Using Mentimeter to Teach Data Visualization

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Most data visualization classes are: Lecture + Hands-on

- Provide design guidelines

- Show examples

- Give students data to manipulate or let them bring in their own work

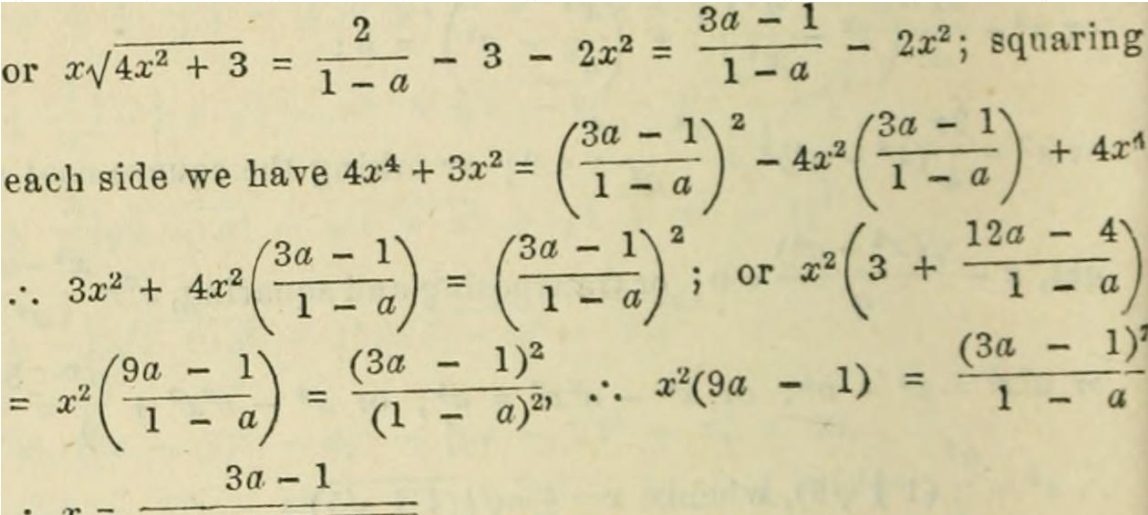- Give students a chance to try out a data visualization on their own

Most data visualization classes are: Demo + Copy the teacher

- Show a data visualization

- Demonstrate the software

- Give students data to manipulate

- Ask students to work with the software on their own

- Ask students to complete various visualizations

Image source: http://kateto.net/network-visualization
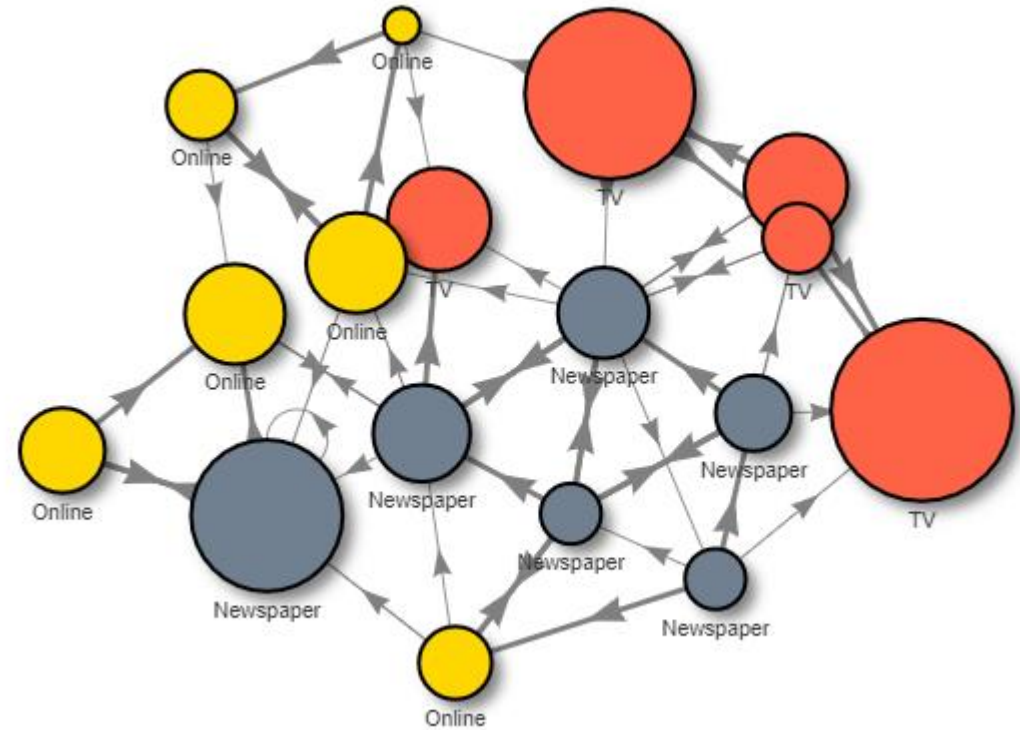
Problems with the usual teaching methods

