

Effective video assessment use for STEM courses in remote teaching:

*Mexico case study with Business
and Engineering students*

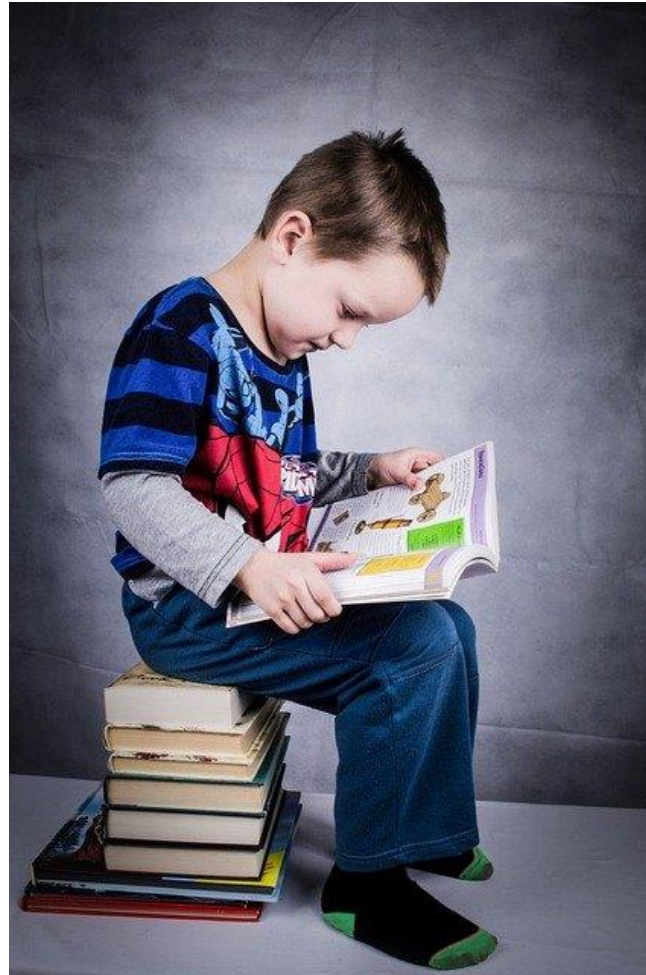
Carlos A. González-Campos, CETYS Universidad

Jane Boyland, JWU - Moderator

Assessment Institute,
IUPUI
2021

Learning is
personal...

...but...



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...It's better when
done together



Learning is
personal...but

...It's better when done
together...

...Thus, an idea was
born...

“Our students learning
benefits from us building
community in the classroom”

...In person &
on-line



*>3 years
on-line*

After teaching for 28 years,
I thought I knew how to do it.

I was wrong.

I had to be open to change, to
be a better teacher.

Carlos A. González

Business & Engineering Professor – U/G:
Statistics,
Operations Management/Production Systems Engineering
Simulation

Dean Institutional Effectiveness & Accreditation
CETYS Universidad
México

WASC, ACBSP,
ABET +
México
Accredited

Private,
Non-profit,
4-year
Institution
1961

30 programs:
21 Undergraduate
8 Masters
1 EdD



*LMS – Blackboard +
Google Campus*

+ 5,000 students
(80% UG)

+80% of students
with
scholarships

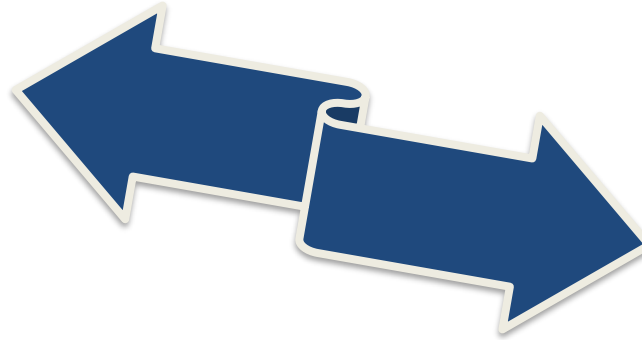
>60% of UG
alumni with
international
experience

Faculty:
Full Time (+130)
Adjunct (+450) -
average stay +5 years

Liberal Education Mission (AAC&U)

<http://www.cetys.mx/>

Teaching during 2020



*Moved to fully
remote*

March
2020

*Underwent PD
for Remote
teaching*

*New sections in
Grad School
scheduled for
late April*

*+3 years on-line
teaching
experience*

April '20 began...



ACUE Webinars: Teaching on-line
Flower Darby and Michael Wesch

“Assessing student learning”
Linda Suskie*

“Small teaching on-line”
Flower Darby and James Lang

Journal Articles

“How learning works”
Susan Ambrose, et. al.

