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Best Practices for Online Teaching

based on Vai, M & Sosulski (2017)

Riga 28 May 2019

Universidad de Alcalá

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Differences in online teaching

- Absence of a physical meeting space
- Time spent planning and creating online content
- Communication via mediated online channels
- Delayed feedback to students
- Emphasis on visual design of content
- Flexible schedule
- Time online instead of the classroom
- Class participation replaces attendance
- Office hours change to online web conferences

What good online learning is not

- Self-paced
- Primarily a set of recorded videos
- Anti-social
- Boring
- Devoid of an instructor

Or just giving a students a bunch of tasks

Read chapter 1

– Complete assignment 1

- Read chapter 2

– Complete assignment 2

- Read chapter 3

– Complete assignment 3

Roles of the teacher and the learners

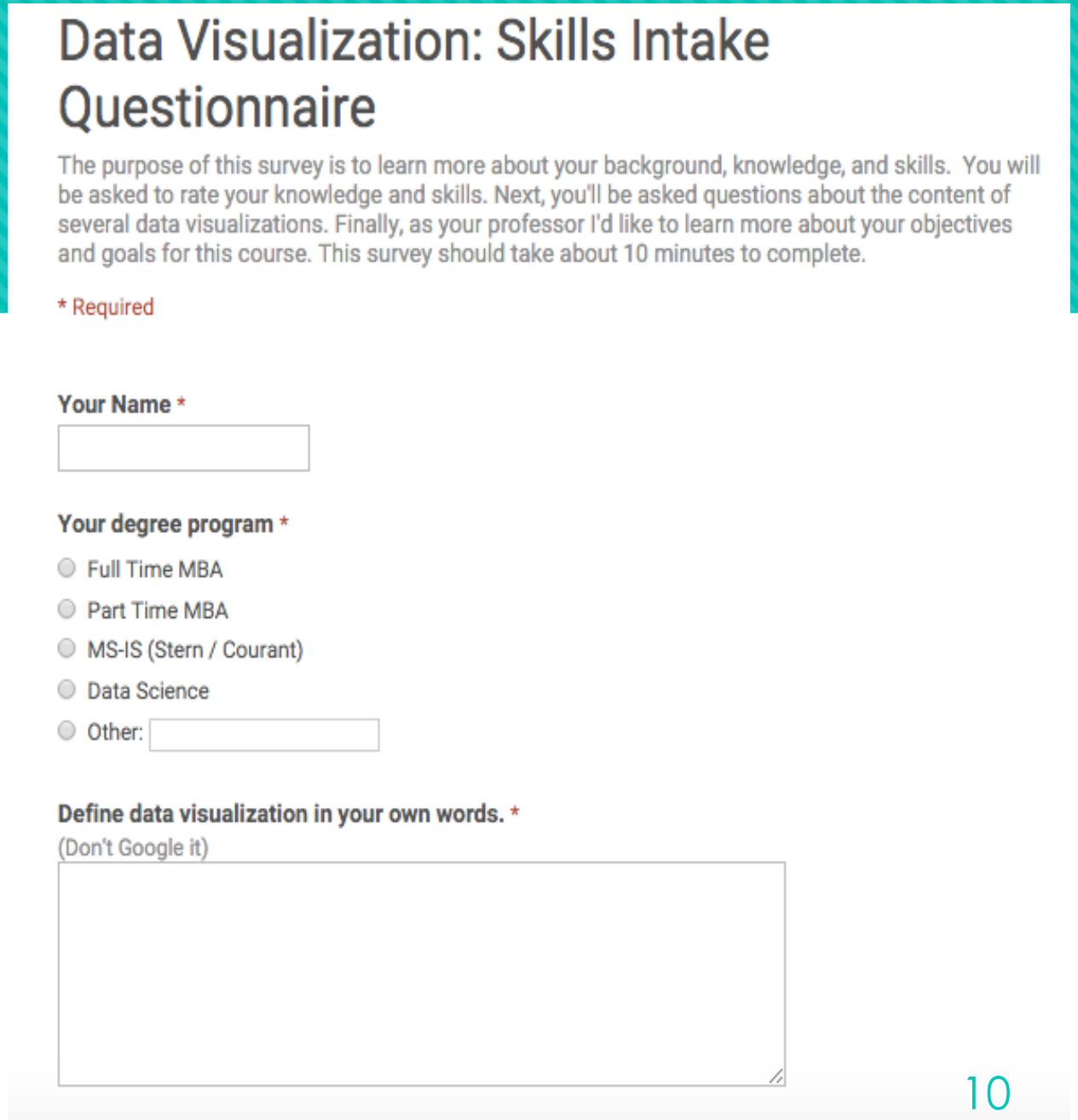
Teacher	Student
• Designing the course • Teaching in the course – Modeling – Coaching – Scaffolding – Providing feedback – Assessing student progress – Contributing to conversation	• Engaging in assignments and activities • Collaborating with peers • Asking questions of peers and the instructor • Reflecting • Sharing experiences • ….

Assess student prior knowledge to inform your course design

Learn more about your students' prior knowledge and preconceptions before class

Pre-class survey

- Students have diverse experiences and knowledge.
- Learn more about what they know and what they don't by asking a pre-course survey.
- Incorporate the findings into the class discussion and lecture.



Data Visualization: Skills Intake Questionnaire

The purpose of this survey is to learn more about your background, knowledge, and skills. You will be asked to rate your knowledge and skills. Next, you'll be asked questions about the content of several data visualizations. Finally, as your professor I'd like to learn more about your objectives and goals for this course. This survey should take about 10 minutes to complete.

* Required

Your Name *

Your degree program *

- Full Time MBA
- Part Time MBA
- MS-IS (Stern / Courant)
- Data Science
- Other:

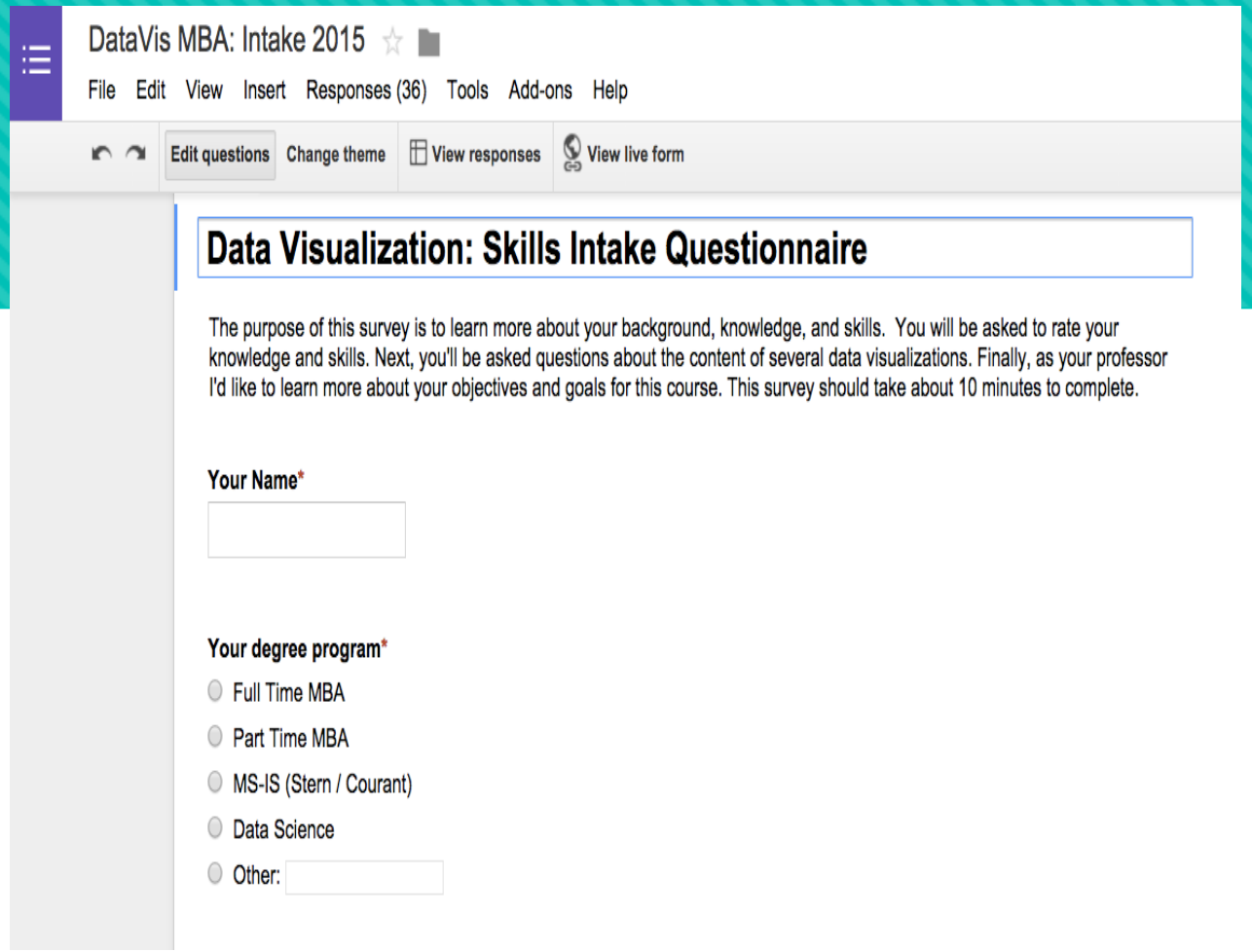
Define data visualization in your own words. *

(Don't Google it)

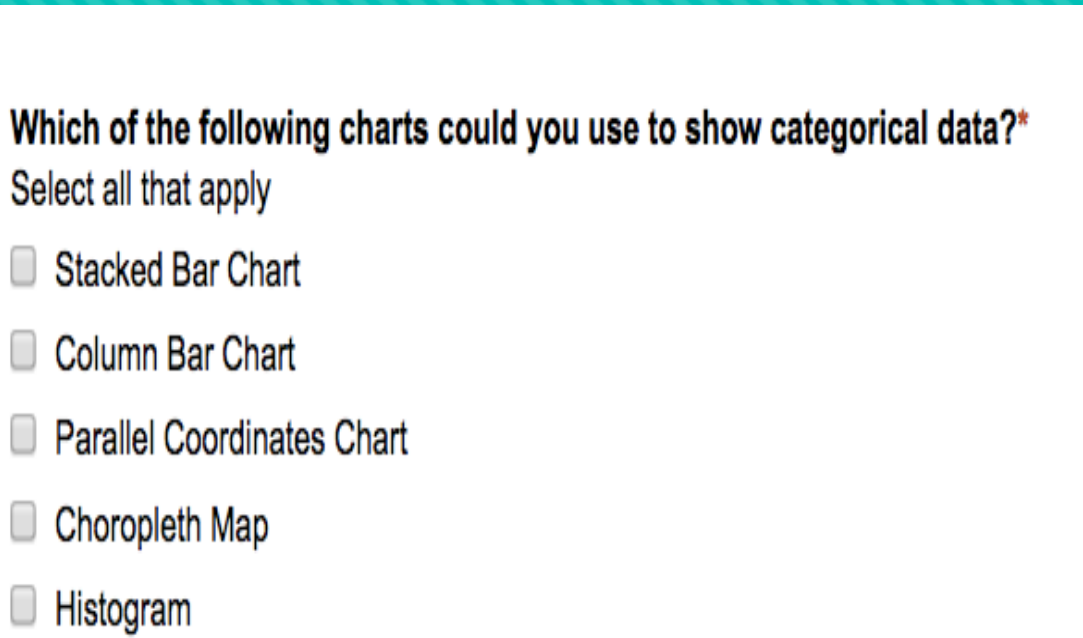
Build the survey in Google Forms

Ask questions about

- stds. Background & skills
- to assess their understandings of content



Types of questions



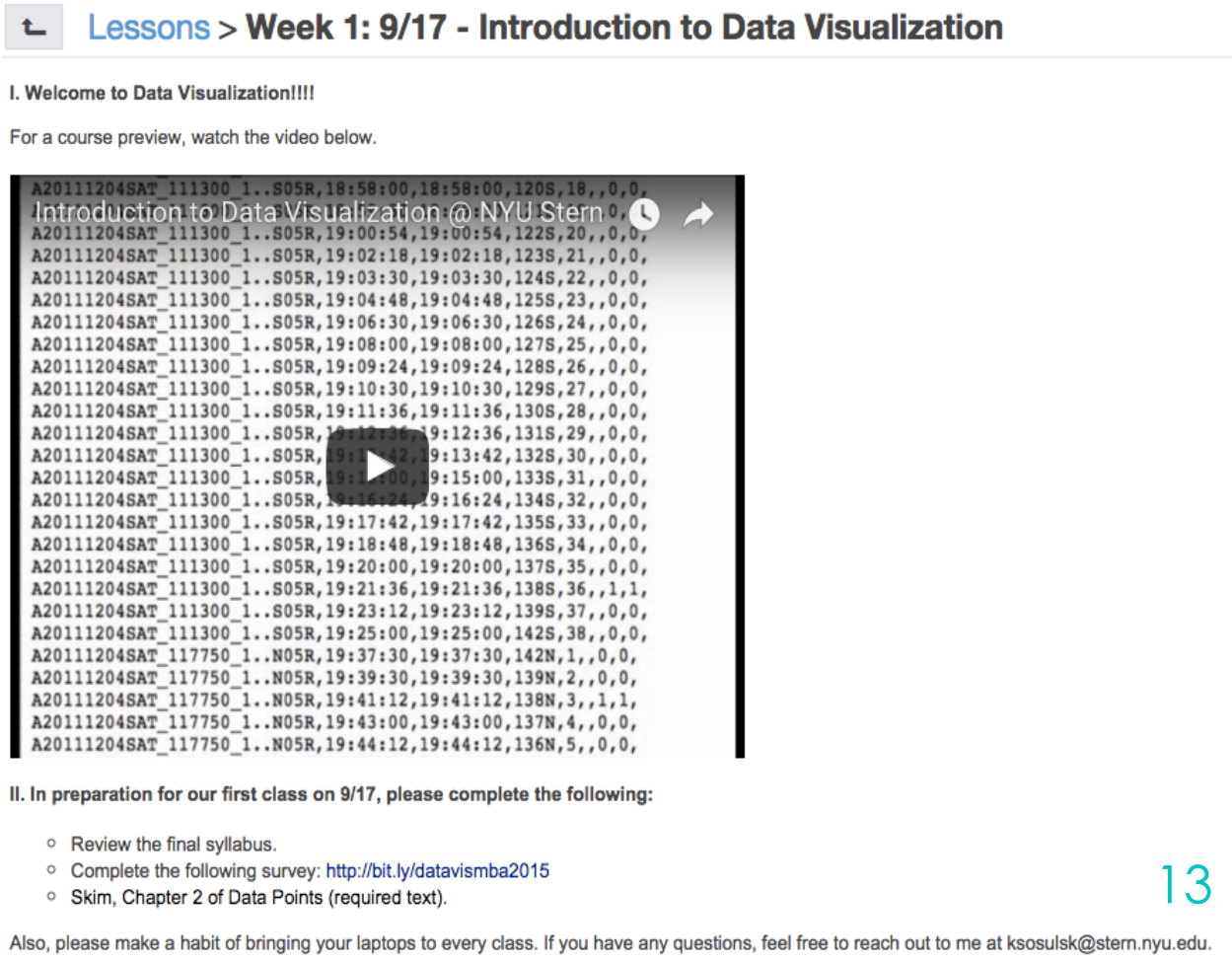
1) Perception questions: Ex.“how confident are you in using the following technologies: Python, PowerPoint, Excel?
2) Content questions: Ex., “which of the following data visualization chart types is most appropriate to show time series data: pie, line, histogram, or scatterplot?”
3) Open ended questions: Ex.,“Define data visualization.”
Open-ended questions allow students to share their understandings of the content in their own words

Distribute the link to students

Add the link to the first module.

- Send an email with the link in advance of class or during class.