- Lack of engagement with lecture

- Different skill levels

- Different learning paces

- Technical thrash

- Time limits

- Lack of instructors to assist students

$$\text{or} \quad x\sqrt{4x^2 + 3} = \frac{2}{1-a} - 3 - 2x^2 = \frac{3a-1}{1-a} - 2x^2; \text{ squaring}$$

$$\text{each side we have } 4x^4 + 3x^2 = \left(\frac{3a-1}{1-a}\right)^2 - 4x^2\left(\frac{3a-1}{1-a}\right) + 4x^4$$

$$\therefore \quad 3x^2 + 4x^2\left(\frac{3a-1}{1-a}\right) = \left(\frac{3a-1}{1-a}\right)^2; \text{ or } x^2\left(3 + \frac{12a-4}{1-a}\right)$$

$$= x^2\left(\frac{9a-1}{1-a}\right) = \frac{(3a-1)^2}{(1-a)^2}, \therefore \quad x^2(9a-1) = \frac{(3a-1)^2}{1-a}$$

$$\frac{3a-1}{}$$

How to engage online and in-person workshop attendees?

Cat videos?

Emotion regulation, procrastination, and watching cat videos online: Who watches Internet cats, why, and to what effect?

Jessica Gall Myrick ✉

⊞ Show more

Get rights and content

Highlights

- A survey of nearly 7000 Internet users tested associations between personality traits, past behavior, and viewing cat-related media online.

- The study also examined Internet users' motivations for consuming cat-related content, including emotion regulation and procrastination.

- Additionally, it explored effects of Internet cat consumption on emotional states and enjoyment of this type of digital media.

Image source: http://pixabay.com/en/cat-british-shorthair-grumpy-1378203/

# In blended learning environments, try games

Online students

- Active learning engages online students

- Teachers can monitor and encourage students to participate

- Students can see how they are progressing through the class

- Students can be anonymous, so they can respond to questions without fear of a wrong answer

Games

In-person students

- Engages students who are reluctant to speak to participate

- Can be used to emphasize/highlight specific points (prioritize content)

- Competition can give students a reason/motivation to participate

- Utilizes the cell phone so that students are not using it for other purposes
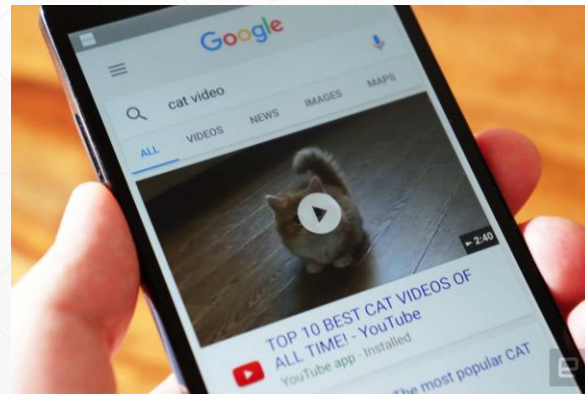
Mentimeter: Audience response tool

- Cloud-based software to create polls, and other audience response trackers

- Allows the presenter to interact with an audience in real-time

- Ask questions as part of a presentation

- The audience responds using a mobile phone or another internet enabled device

- Responses are tallied in the presentation so everyone can see the results

1 Create your question

2 Your audience uses their mobile phones to vote

3 Show the result live

Image source: Mentimeter.com

Audience response options

Multiple Choice

The most popular question type lets the audience choose one or more options that you provide - it's both easy and effective.