PD+

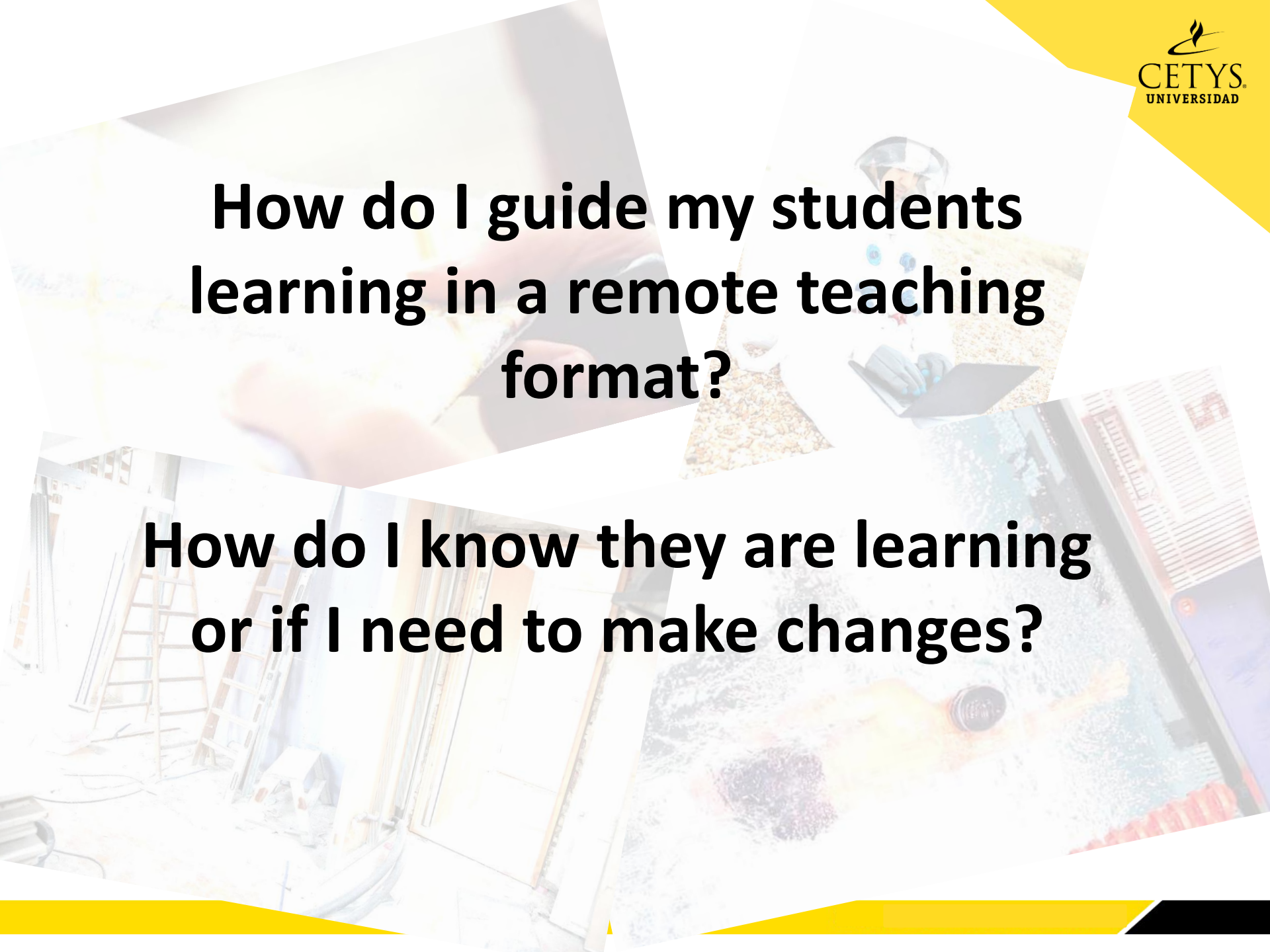
Podcasts

“Online teaching at its best”
L. B. Nilson and L.A. Goodson

Videos

Assessment Periodicals NILOA
Pat Hutchings*

“7 principles for good teaching”, Arthur W. Chickering and Zelda F. Gamson



**How do I guide my students
learning in a remote teaching
format?**

**How do I know they are learning
or if I need to make changes?**

In the
classroom



The delivery of the program & learning

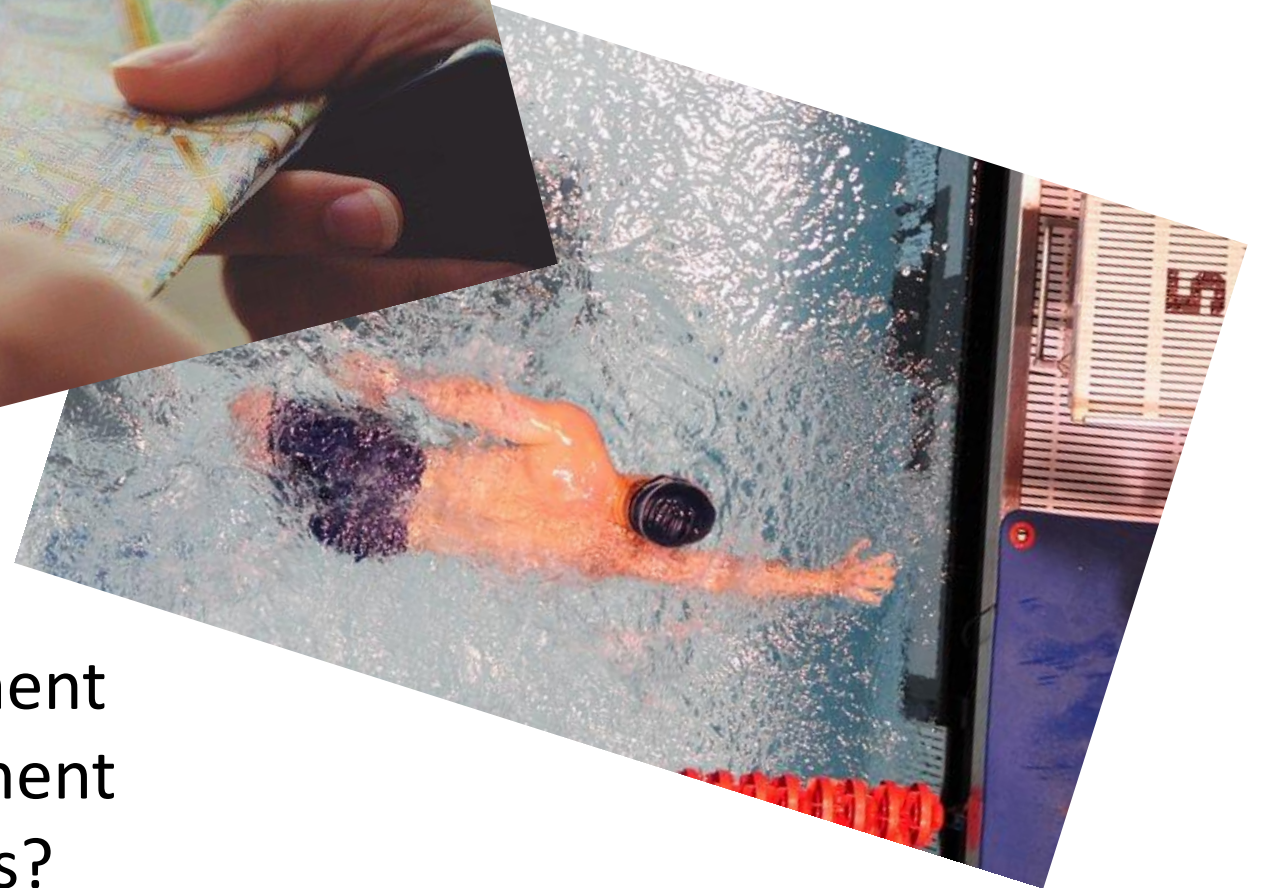


Research shows...

- “On-line instruction can be as effective as traditional, with
- Cooperative/ Collaborative/ Active learning, and
- Strong instructor presence”

Dixson, “Creating effective student engagement in on-line courses: What do students find engaging?”, 2010

Changes in
teaching?



Improvement
in Assessment
practices?

2 small changes (before class)

“Small teaching online” – F. Darby

&

1 question (during class)

“Assessing for student learning” – L. Suskie

1. Syllabus

Made it more user friendly

Statistics for Business
CETYS College of Business