Complete the following survey: → http://bit.ly/datavismba2015

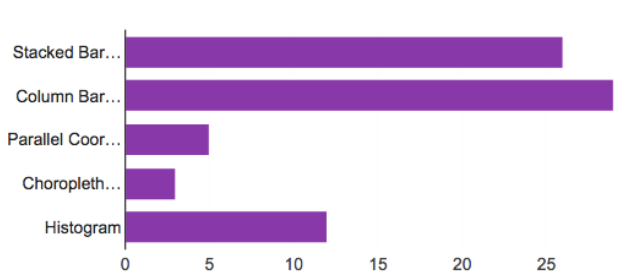


Share results

The instructor can see data presented in spreadsheet or summary form

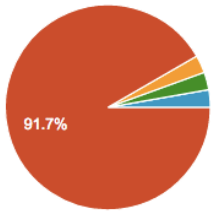
- Summary pages can show students where they rank in class

Which of the following charts could you use to show categorical data?



Stacked Bar Chart	26	72.2%
Column Bar Chart	29	80.6%
Parallel Coordinates Chart	5	13.9%
Choropleth Map	3	8.3%
Histogram	12	33.3%

Which chart type is best for displaying time series data?

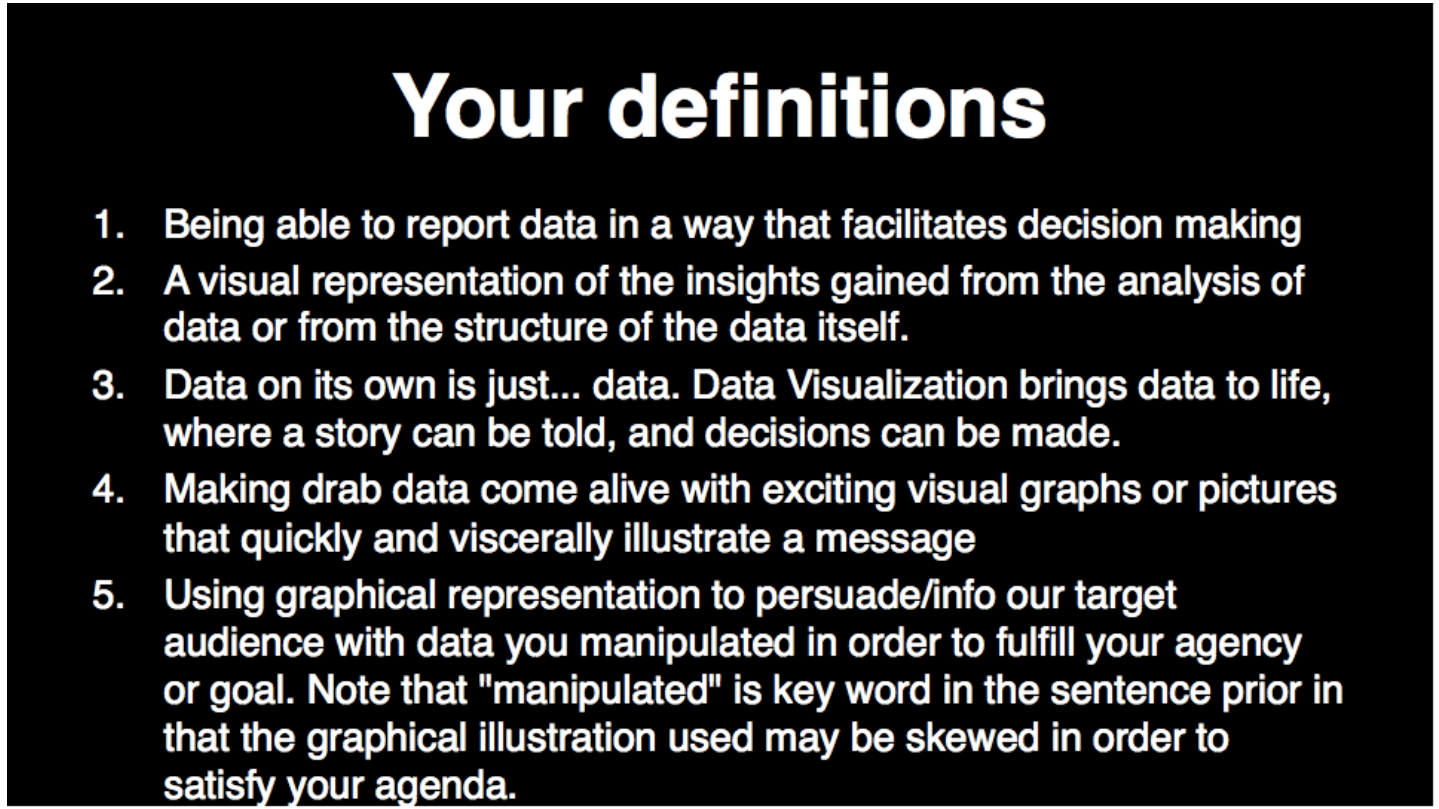


Pie Chart	0	0%
Line Chart	33	91.7%
Parallel Coordinates Chart	1	2.8%
Histogram	1	2.8%
Boxplot	0	0%
Treemap	1	2.8%

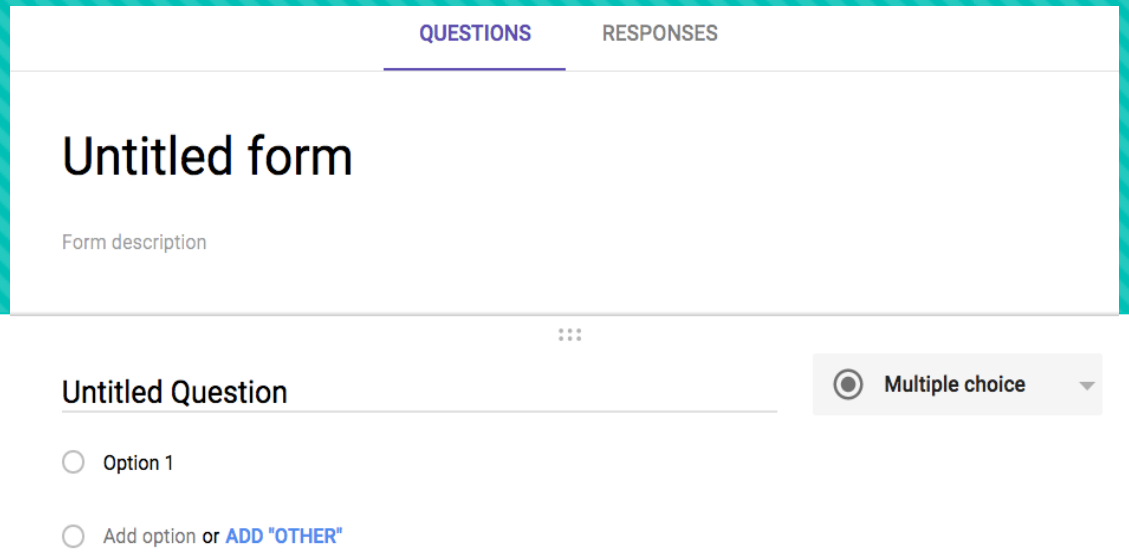
Incorporate the results

Incorporate student responses into the online content and discussion.

- Show students where they rank in relation to the class.
- Use results to modify your content.



Instructions to do it:



Go to GoogleDrive

- Select New > Google Forms
- Add title, form description, and begin entering questions.

Select from a wide-array of question types.

- When finished select > Send
- Copy URL or enter email addresses
- Share with students
- View results by selecting >

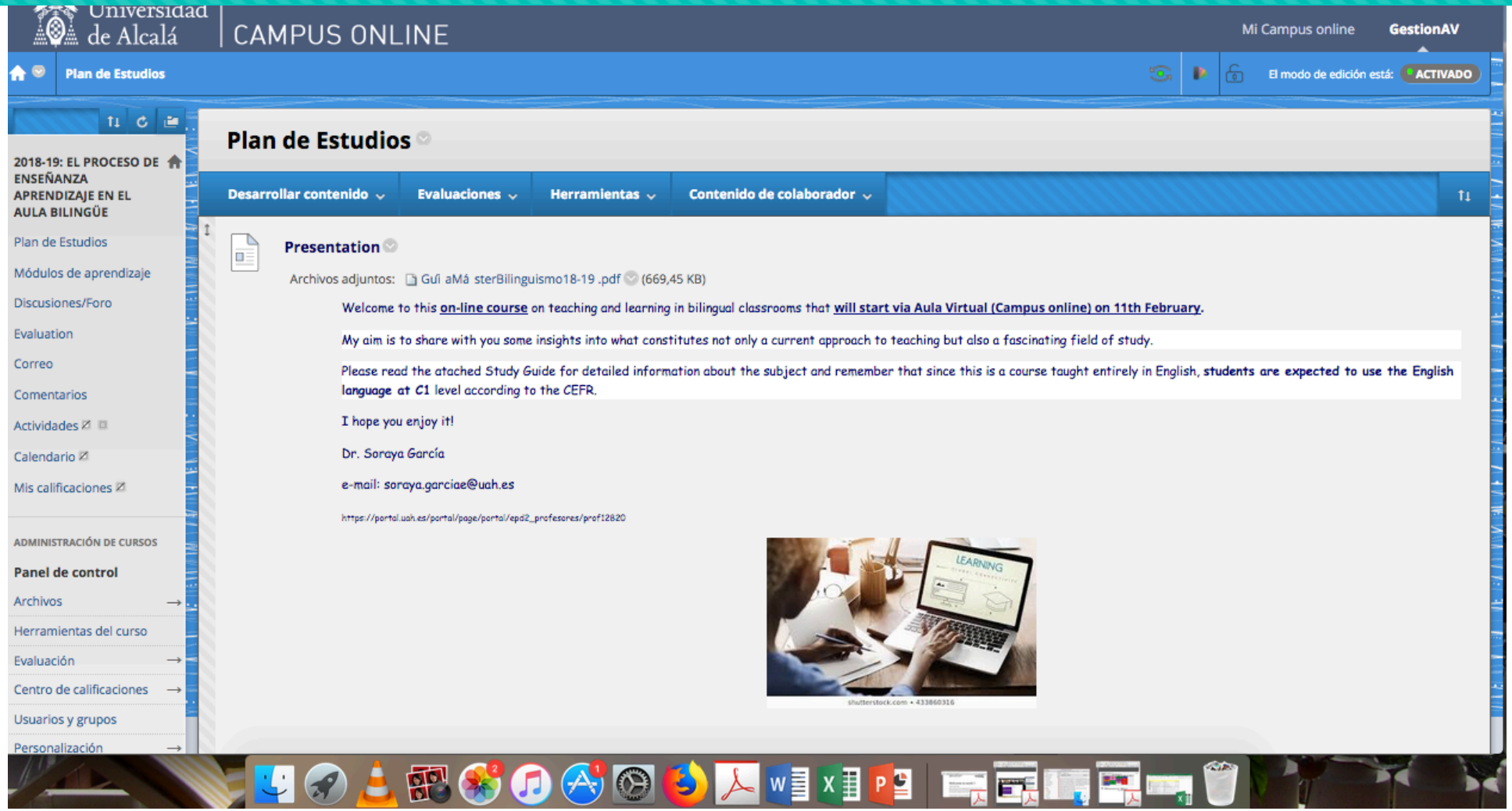
Responses on the for

STRATEGY: Instructor Presence

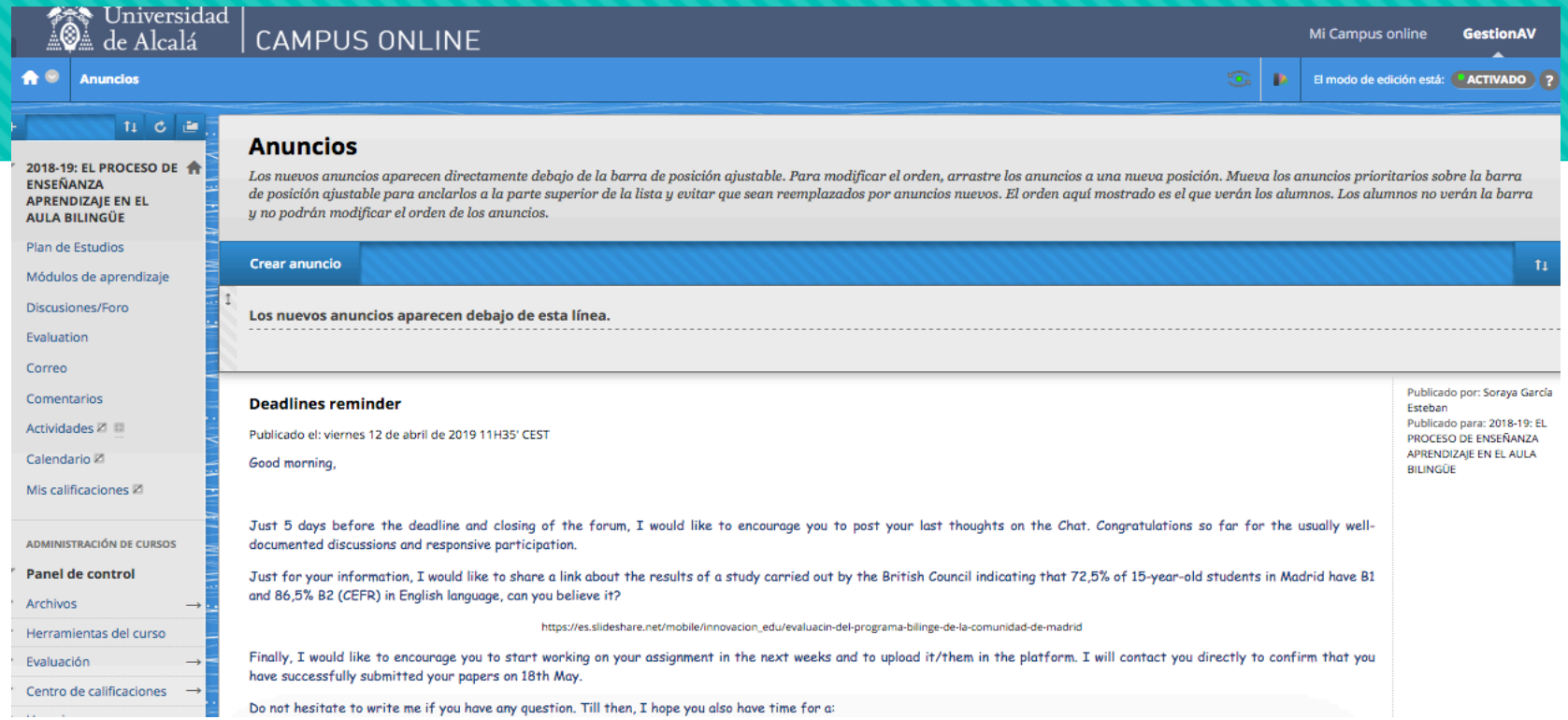
Strategies to stay present and keep students engaged

- Greet the class with a welcome message
- Post weekly announcements
- Introduce new topics
  - Deadline reminders
  - Reflections on the progress of the class as a whole
- Provide frequent feedback on student work
- Contribute to online discussions
- Advertise and promote your availability for office hours
- Respond to questions in a timely fashion
  - Clear guidelines for communication

EXAMPLE 1: Welcome



Example 2: & evolution messages



Oct 16 at 11:38am

Welcome to week 5 of Collaboration Technologies. For this week please continue reading *Here Comes Everybody*. The details are explained in the week 5 lesson.

Later this week I will be posting the final paper assignment. I will make an announcement in the course and send an email notification indicating where you can find the assignment description details.