Image Choice

Visualize your questions and let your audience vote on images to interact in a new way.

Word Cloud

Impress everyone with a beautiful Word Cloud, rearranging itself in real-time to emphasize the most common words submitted by the audience.

Quiz

Energize the audience with a fun and learning-intense competition using Mentimeter Quiz.

Scales

Let the audience rate statements on a scale; a quick way of getting useful data and analysis of trends and progress.

Open Ended

The Open Ended question-type lets the audience freely type in their answer and is perfect for capturing audience insights.

Image source: Mentimeter.com

Audience response options

Questions from Audience

New! Give your audience a voice and let their questions be heard with Mentimeter's Q&A tool.

100 points

Determine which items are the most important through the sophisticated 100 points method.

2 by 2 Matrix

If Scales are not enough, you can let the audience rate items in two dimensions to decide on complex matters.

Who will win?

Take away some of the tension in the voting by only presenting the winner, boosting the atmosphere with confetti.

Quick Slides

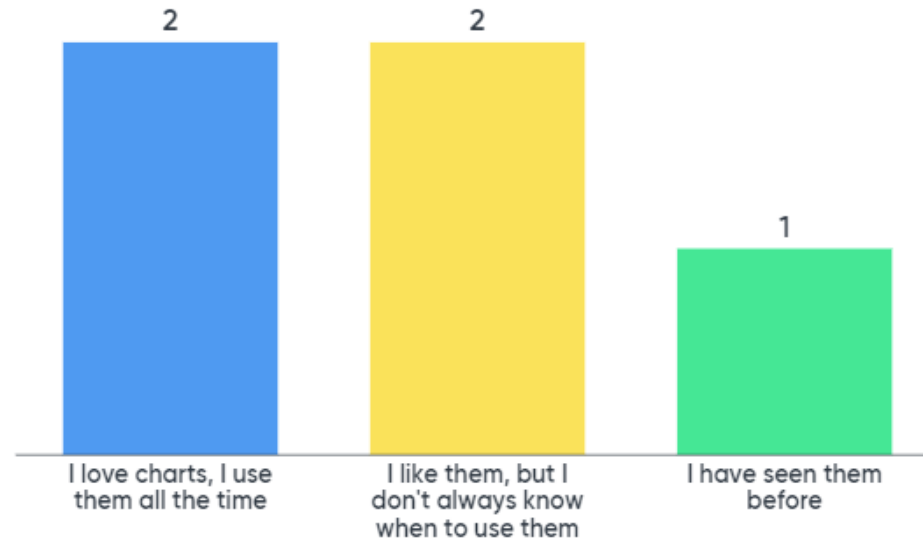Add text and images to complement your regular Mentimeter questions.

Reactions

Let your audience react to every slide and take interactivity to a new level.