Summer 2020



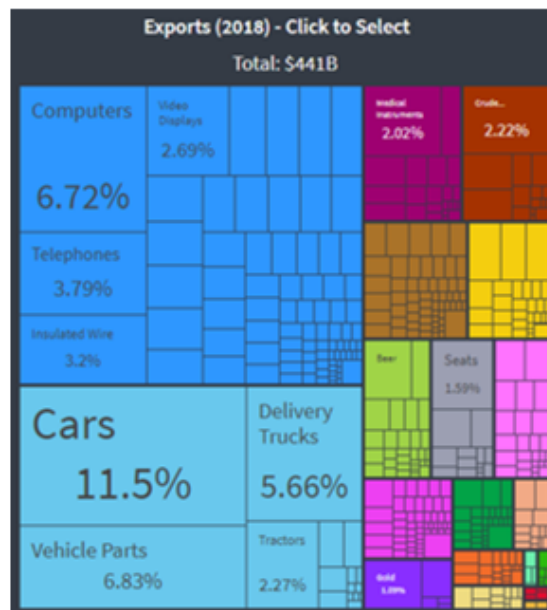
Why do you want to take this course?

Statistics is the science of helping us make decisions. My purpose is to give you tools that you'll use in your life every day.

In business, if you can make better decisions than your competition, it might mean you'll be more successful.

There are two main areas in statistics – descriptive & inferential. We will look at both from a business perspective. The graph on the right is the total exports of Mexico for 2018, oil represents 2.22% while cars 11.5% (in money terms, oil represents \$9.8 Billion US Dlls. and cars represent \$50.7 Billion US Dlls.), this helps the federal government make decisions about which industry to support more (<https://oec.world/en/profile/country/mex>).

We will learn about the formulas statistics



Course structure.

Week 1: Introduction to Statistics

2. Assignments

Made learning expectations clearer – in the form of questions
(*Operations Management example - IBS*)

Course Units and Learning Targets:

What answers will I know?