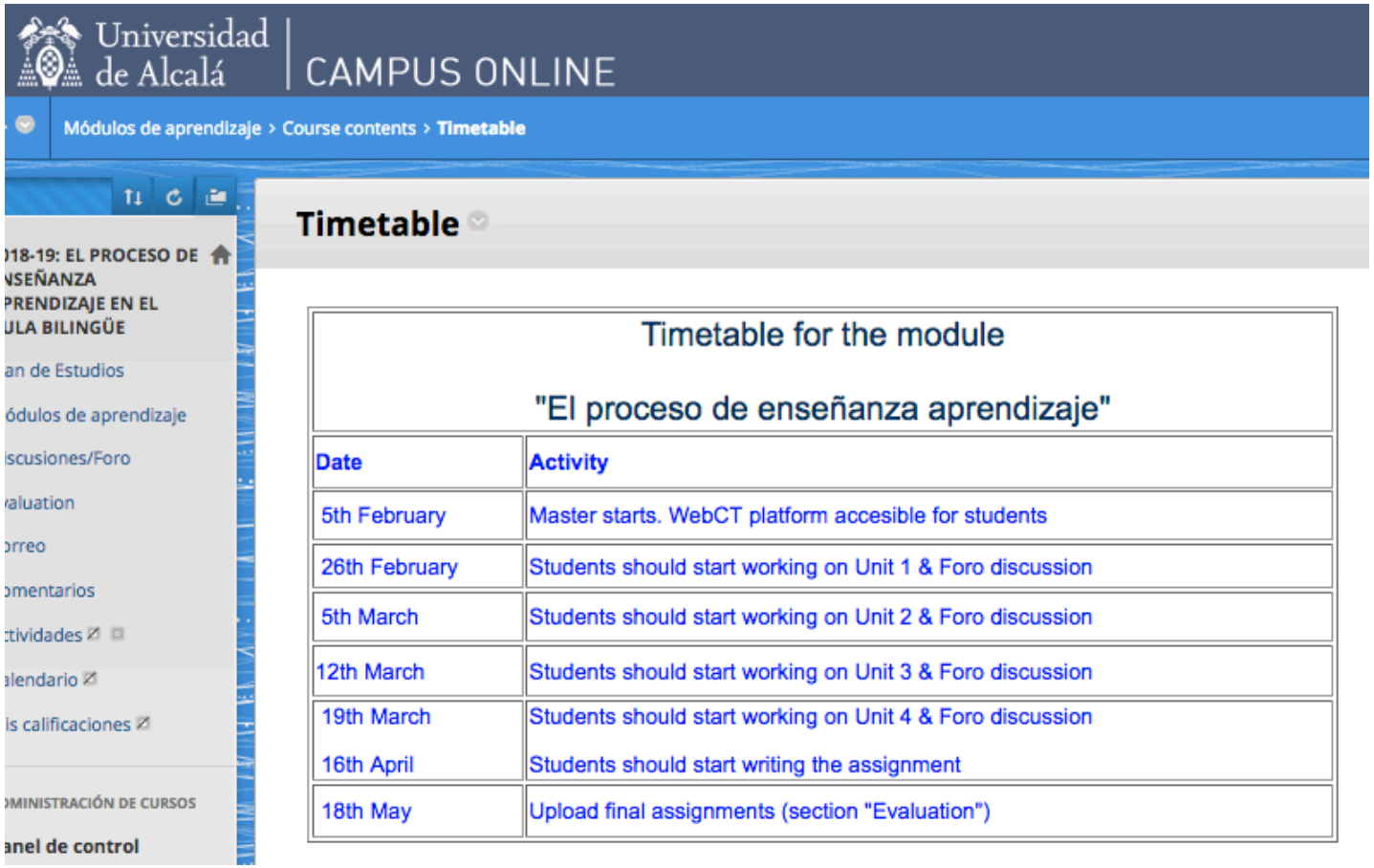
Please feel free to contact me with any questions! Happy reading!

Best,

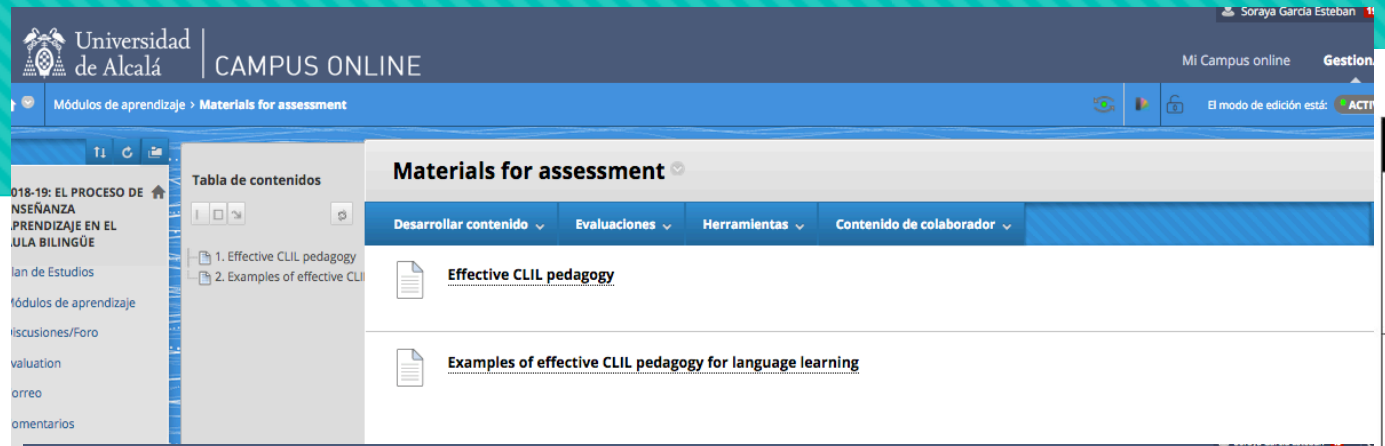
Professor Sosulski

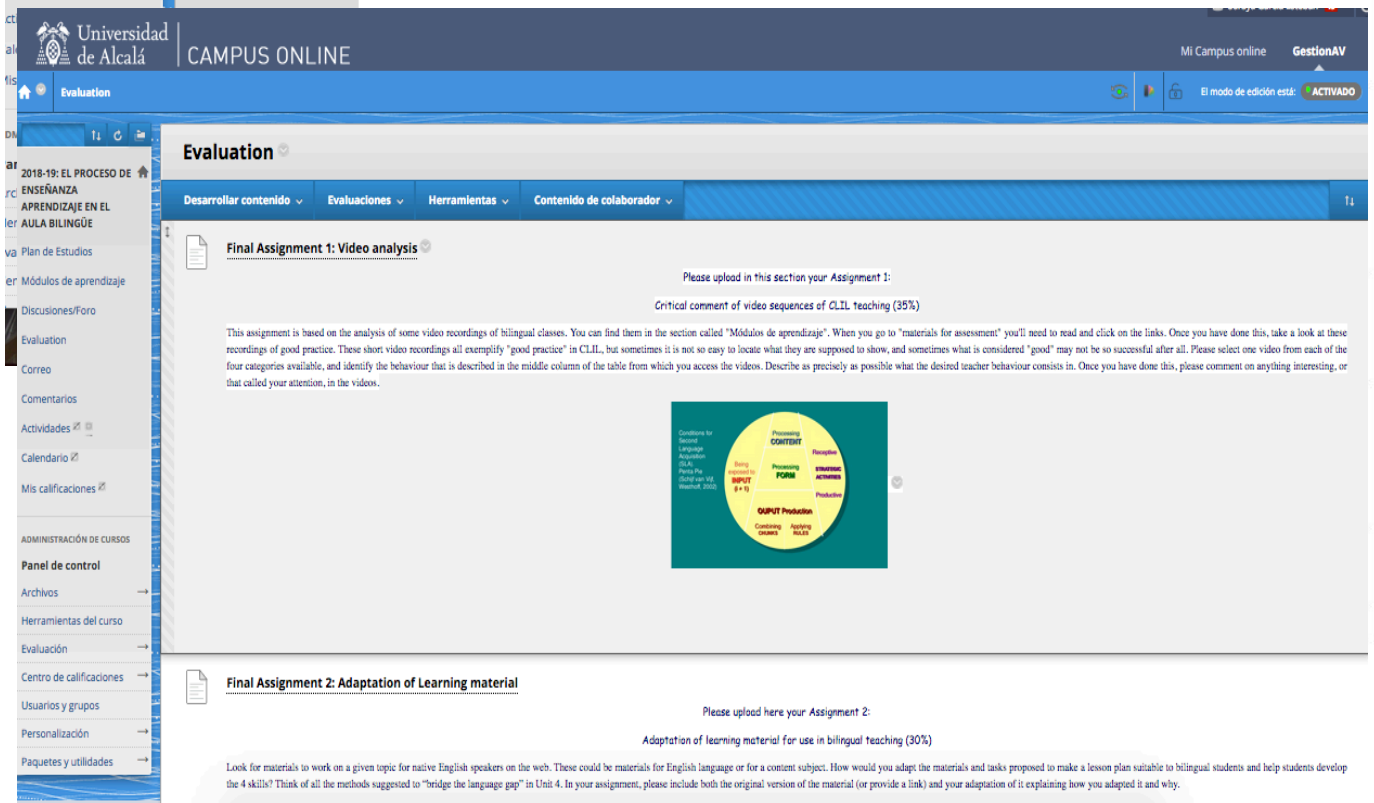
Ex. 3: Advanced organizer

Create organizer for upcoming sessions to ensure students better prepared.



Ex. 4. Assessment & feedback plan





Assessment and Feedback Plan

Week #	Learner Activities	% of Grade	Feedback Given By	Feedback Turnaround
1	Practice Exercise	0%	Automated	Immediately
	Class Discussion	5%	Teacher Peers	Throughout the week's discussion
	Online Journal	5%	Teacher	Within a week
2	Practice Exercise	0%	Automated	Immediately
	Class Discussion	5%	Teacher Peers	Throughout the week's discussion
	Group Project	10%	Teacher Peers Guest	Within a week
3	Class Online Glossary	5%	Teacher Peers	Over the course of the week
	Class Discussion	5%	Teacher Peers	Throughout the week's discussion
	Quiz	15%	Teacher	Within a week
4	Class Participation Discussion	5%	Teacher Peers	Throughout the week's discussion
	Group Activity	10%	Teacher Peers	Within a week
5	Class Participation Discussion	5%	Teacher Peers	Throughout the week's discussion
	Homework Assignment	10%	Teacher	Within a week
6	Final Project	20%	Teacher Peers Guest	Within a week
	Total =	100%		

Sosulski, K. (2011)

Ex. 5. Provide structured help sessions

Optional Online synchronous meetings

To assist in your learning of data visualization online, there are 3 optional scheduled online working sessions. These sessions are designed around your needs and questions. You are not required to attend. If you wish to attend, please sign up below. In advance of the online meeting, you will receive an email from GoToMeeting with information on how to attend.

Tuesday: 10/7: 8-9am EST: Sign up here.

Tuesday: 10/14: 3-4pm EST: Sign up here.

Wednesday: 10/15: 5-6pm EST: Sign up here.

Ex. 5. Add a communication strategy

Communication Strategy

There are several ways to contact me:

- Office Hours. I will be available for onsite office hours every Tuesday and Friday from 1pm to 3pm and online by appointment.
- By Phone Appointment. I am available for phone appointments. Please email me to schedule an appointment.
- Email. I am available by email and will respond within 24 to 48 hours. For urgent matters, I would suggest following up by phone.
- Question and Answer Discussion Forum. Always check the Question and Answer discussion forum to ask a question of the class and see if a response has been posted to your question.

PART II

Design of the online education experience
Context Tutor Content

Describe some ways that you can present or introduce content to students in an online course

What is content?

What is content?

The knowledge that an expert possesses and demonstrates to students.

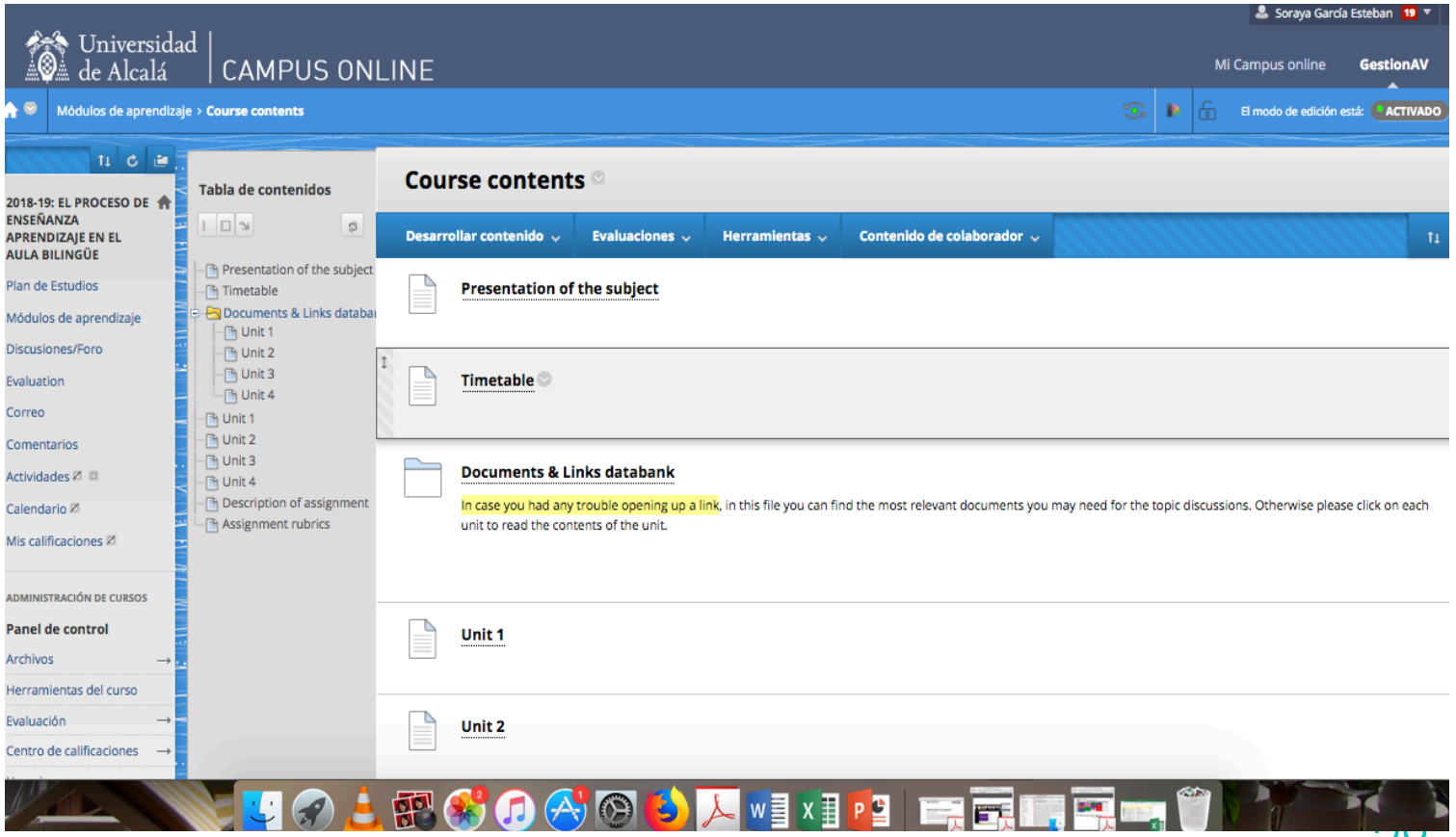
Categories

- Domain knowledge
- Heuristic strategies
- Control strategies
- Learning strategies

Organizing lesson/module contents

Organize lessons according to the timeframe of the course

Week 1: 5/23 – 5/29
Week 2: 5/30 – 6/5
Week 3: 6/6 – 6/12
Week 4: 6/13 – 6/19
Week 5: 6/20 – 6/26
Week 6: 6/27 – 7/3



Lessons or modules sequence

The sequence of lessons should be chosen to support students needs at different stages of learning.