Mentimeter: Polling Question

Mentimeter: Multiple choice question
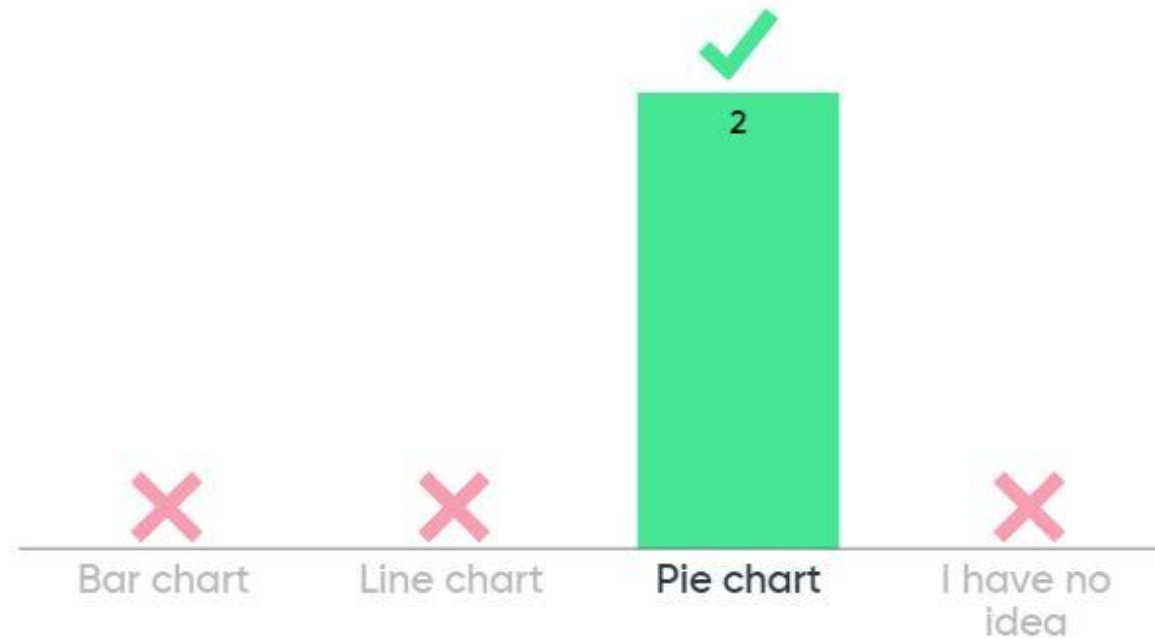
Mentimeter: Which is better A or B?