Unit 1: Strategy, Operations and Global Competitiveness:

Why is strategy important to operations and what/how can Industry 4.0 be implemented?

Week 1 & 2

- What is Operations,
- What is a manufacturing strategy and why is it important,
- What Industry 4.0 is and isn't,
- What benefits and challenges does Industry 4.0 have,
- How can you become active in Industry 4.0 sphere (give specific examples)

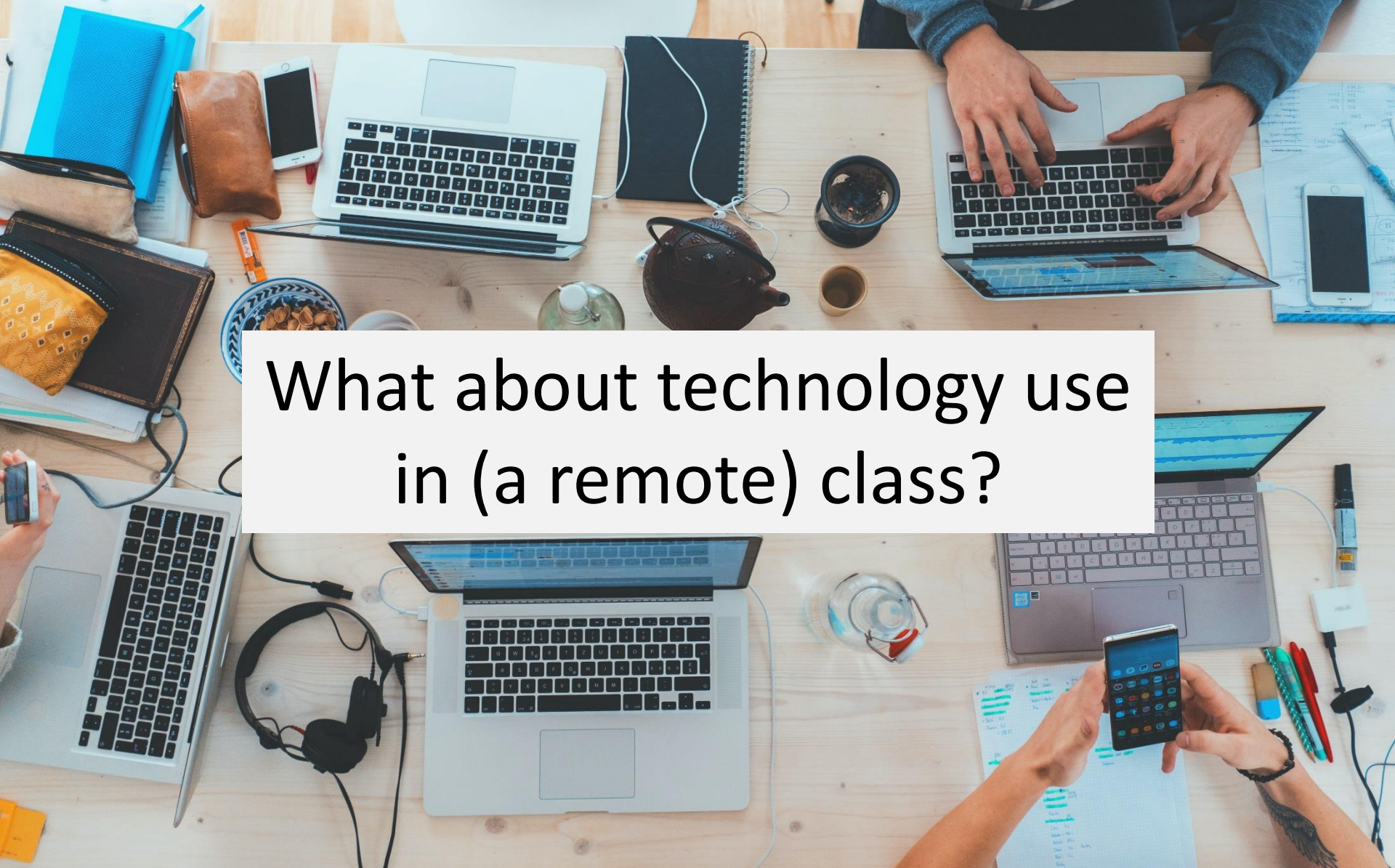
Unit 2: Product design: Goods & Services - Design Thinking Methodology

How are goods and services designed and how does Design Thinking Methodology help?

Week 3, 4 & 5

- What is New Product Development: Product and service,
- What is product life cycle,
- What is Design Thinking Methodology and how is it applied,
- How can you improve your Design Thinking skills

Unit	Description	Points	Due date
1 – Strategy, Operations and Global competitiveness			
D1	What are the basics of Operations Management?	5	18/Aug
D2	How can disruptive innovation and Industry 4.0 help improve competitiveness?	5	25/Aug
2 – Product design: Design Thinking Methodology			
D3	What is Product Life Cycle and how does it apply to goods and services?	5	1/Sep
D4	Design Thinking Case Study Lab	15	15/Sep
3 – Forecasting			



What about technology use
in (a remote) class?