.
Week 1: 5/23 – 5/29
- **Topic: Data Visualization as Communication**
- **Overview**
- **Demonstration**
- **Exercise**
- **Discussion**
- **Advanced Exercise**

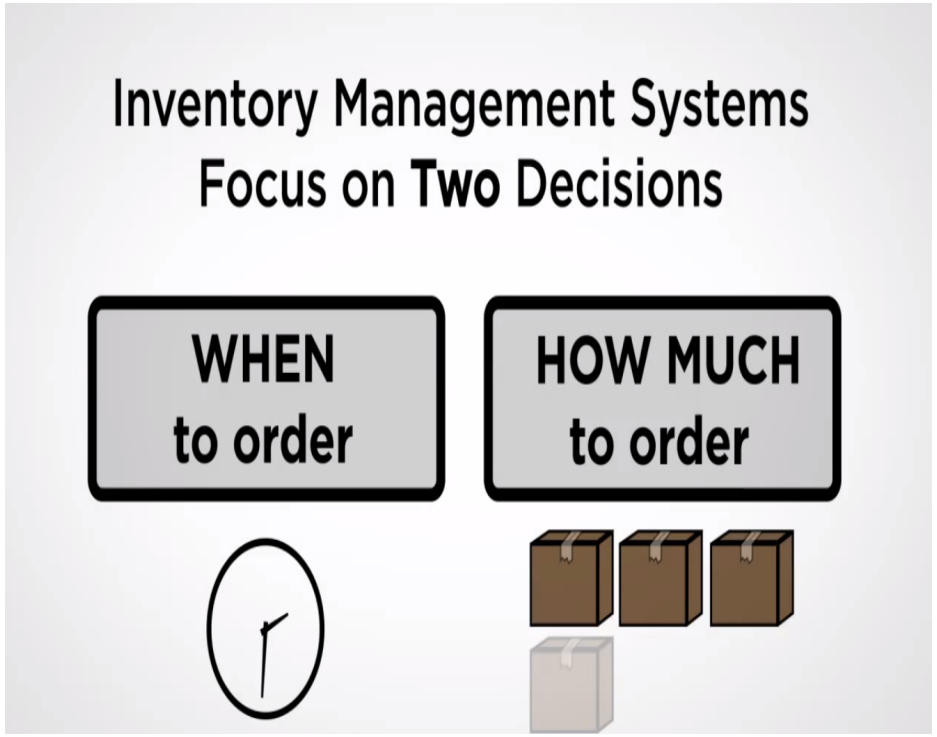
Week 2: 5/30 – 6/5
Week 3: 6/6 – 6/12
Week 4: 6/13 – 6/19
for the content

Lessons: A basic structure

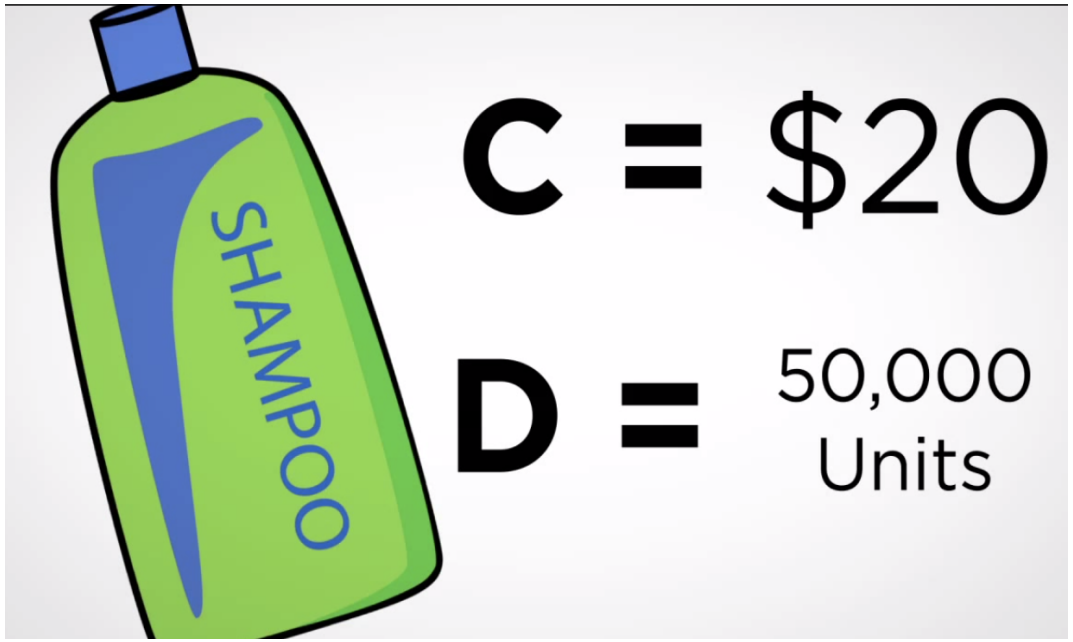
1. Introduction to new concept
2. Demonstration of new concept
3. Application of new concept

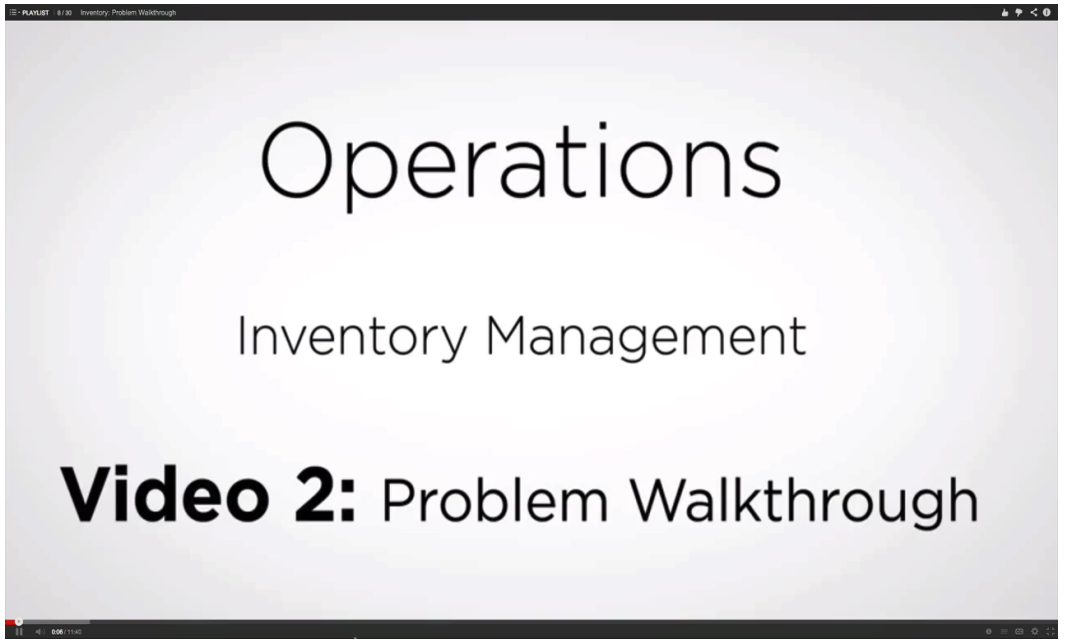
Example 1.1. Introduction to new concepts

Topic introduction



Example 1.2. Introduction to new concepts
Problem – solution demonstration





Example 1.3. Introduction to new concepts

Call to action – student assignment

Assignment:

What is the inventory level at which you would you place the order?

Lead Time: 1 Week

Weekly Demand: 1000 Units

2. Presentation of content

- Many lecturers propose the development of robust video lectures
- Short videos can replace long lectures.
- However, how do we know if students are watching the videos?

Why use video / resources in your course?

- Introduction to some concept or phenomena
- Demonstration of problem solving
- Illustration of a technique or approach
- Inclusion of alternative viewpoints or perspectives
- Evaluation of the source (the video content itself)

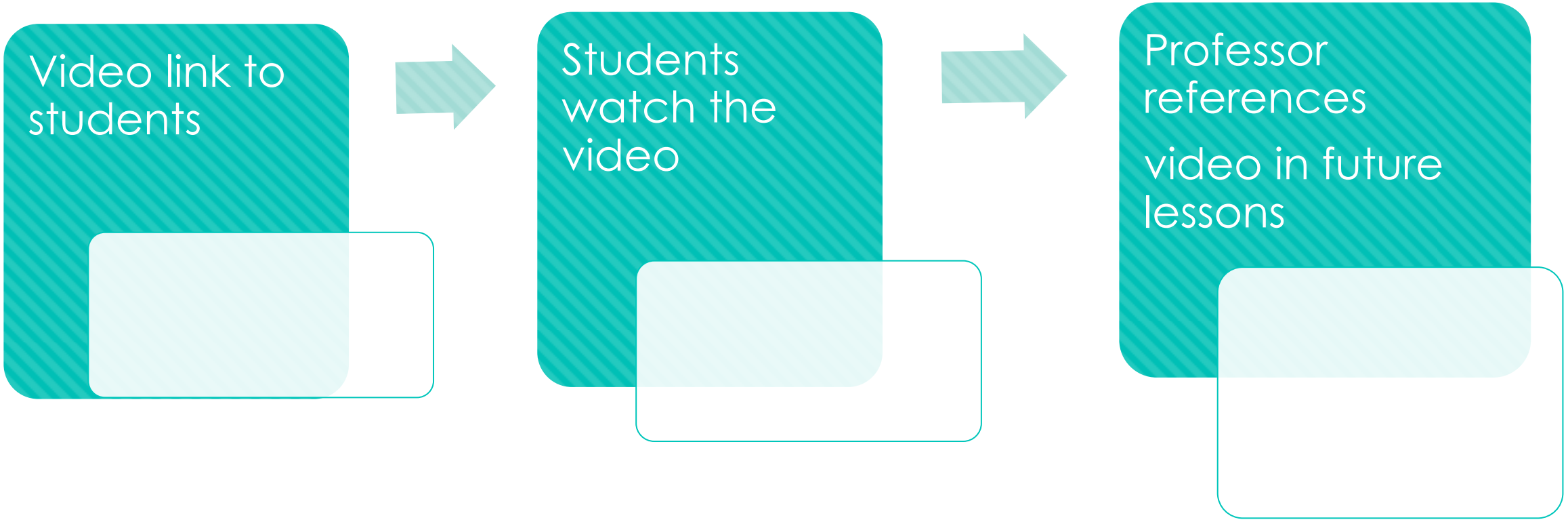
What is the expectation when assigning a resource

Example 1	Example 2
Watch these three videos (link 1) (link 2) (link 3) in advance of class 3	Watch these three videos (link 1) (link 2) (link 3) in advance of class 3
	As you watch the videos consider the following questions: Q1, Q2, & Q3.

What is the expectation when assigning a resource

Example 3	Example 4
Watch these three videos (link 1) (link 2) (link 3) in advance of class 3.	Watch these 3 videos (link 1) (link 2) (link 3) in advance of class 3.
As you watch the videos consider the following questions: Q1, Q2, Q3.	As you watch the videos consider the following questions: Q1, Q2, Q3.
Draft a one page summary of your responses to the questions.	Draft a one page summary of your responses to the questions.
	Submit your responses before class 3.

Use case #1: The black box approach



The educational challenges

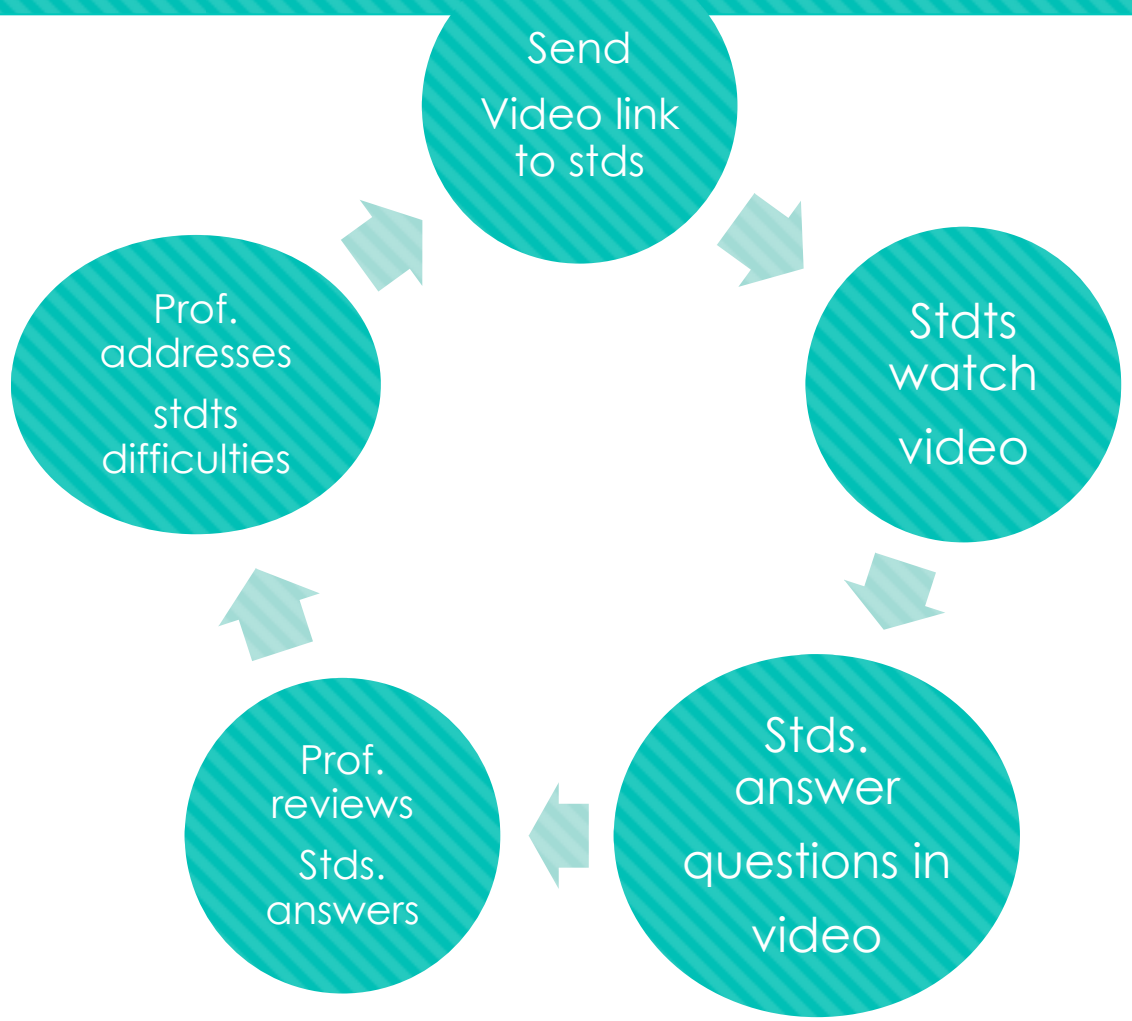
- Preparation
- Understanding
- Integration

How can we address these challenges?