A

The US has more than double the average of OECD countries
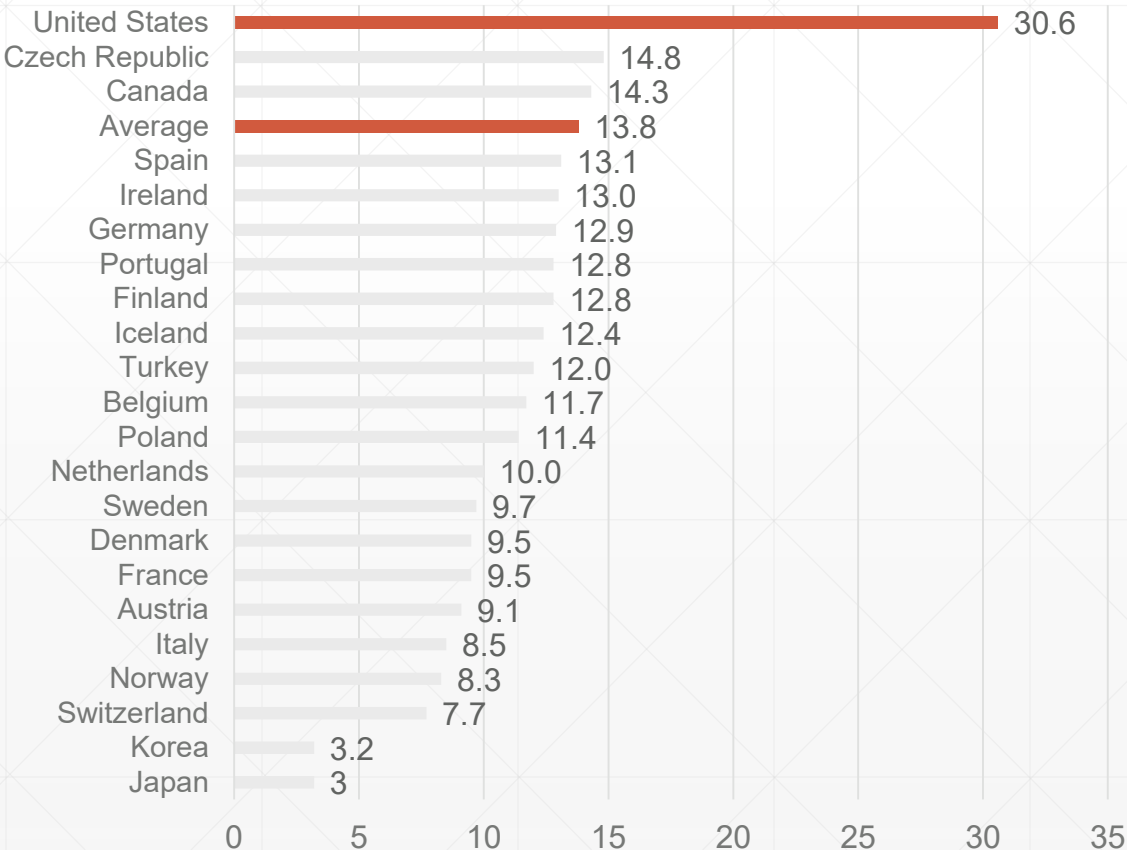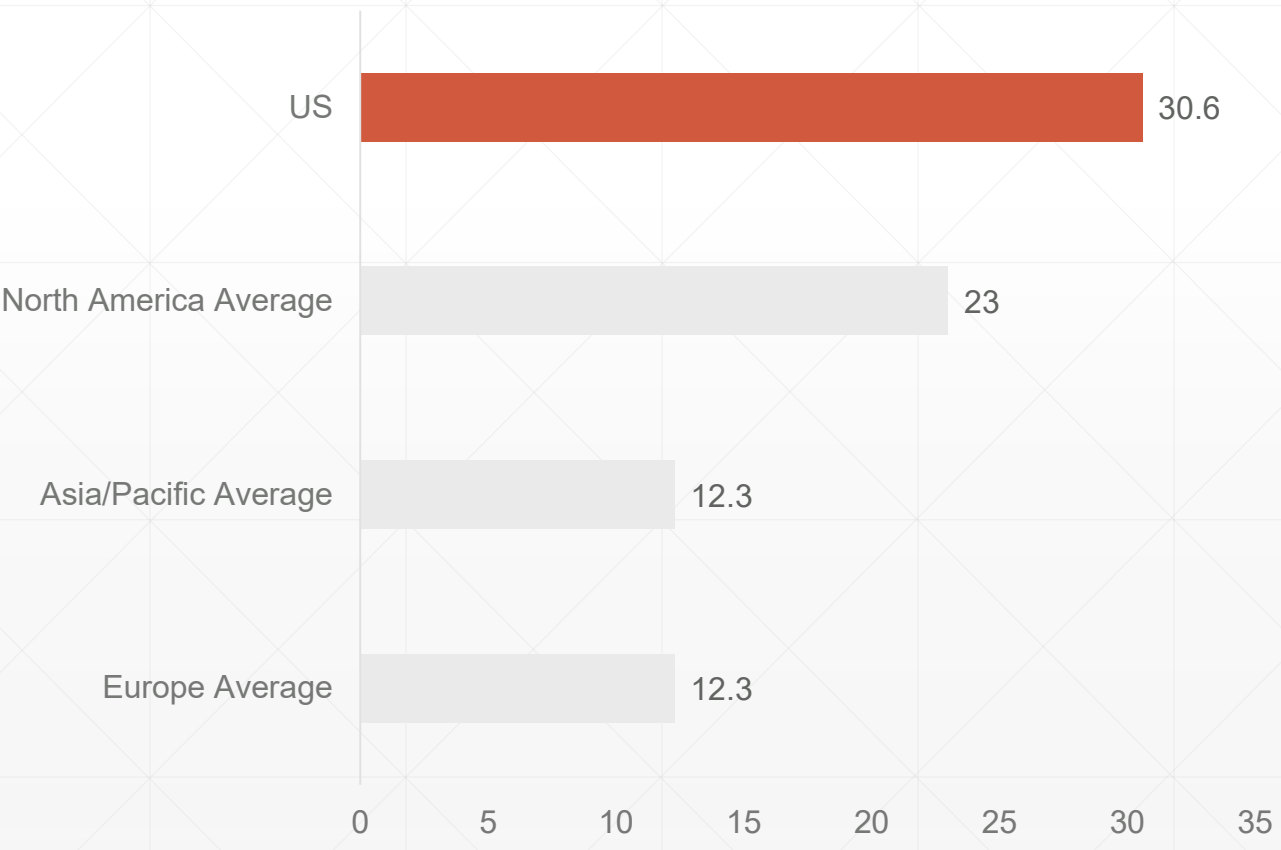**Percent of population with BMI >30**
(for age 15 and older, 2008)