Strategic approach to technology in class
New EdTech Classroom



1st try...

Micro lecture recordings <10
min &



Step-by-step Lab explanation
recordings



Asked my students to video
record their Lab results** and
share it on a discussion forum







Individual student recordings was a
game changer:

For learning,
for assessment, and
for creating community



By late fall this idea
began to take shape...



...“Our students learning benefits from
us building community in the classroom”

***...with video recording as a key
element for learning and assessment***

2nd try...

Micro lectures & Lab
recordings



Interactive slides



Asked my students to video
record their presentations
while working in teams***



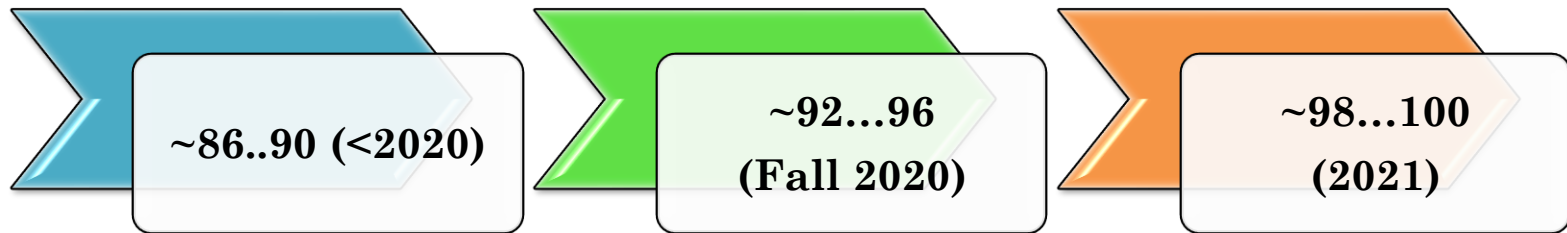




4 results, of working in teams and video recording it:



- a) Students came together in community
- b) Dove deeper into the content
- c) Saw value in the tools – Student evals*
- d) It provided them with additional tools outside of class that they could use



Now, no one tool is
perfect, we need to try
and fail to also learn...

...for our students

Business Students

Period	Course	# students
Summer '20	Statistics	5
Fall '20	Operations Management (OM)	20
Spring '21	Statistics	5
Spring '21	Simulation	20

Engineering students

Period	Course	# students
Fall '20	Production systems engineering (PSE)	5
Spring '21	Simulation	5

Grad program in Engineering

Period	Course	# students
Spring '21	Simulation	20

Putting it all together...

Summer
2020

**Statistics
Executive
program**

**Individual
work video**

**Business degree
>24 years old**

Fall 2020

OM / PSE

**Teamwork
video**

IBS – Ind Eng

Spring
2021

**Statistics /
Simulation**

**Video +
Interactive
slides**

Logistics – Ind Eng

Tools used... (free for .edu)