Preparation → Required deliverable

- Understanding → Question / prompts / tests
- Integration → Discussion

Use case #2: The transparent approach



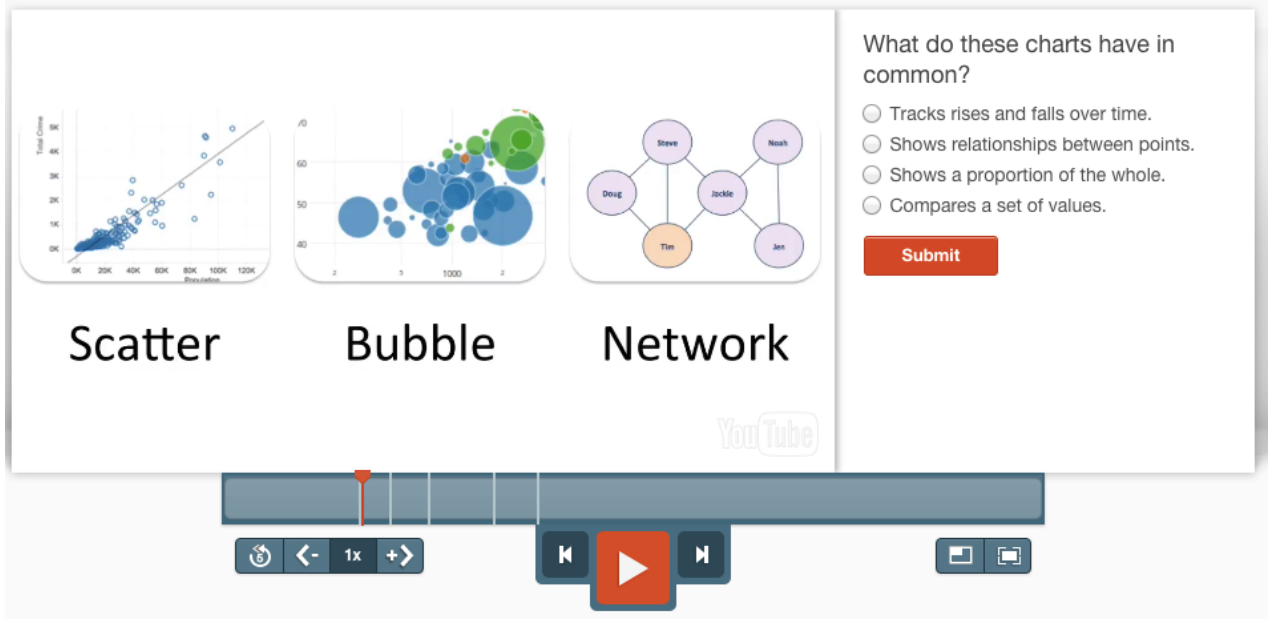
Insights on student preparation and their understandings as they watch the videos

Interactive videos provide:

1. opportunities to actively participate in the video lecture by responding to question & discussion prompts
2. robust analytics that show data by student including responses to questions, viewing time, date / time viewed,
3. the ability for students to rate the video &
for tutors to incorporate the results into their teaching
4. opportunities to comment and generate discussion around the content and concepts viewed

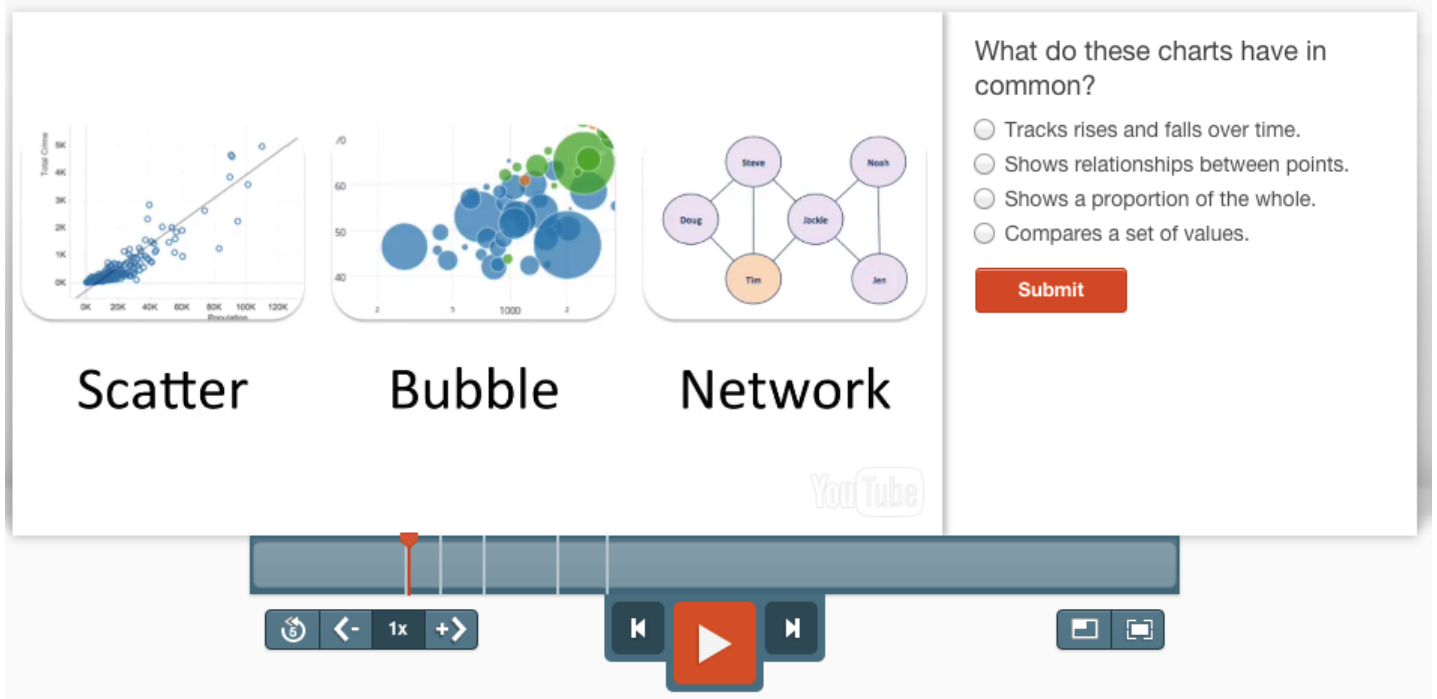
Interactive Video

Use programs like Zaption to create interactive videos guided with quiz questions and information.

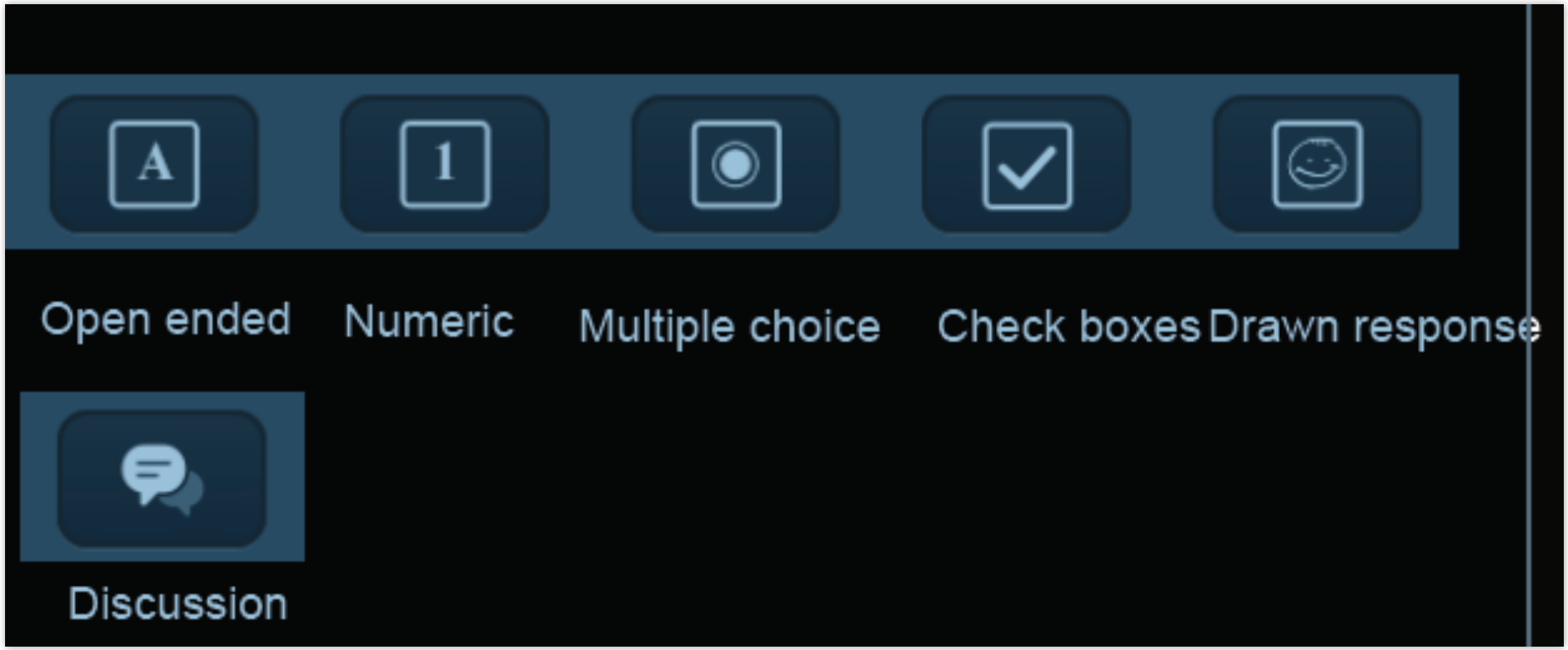


How do students interact with the video?

- While a student is watching a video, a question or prompt to discuss the topic appears on the screen, pausing the video.
- Students can then respond appropriately, after which, the video resumes.
- Feedback is provided to the student based on their response.



Types of questions & prompts

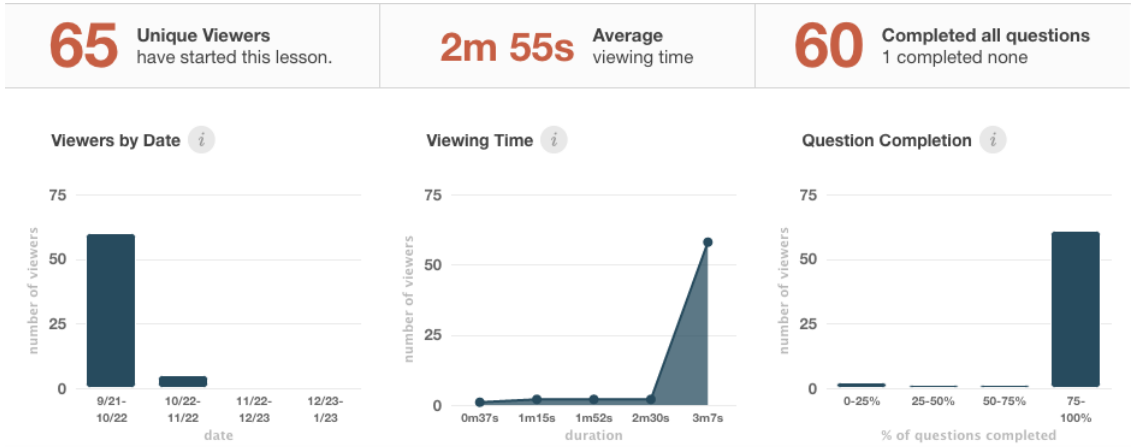


How do you know that students have participated?

For each video:

1. the number of unique viewers,
2. the average viewing time,
3. the % of stds. dents who completed the questions

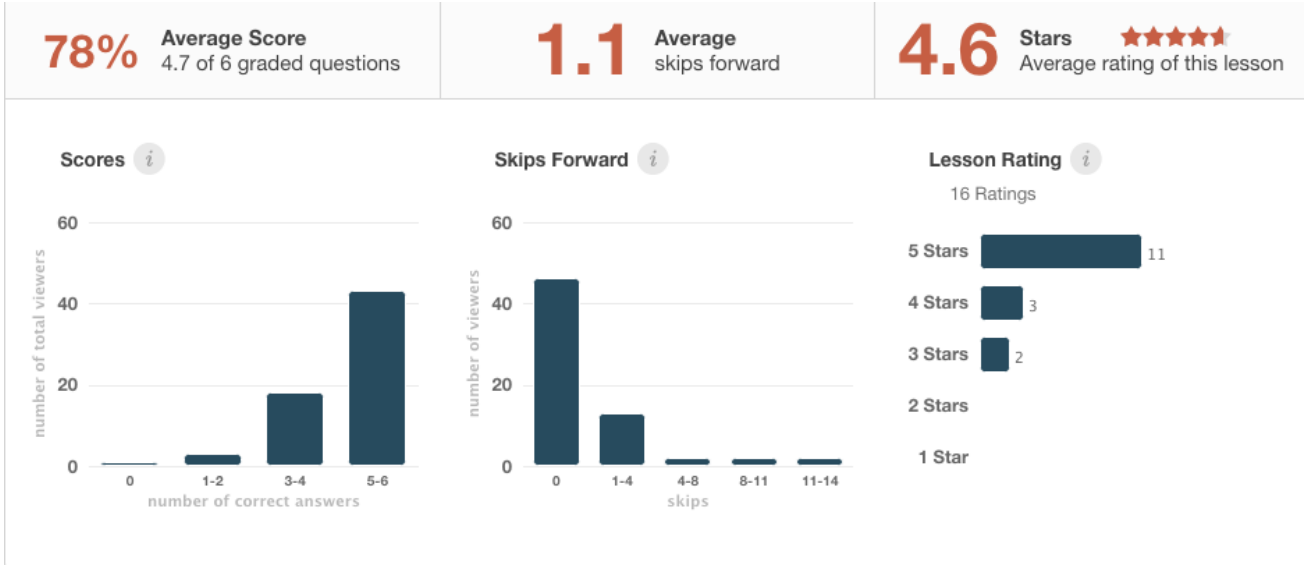
is available through Zaption's analytics interface.



How do you know if students participate?

The prof. can see:

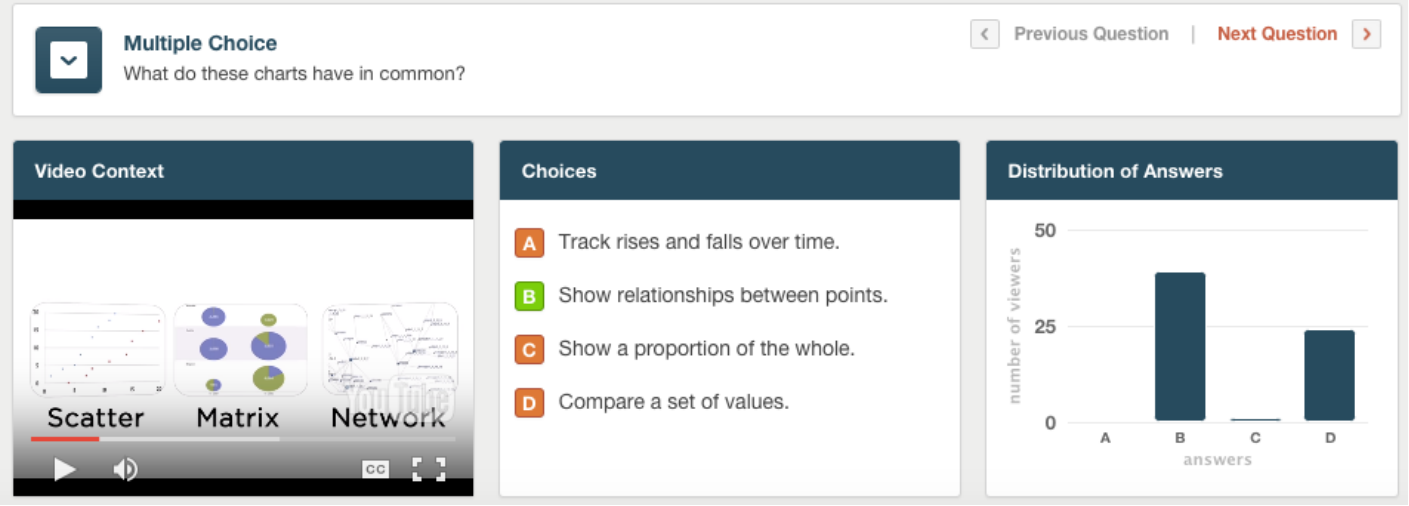
1. the average score &
2. the average N° of "skips forward" that the students made during the video, &
3. the average rating students gave the video from 1 to 5 ****



Can you see the data by student?

Yes, in addition to summary data, there are data that the prof. can view by stds.

- The analytics provided by student are powerful.
- For each student you can see the response by question, the question responses with the correct response highlighted, and the distribution of answers by the class.



How I can use this data?

- To inform my weekly minilecture.

