}{\sqrt{\frac{0.3(1-0.3)}{56}}} = -0.8165$$



test statistic

not in rejection region

Fail to reject the null or reject the null?

Fail to Reject the null

f (+) test statistic $\rightarrow 2 * P(Z > z)$

f (-) test statistic $\rightarrow 2 * P(Z < z)$ ✓ * z is test statistic

Let's verify by finding the p-value:

$$2 * P(Z < -0.8165) = 2 * \text{pnorm}(-0.8165)$$
$$= 0.4145 > \alpha$$

You can also show videos in lecture



Showing a short video can give students a much needed break as well as connect the lecture to real world applications.