**Summer
2020**

**Statistics
Executive
program**

**Loom /
Flipgrid**

Fall 2020

OM /PSE


**Pear deck +
Loom /
Flipgrid**

**Spring
2021**

**Statistics /
Simulation**

**Edpuzzle +
Pear deck
Loom /
Flipgrid**

Google Sheets + Open Textbooks & Software

 loom

Carlos Antonio Gonzale...
1 member

Invite teammates

Libraries

- Personal
- Shared
- Team

Starred

Archived

Settings

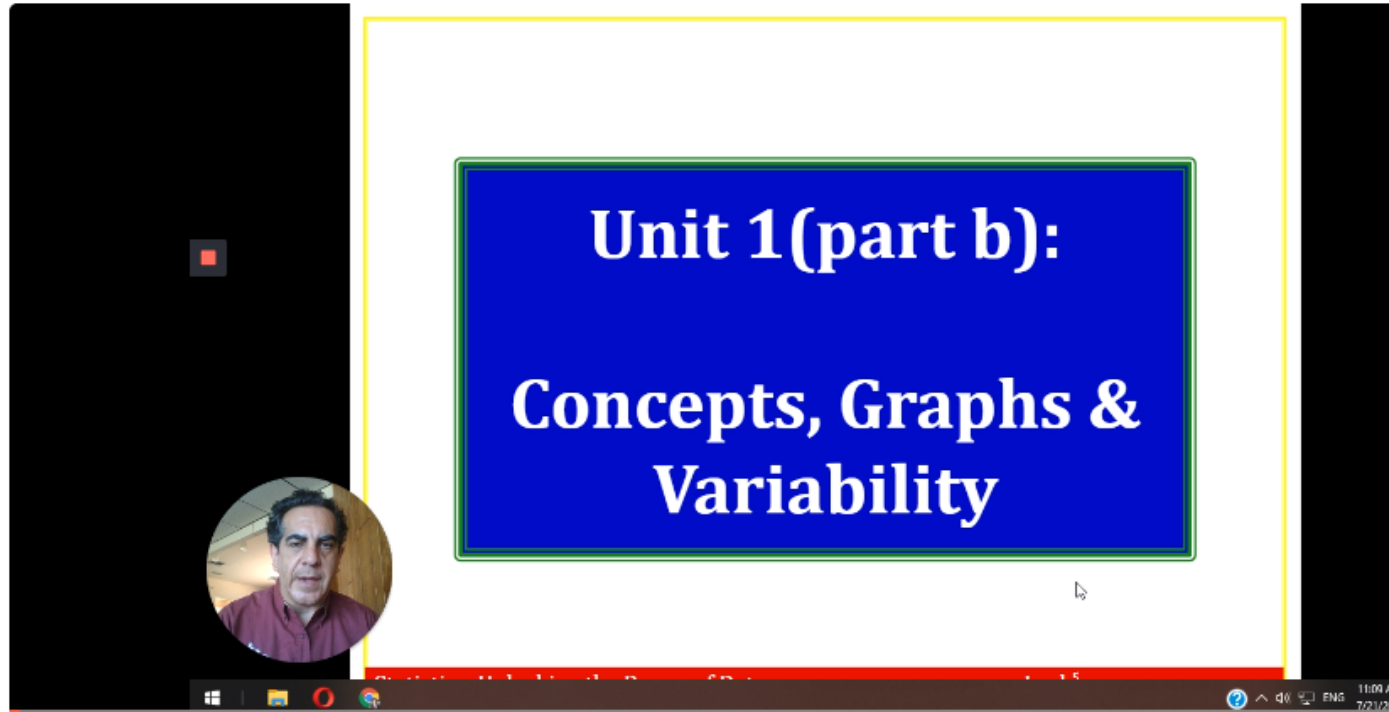
Invite your team to share and

Personal

3 views

Share

Copy video link



Unit 1(part b):
Concepts, Graphs &
Variability

Loom

Content

Gradebook

My Classes (

Video events

00:43

Open-ended

02:26

Multiple-choice

04:34

Open-ended

Assign

Edit assigned video

Duplicate

Delete

 Private ▾

edpuzzle

Search content...

Content Gradebook My Classes

YouTube video

Carlos Antonio Gonzalez-Campos



Assigned to 1 class

Video events

00:43

Open-ended

02:26

Multiple-choice

04:34

Open-ended

Assign

Edit assigned video

Duplicate

Delete

 Private ▾

Edpuzzle

Cluster
Stratified

2 Answers to grade

Students

Questions

00:43



Open Ended question

4 out of 6 right

Still 1 pending to grade

Por que para conocer el tamaño de las manzanas debemos tomar una muestra en vez de analizar toda la población ?

02:26



Multiple choice question

1 out of 6 right

El muestreo aleatorio es preferible usarlo en el caso de cosas o en el caso de poblaciones por que...

- ✓ Es preferible en el caso de cosas porque ademas es representativo
- ✗ Es preferible en el caso de poblaciones porque ademas es aleatorio

04:34



Open Ended question

4 out of 6 right

Still 1 pending to grade

Que significa que un metodo sea representativo?

Edpuzzle



YouTube video

[Edit assigned video](#)

2 Answers to grade

Edpuzzle

Students

Questions

Student Name

Watched

Grade 

Last watched

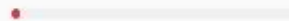
Turned in



-

Feb. 7th

Late



0/100

Never

Not turned in



67/100

Feb. 3rd

Not turned in



67/100

Feb. 3rd

On time



67/100

Feb. 3rd

On time



100/100

Feb. 3rd

On time

Edpuzzle

YouTube video

Grade

67 /100

Video watched

90 %

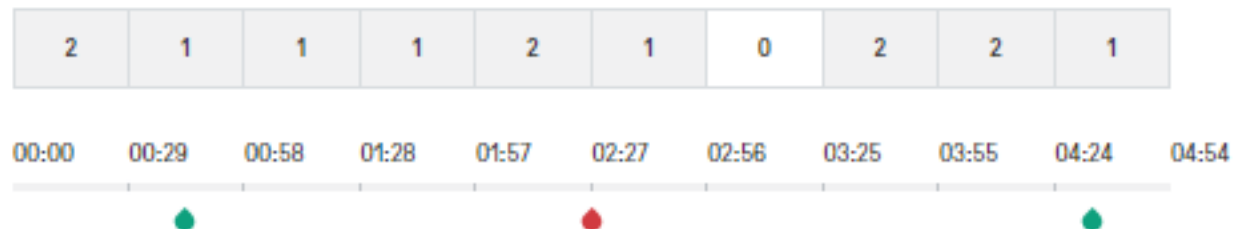
Correct responses

2 / 3 questions
(3 answered)

Time spent: 6 min

Not turned in

Number of times student watched each section of your video



1er. Muestra	1a	2a	3a	4a	5a
1	13	8	13	7	10
2	7	9	12	9	10
3	13	11	13	6	4
4	6	4	13	6	4
5	12	9	5	5	7

2da. Muestra	1a	2a	3a	4a	5a
1	13	8	13	7	10
2	7	9	12	9	10
3	13	11	13	6	4
4	6	4	13	6	4
5	12	9	5	5	7