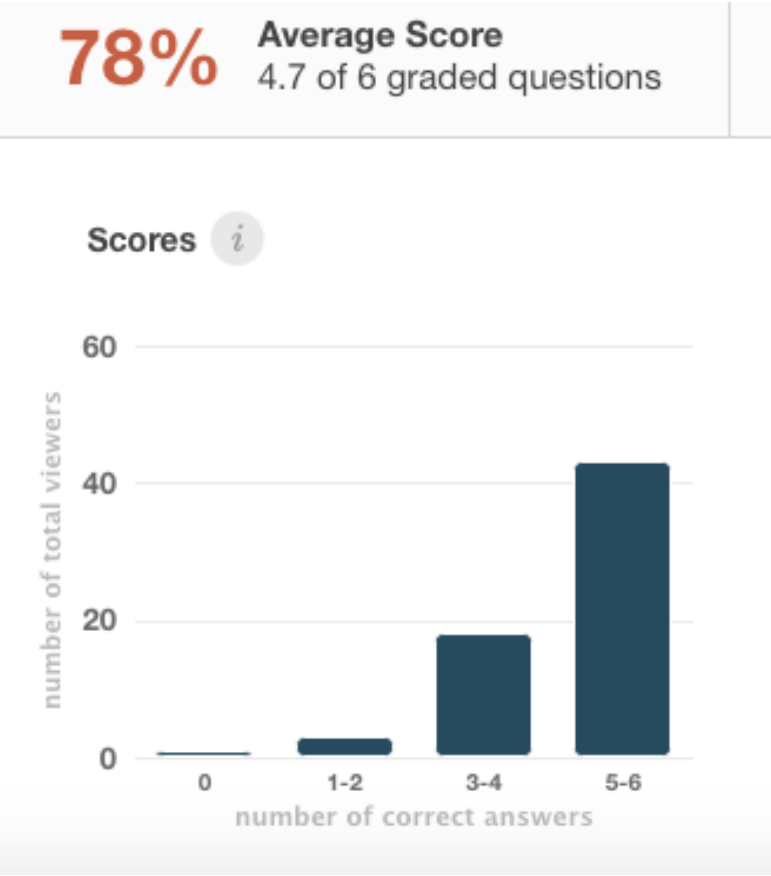
With slides to show how well the class as a whole did on the questions asked in the video.

- To customize my lecture and identify areas

That may need more clarification.

- It signals to students that I am engaged in the

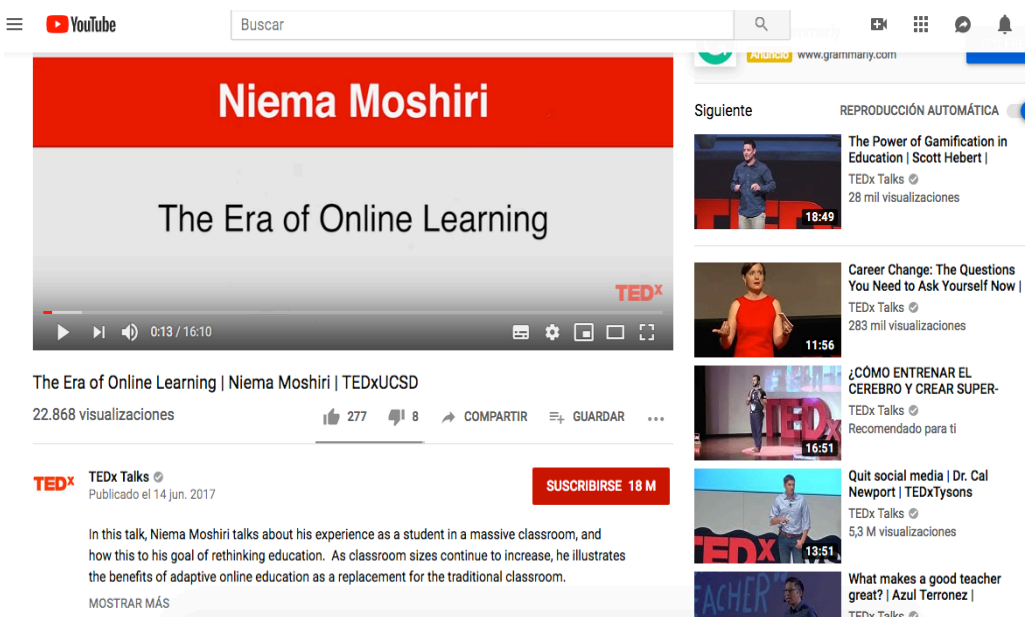
Learning & monitoring their progress.



STRATEGY: Present ideas or concepts in diverse ways using open content.

Open Content: Ted Talks

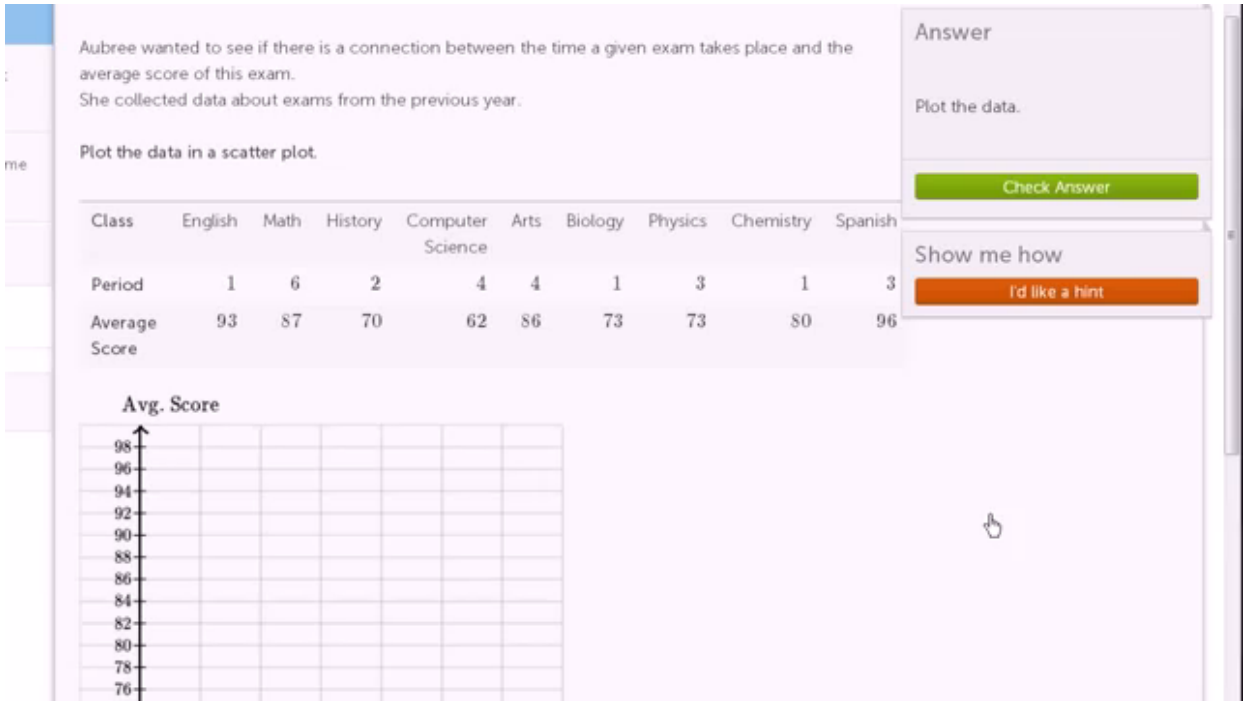
- For new topics/concepts consider providing multiple explanations and/or diverse perspectives.
- Share multiple viewpoints in a few three to five minute videos
- For example, share the voices of data scientists, & information designers.



Example 2. Open Content:

Khan Academy

- Has a rich set of resources for math, computing & arts.
- Resource for students to review statistical models such as regression or constructing scatter plot. (See the example)
- Good for demonstrations and tutorials.



Example 3. Distributing content to students

- Embed in a lesson in your LMS
- Share the link with students in your syllabus or via email.

Exercise A: Observing and commenting on the use of data visualization in a presentation

Task	Hans Rosling is a professor of international health and director of the Gapminder Foundation. Using at tool called Trendalyzer, Rosling runs an animation that shows the changes in poverty by country. He does this during a talk that first draws you in deep to the data and by the end, everyone is on their feet applauding. Watch this video below and answer the questions that follow: www.youtube.com/watch?v=jbkSRLYSojo
Questions	◦ Describe those attributes of Hans Rosling's presentation that you find particularly effective. Explain why. ◦ What questions are being addressed by the presentation? ◦ What data is used to create the visualization? ◦ What visual cues are used to represent the data?
Reading	**After completing the exercise, read Yau, Chapter 1.** The first chapter aims to provide you with an argument for creating meaningful visualizations. You'll notice Yau references Hans Rosling's infamous presentations.
Submission	Provide answers to each of the questions.

STRATEGY:
Use synchronous communication

Adding real-time teaching to your class…

- Office Hours
- Guest speakers
- Student presentations
- Class make-up
- In-class substitute
- Tutorials
- Study sessions
- And much more…

Use web meeting

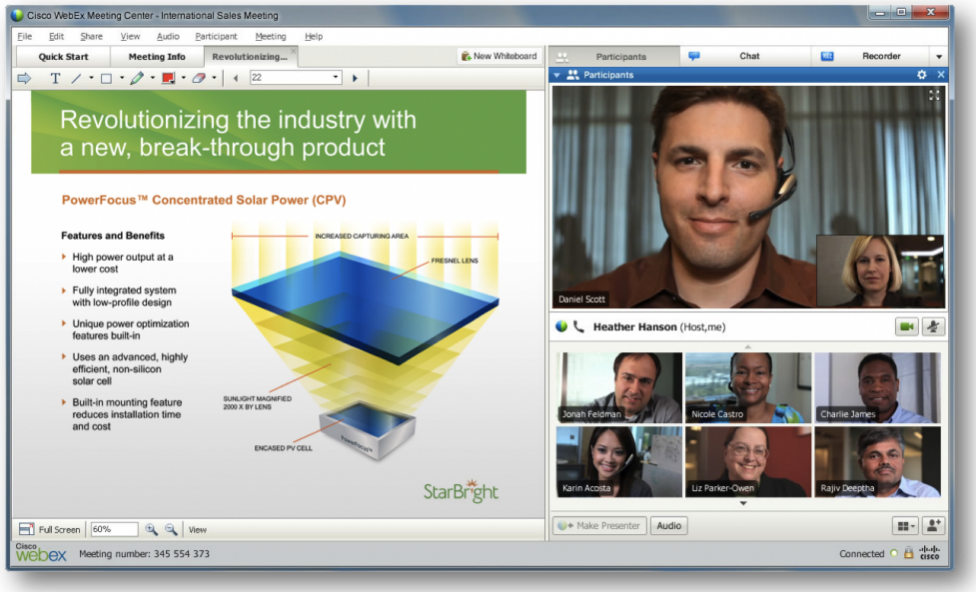
- Virtual method when f2f interaction is limited.
- Each student has a voice
- Allows profs. & students meet online atthe same time.
- Tools:

WebEx,

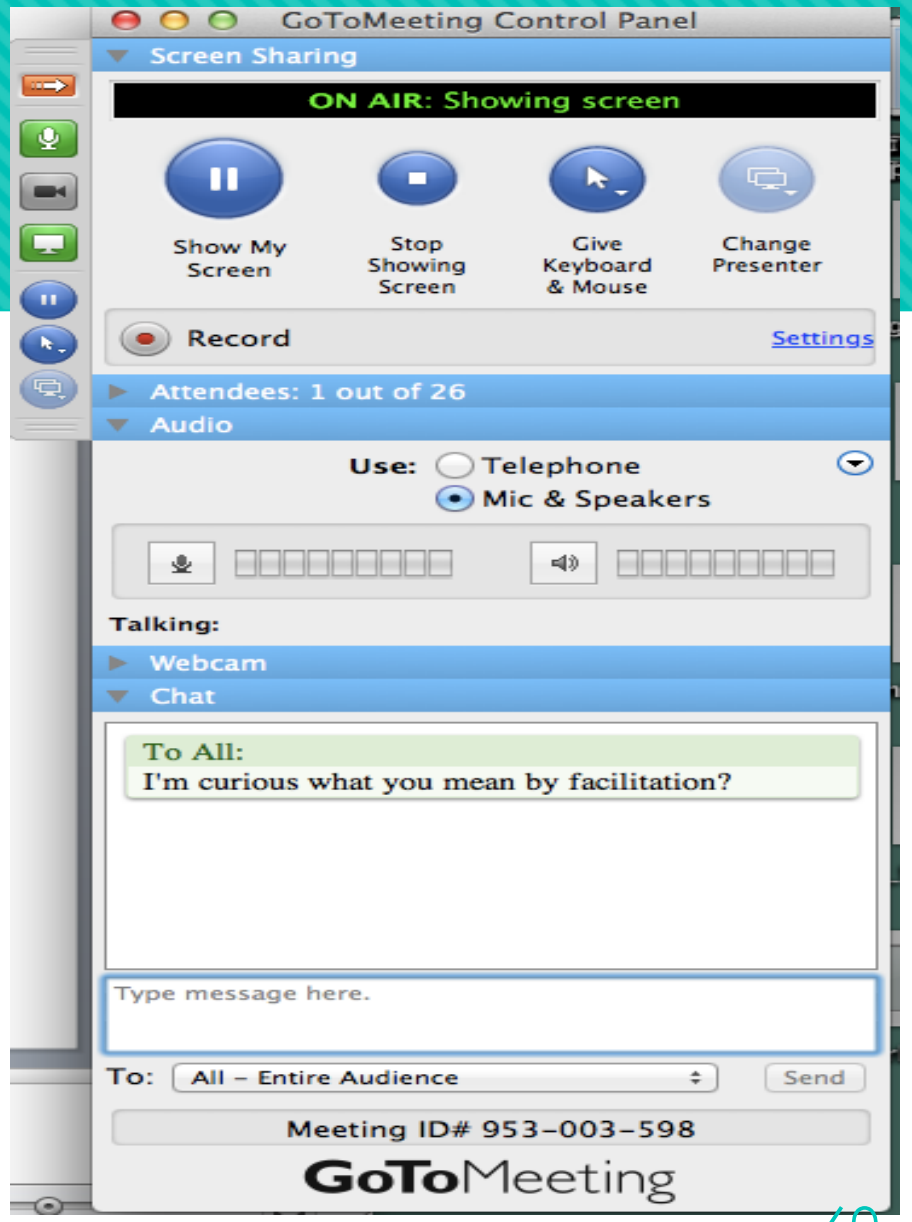
GoToMeeting,

Adobe

Connect

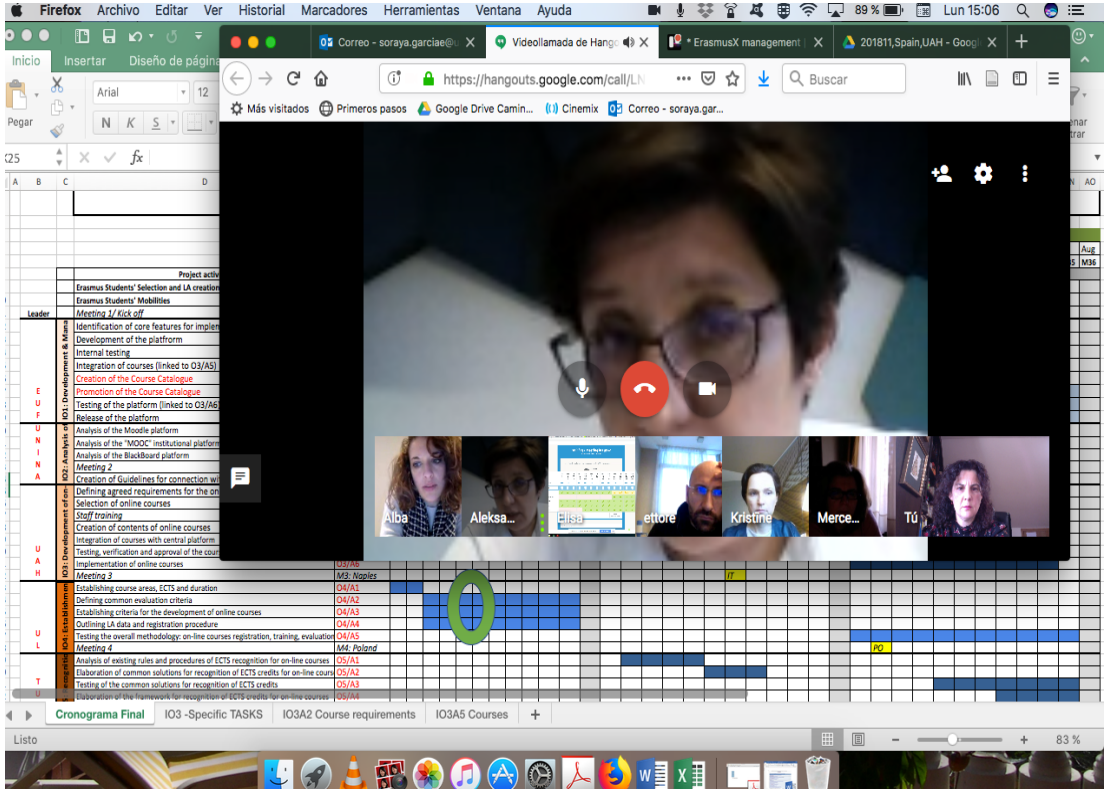


Online Presentations led by tutor &/or students



How to…

- Arrange a time/date with participants to have the web meeting
- Make sure you have a secure connection and the same program to engage in the meeting
- Conduct various agenda through the platform (e.g. interactive class, discuss an idea, work through a presentation, etc.)

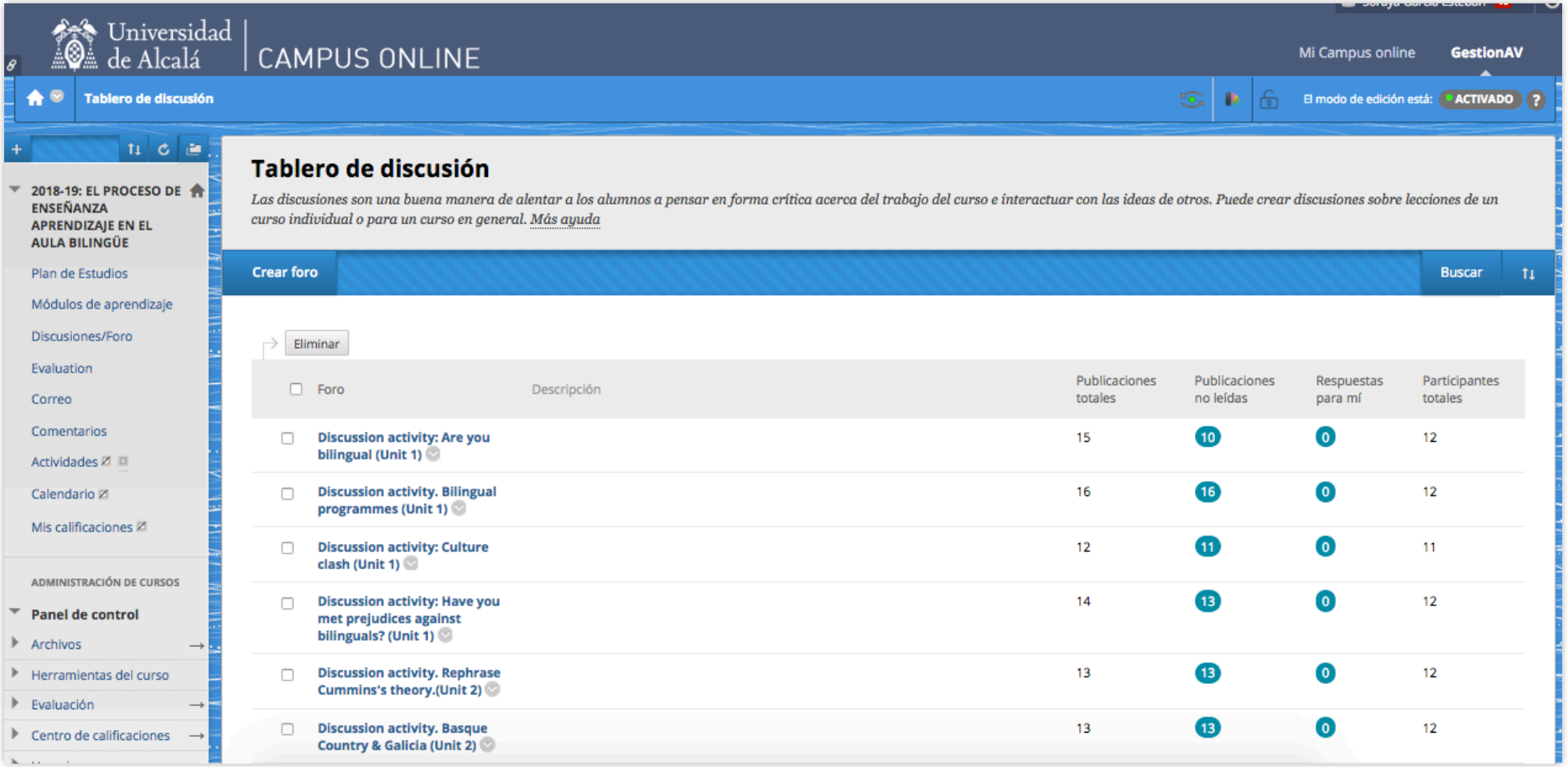


Establish communication guidelines

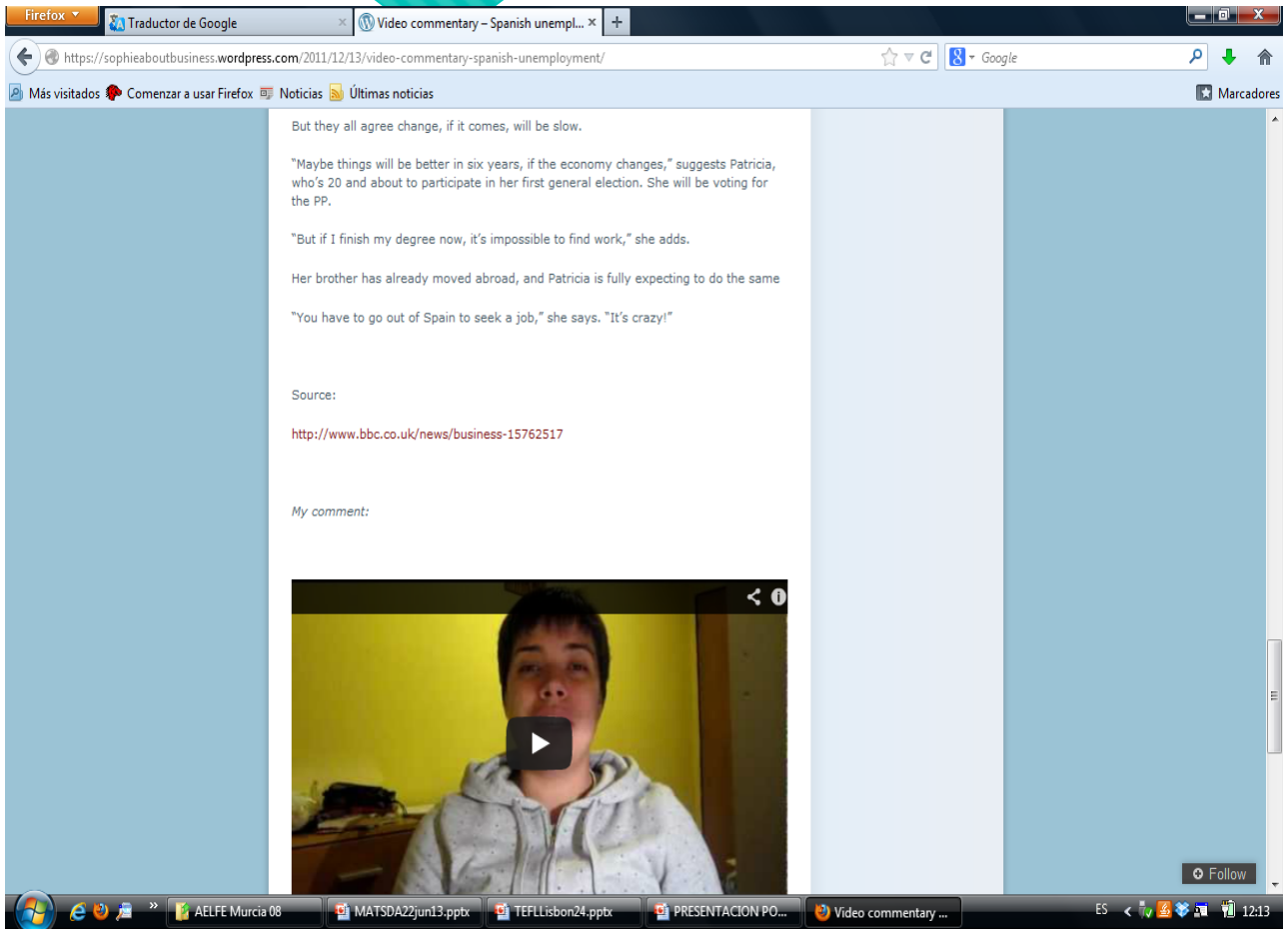
How will you respond to chat messages?

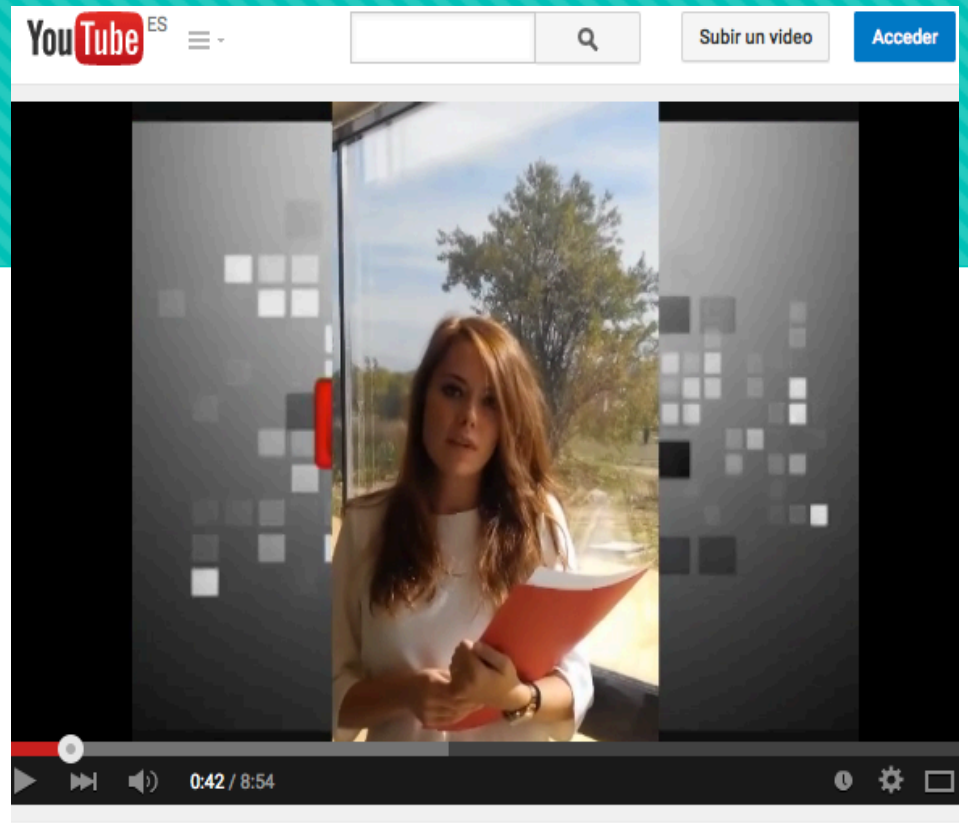
- Who can talk and when?
- Encourage the use of audio and video for max. engagement.

Examples: Foro discussions



Student Presentations

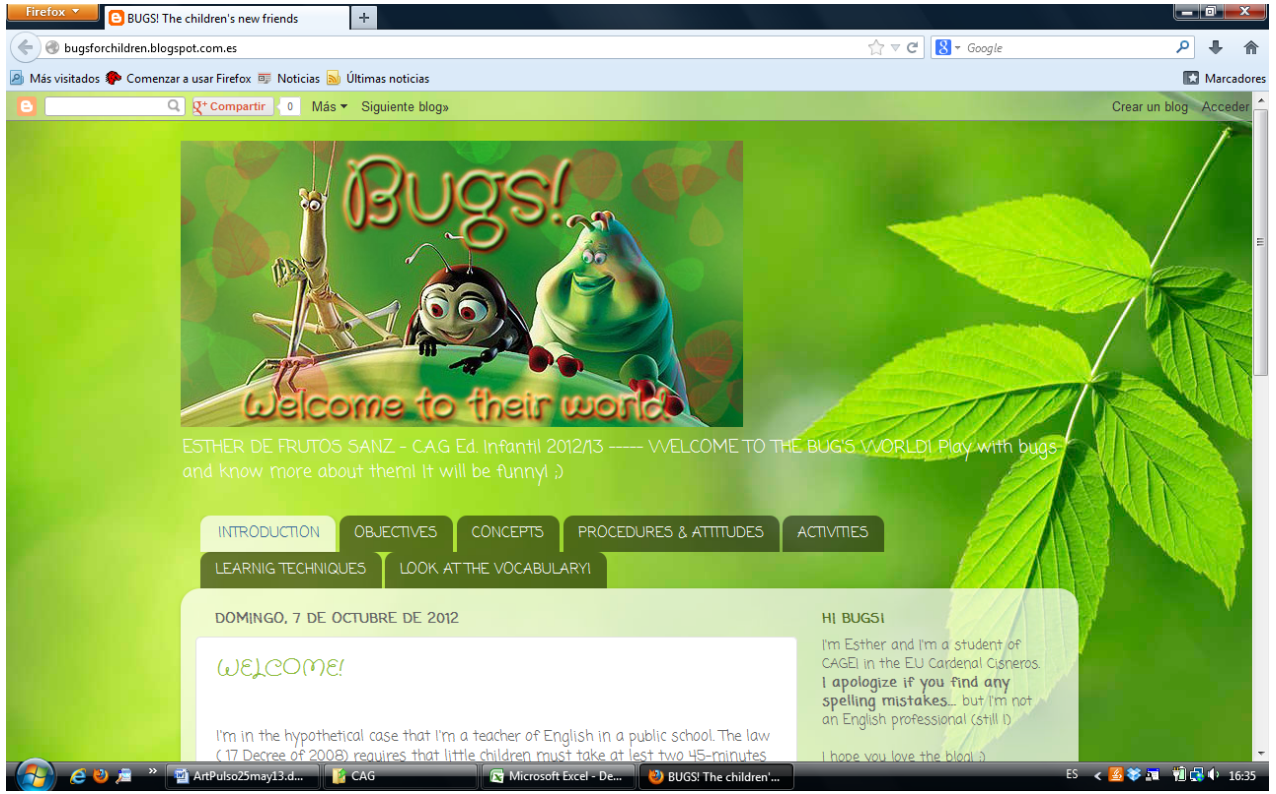




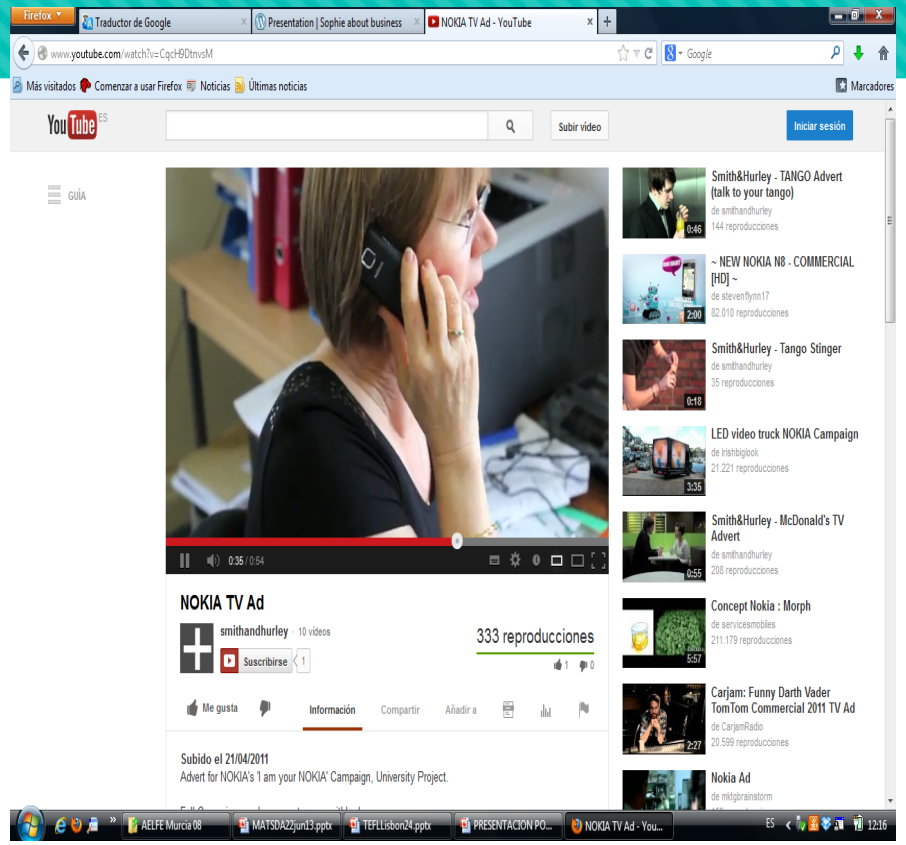
:he all whatching eye?