3ra. Muestra	1a	2a	3a	4a	5a
1	13	8	13	7	10
2	7	9	12	9	10
3	13	11	13	6	4
4	6	4	13	6	4
5	12	9	5	5	7

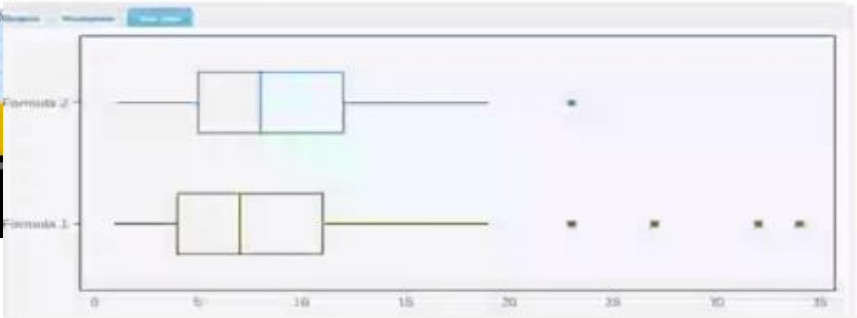
4ta. Muestra	1a	2a	3a	4a	5a
1	13	8	13	7	10
2	7	9	12	9	10
3	13	11	13	6	4
4	6	4	13	6	4
5	12	9	5	5	7

5ta. Muestra	1a	2a	3a	4a	5a
1	13	8	13	7	10
2	7	9	12	9	10
3	13	11	13	6	4
4	6	4	13	6	4
5	12	9	5	5	7

¿Cuál receta nos proporciona burbujas de mayor duración?

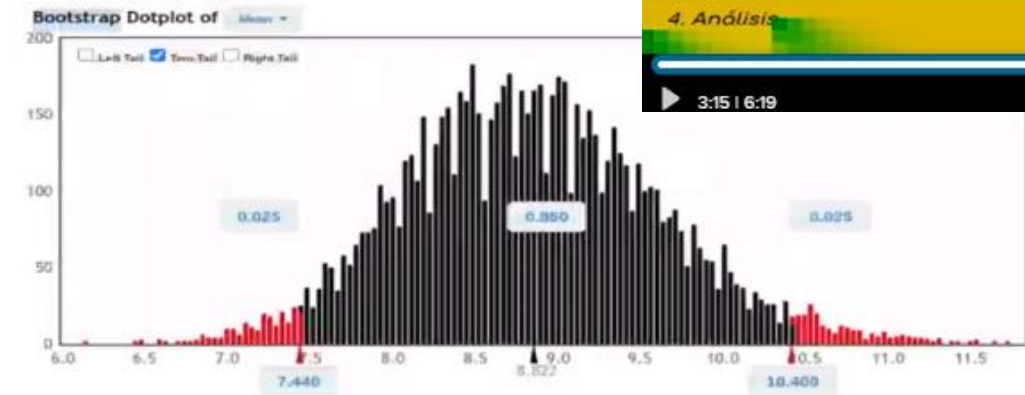
3. Datos

1:36 / 6:19



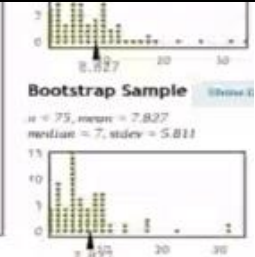
Statistics	Formula 1	Formula 2	Overall
Statistic Size	75	23	150
Mean	8.827	8.787	8.787
Standard Deviation	8.586	4.765	5.788
Minimum	1	1	1
Q ₁	4.081	9.090	6.581
Median	7.080	8.060	6.000
Q ₃	11.809	12.000	12.000
Maximum	34	23	34

Receta 1



4. Análisis

3:15 / 6:19



4. Análisis

3:46 / 6:19

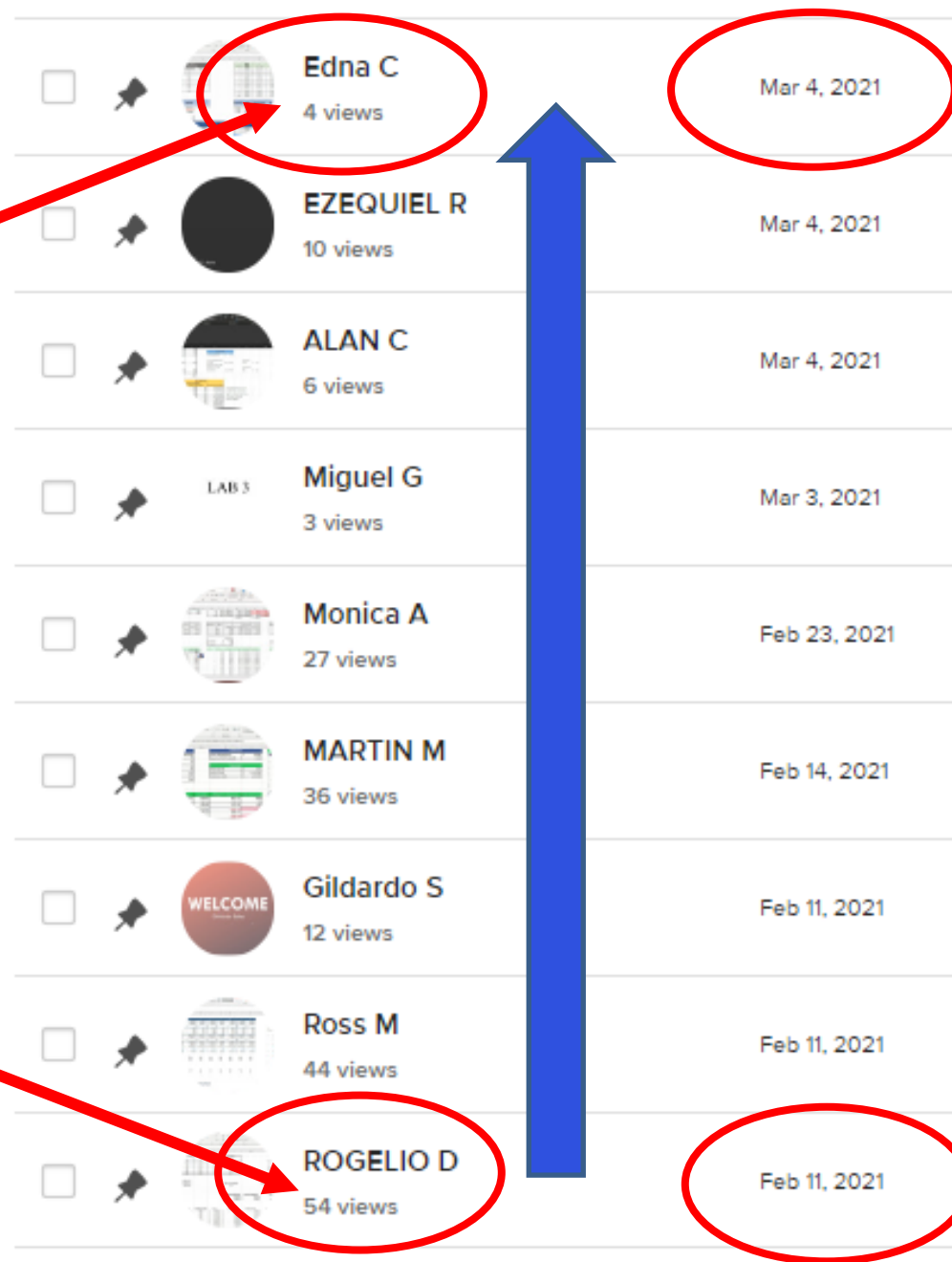
Flipgrid



Flipgrid

Flipgrid

20 students



The screenshot shows a list of 10 students in a Flipgrid interface. A large blue arrow points upwards from the bottom of the list. Two red arrows point to specific student entries: one to 'Edna C' at the top and one to 'ROGELIO D' at the bottom. Red circles highlight the names and dates for 'Edna C' and 'ROGELIO D'.

<input type="checkbox"/>			Edna C 4 views	Mar 4, 2021
<input type="checkbox"/>			EZEQUIEL R 10 views	Mar 4, 2021
<input type="checkbox"/>			ALAN C 6 views	Mar 4, 2021
<input type="checkbox"/>			Miguel G 3 views	Mar 3, 2021
<input type="checkbox"/>			Monica A 27 views	Feb 23, 2021
<input type="checkbox"/>			MARTIN M 36 views	Feb 14, 2021
<input type="checkbox"/>			Gildardo S 12 views	Feb 11, 2021
<input type="checkbox"/>			Ross M 44 views	Feb 11, 2021
<input type="checkbox"/>			ROGELIO D 54 views	Feb 11, 2021

Tools

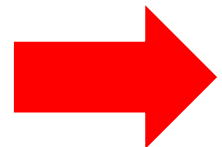
Video

- Loom – Lecture recording
- Edpuzzle – Using Loom
 - In class assessment
 - Out of class assessment
- Flipgrid
 - Video discussion + learning forum
 - Group Assessment

Lecture + Labs

- Peardeck
 - Class lecture
 - In class assessment
 - Outside of class assessment
- Google sheets

All are mobile friendly



**The tools need to be used
with a purpose...**



...“Our students learning benefits from
us building community in the classroom”

***I need to present, train and convince students to
add video... passing the initial doubts... it's a game
changer***

Fall 2021+

- August '21 – Remote...no changes
- September '21...Hybrid...
 - In-classroom + Remote... Extra-challenging
 - Class time: Zoom - *Peardeck* + *Google sheets*
 - Out of class: *Loom, Edpuzzle, Flipgrid, Peardeck*

..We'll see how this works

Thank you for
your time and
attention...

...Comments &
Questions

Carlos A. González-Campos
carlos.gonzalez@cetys.mx
www.linkedin.com/in/carlosglz