Guest Speakers

STRATEGY: Students as content creators



Example: Student video project: USPS



Student video project: Brooklyn Brewery

https://www.youtube.com/watch?v=ykxZ9WUkrk8&feature=youtu.be

Objective: To create a 2 minute video presentation with images and narration.

Process

- Step 1: Begin with a PowerPoint deck.

Include images and text in the order in you which to narrate over them.

- Step 2: Have a script or talking points handy.
- Step 3: Record your narration.
- Step 4: Match your narration (your audio track) to the images you want displayed.
- Step 5: Edit and deploy

Tips

Do not read what is written on the slide.

- Avoid using too much text, use images instead.
- Try tell a story rather than deliver a report.
- Consider how you will engage your audience.
- Ask questions, demonstrate, show & tell.

How to…

Tools: Screenflow and PowerPoint

- Begin by exporting PowerPoint slides as images (File > Save as Pictures)
- Bring up Screenflow. Record your narration.
- Save file and edit by adding your Powerpoint images.

Save & export as AppleTV format.

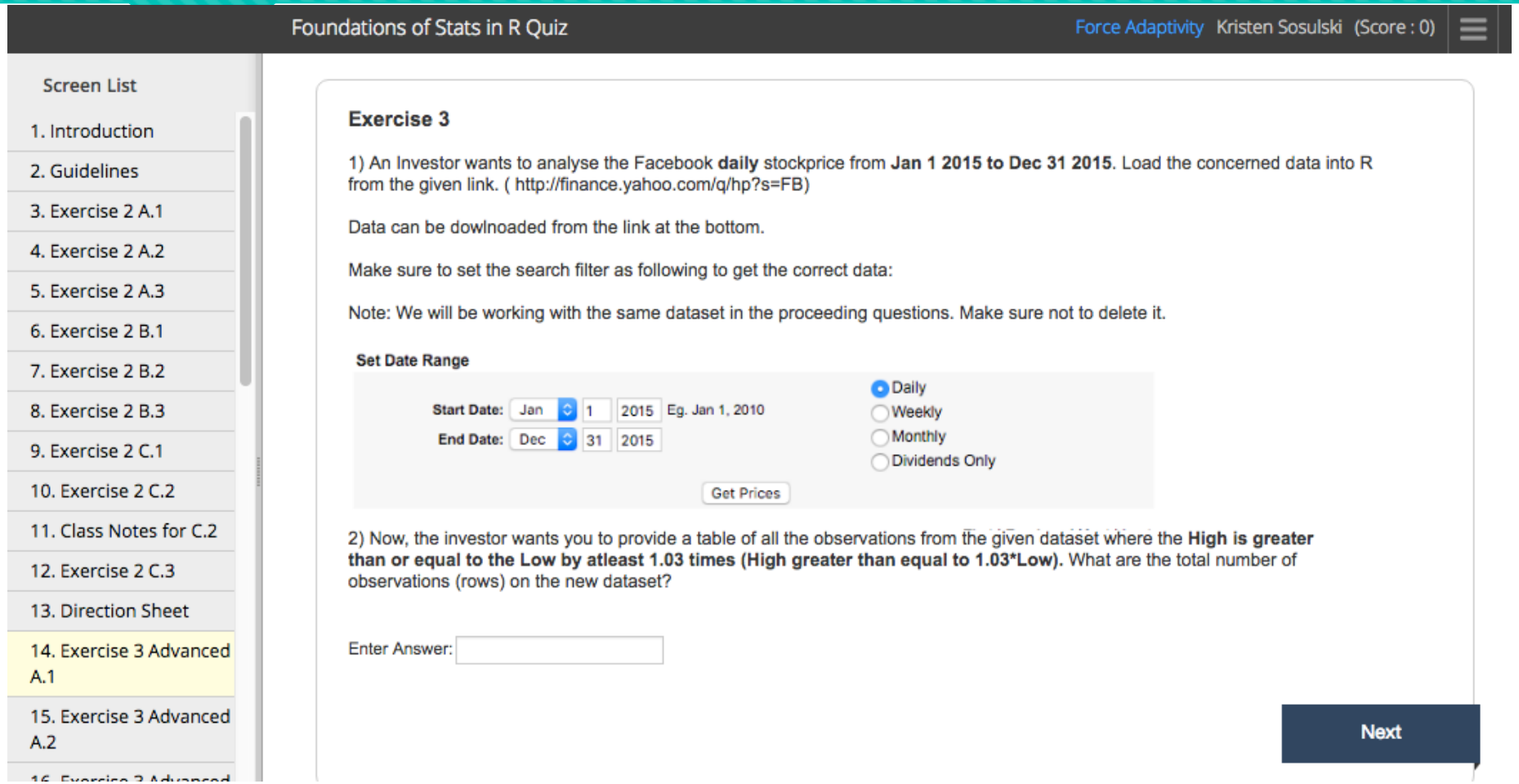
- Upload movie to your YouTube.

STRATEGY: Self-Assessment

Use self-assessment quizzes and practice exercises
Allow students to self-assess to gauge their knowledge and understanding of content—also signals important concept to know/learn.

- Textbook resources such as Pearson or McGraw Hill, chapter by chapter quizzes
- Use quiz tool in LMS to create short weekly self-assessment quiz
- Embed questions into timeline of video mini-lecture that students can respond to and receive feedback on responses

Example:


Foundations of Stats in R Quiz
Force Adaptivity
Kristen Sosulski (Score : 0)
Screen List
1. Introduction
2. Guidelines
3. Exercise 2 A.1
4. Exercise 2 A.2
5. Exercise 2 A.3
6. Exercise 2 B.1
7. Exercise 2 B.2
8. Exercise 2 B.3
9. Exercise 2 C.1
10. Exercise 2 C.2
11. Class Notes for C.2
12. Exercise 2 C.3
13. Direction Sheet
14. Exercise 3 Advanced A.1
15. Exercise 3 Advanced A.2
Exercise 3
1) An Investor wants to analyse the Facebook daily stockprice from Jan 1 2015 to Dec 31 2015. Load the concerned data into R from the given link. (http://finance.yahoo.com/q/hp?s=FB)
Data can be dowlnoaded from the link at the bottom.
Make sure to set the search filter as following to get the correct data:
Note: We will be working with the same dataset in the proceeding questions. Make sure not to delete it.
Set Date Range
Start Date: Jan 1 2015 Eg. Jan 1, 2010
End Date: Dec 31 2015
Daily
Weekly
Monthly
Dividends Only
Get Prices
2) Now, the investor wants you to provide a table of all the observations from the given dataset where the High is greater than or equal to the Low by atleast 1.03 times (High greater than equal to 1.03*Low). What are the total number of observations (rows) on the new dataset?
Enter Answer:
Next

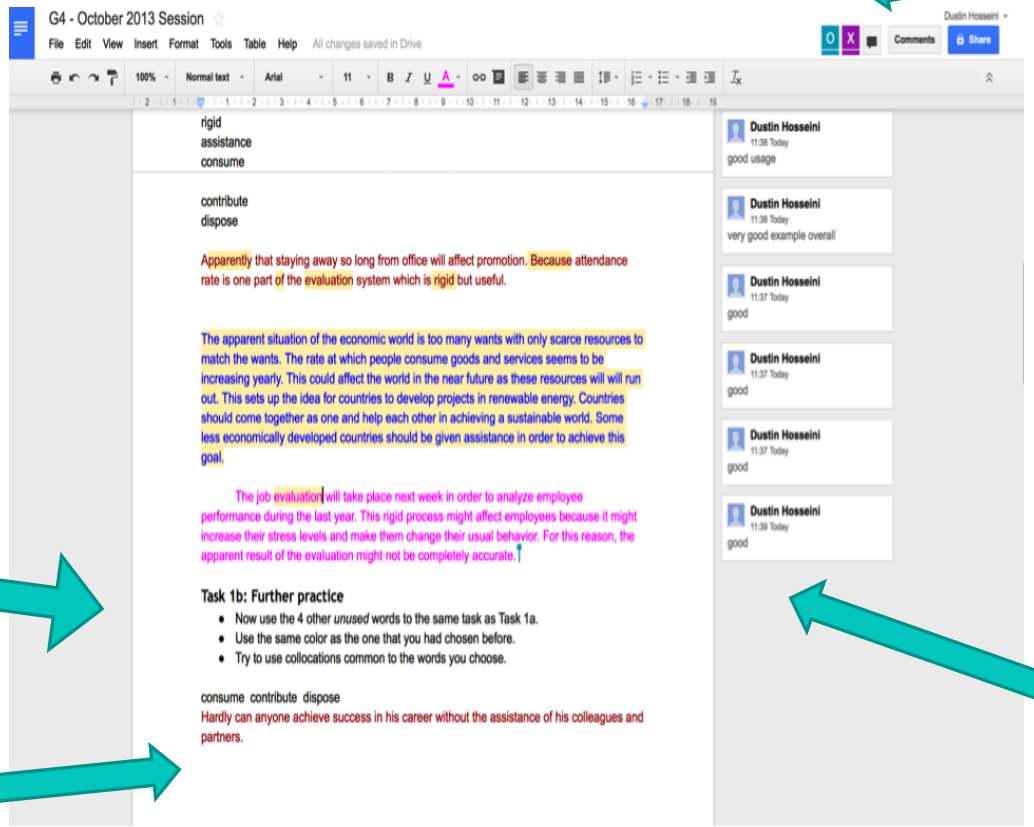
Tools for testing and quizzing

LMS supported engine

- Google Forms / Survey Tools
- Smart Sparrow for adaptive learning

STRATEGY: Structure group work to promote collaboration. Include yourself in the process

Example: Have students work on collaborative documents



Different colored markers indicate to the instructor who contributed what sections, who made comments, and how an assignment came together

Google Docs, Presentations, Spreadsheets allow for multi-userauthoring and creation of content

While working on a document participants can simultaneously chat about the edits

Google Docs: Instructor Feedback

The comments features allows the instructor to add feedback in-text or in the margin of document

Executive Summary

QMSS would like to develop an online community which will engage prospective students, current students, and alumni. However, their current online efforts have been disorganized and lacking in content, and as a result, they have not gained much of a presence in social media. Luckily, none of their direct competitors have gained much traction in this space, and given the profile of their target audience, there seems to be opportunity for QMSS to become the leader in online marketing. To accomplish this, QMSS needs to first fix the "cover pages" of their social media world, then find a way to develop relevant and engaging content, and finally create a comprehensive strategy for integrating the different media through the school year.

sosulski

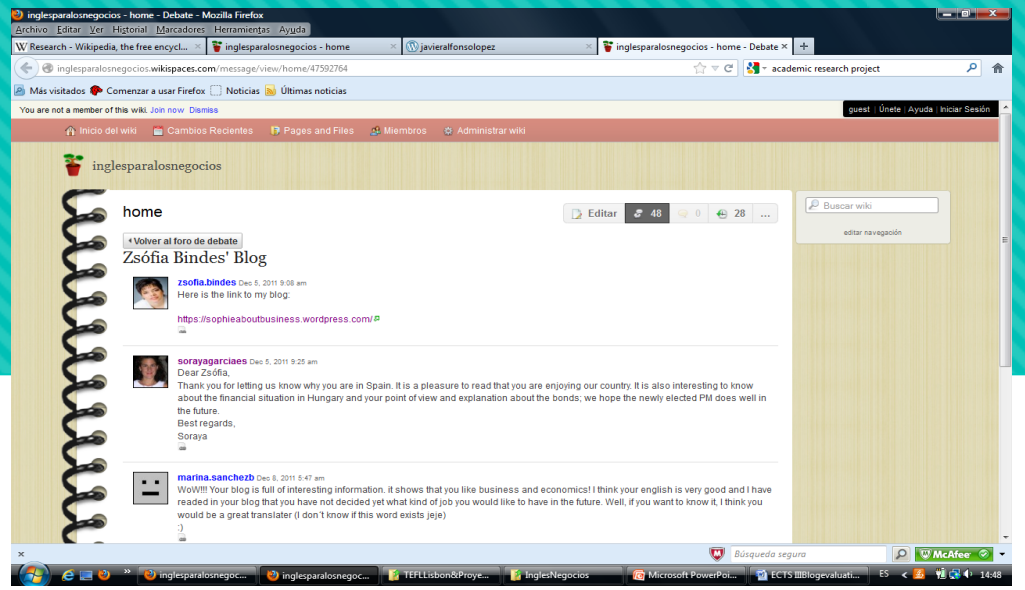
6:21 PM Jul 24

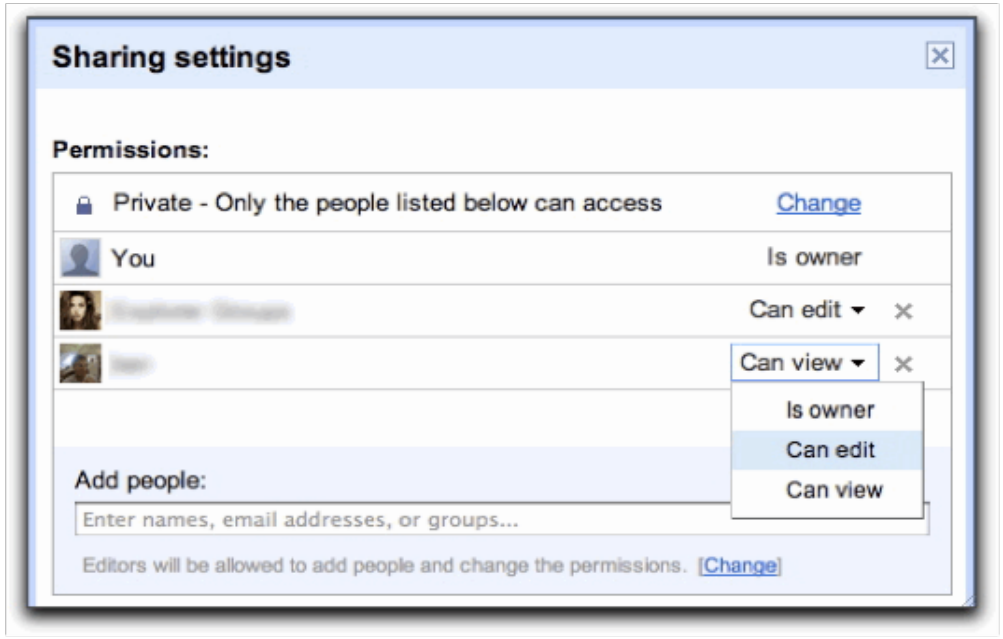
So the assumption here is that social media will be used for marketing purposes. What are you marketing to the "current students" or the "alumni". You can certainly market to the prospective students.

Web-based tools Google Docs

Enables faculty and students to collaborate more efficiently and effectively on papers, spreadsheets, and presentations

- Several people can collaborate simultaneously (both comments and content)
- Revision history allows to revert to previous versions, if needed.
- Encourages accountability of collaborators and auto-save ensures work will not be lost.





Sharing settings in Google Docs.

How to set up GoogleDocs

Google docs are easily accessible through:

http://www.google.com/docs/about/

or the Google doc icon in your Gmail apps

- Create a Google doc you wish to collaborate on
- Invite/share to other participants through Gmail

Further Practical training

:

- Creating visuals (slides and videos) for online teaching
- Developing interactive videos, ex. create a 2 minute video presentation with ppt./images and narration.
- Using programs like Zaption to create interactive videos guided with quiz questions and information (ex. questions in the same video

- Ref. Val, M. & Soluski, K (2017)

Thank you for your attention

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https://: erasmusxproject.github.io

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