Country	Value
United States	30.6
Czech Republic	14.8
Canada	14.3
Average	13.8
Spain	13.1
Ireland	13.0
Germany	12.9
Portugal	12.8
Finland	12.8
Iceland	12.4
Turkey	12.0
Belgium	11.7
Poland	11.4
Netherlands	10.0
Sweden	9.7
Denmark	9.5
France	9.5
Austria	9.1
Italy	8.5
Norway	8.3
Switzerland	7.7
Korea	3.2
Japan	3

B

US Leads in population with BMI>30 in OECD countries
(for age 15 and older, 2008)

Region	Value
US	30.6
North America Average	23
Asia/Pacific Average	12.3
Europe Average	12.3

Mentimeter: What's wrong with this chart?

U.S. Employment Changes: Total Non-Farm (000's)

19,433	18,176	21,931	(1,006)
1970's	1980's	1990's	2000's

7,422	(8,699)	14,161	12,884	10,544
1/1/2000 vs. 1/1/2008	1/1/2008 vs. 2/1/2010	2/1/2010 vs. 5/1/2016	1/1/2000 vs. 5/1/2016	2/1/2009 vs. 5/1/2016
Pre Crisis Peak	Crisis Trough	Trough to May 2016	So Far This Century	Since Obama Inauguration

Source Data: Federal Reserve Economic Database (FRED)
Data Series : "Payems"

Source: http://en.wikipedia.org/wiki/Unemployment_in_the_United_States

Mentimeter: Word Cloud response to What is wrong?

Free text: Any other questions/feedback?

Pro and Con of using Mentimeter
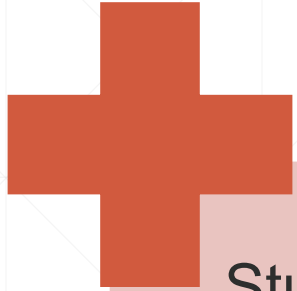
Student engagement (and mobile phone engagement)

Immediate feedback for instructor and students

Fun for students and instructors

Easy to use

May cause some technology thrash (requires internet)

Cost ($60-$150 for educators)

Students may focus on the game more than the content

Anonymity means you don't know how individuals are doing

Conclusions

- Using Mentimeter might shake up your instruction

- It could engage a blended class more than the usual techniques

- Even though people can learn via hands-on activities, sometimes it's best to engage in a different way

- Mentimeter may inspire you to implement new technologies in your teaching

- Options: Kahoot!, PollEverywhere, Google Forms, ParticiPoll, Socrative

Image source: http://segimaru.tumblr.com/post/125949994306/thank-you-so-much

References

- Bojinova, E. & Oigara, J. (2013). Teaching and learning with clickers in higher education. *International Journal of Teaching and Learning in Higher Education,* 25(2), 154-165.

- Burkhardt, A. & Cohen, S. F. (2012). Turn your cell phones on: Mobile phone polling as a tool for teaching information literacy. *Communications in Information Literacy,* 6(2): 191-201.

- Chickering, A. W. & Gamson, Z. F. (1987). Seven principles for good practice in undergraduate education, *AAHE Bulletin*, 39: 3-7.

- Guthrie, R. W. & Carlin, A. (2004: August). Waking the dead: Using interactive technology to engage passive listeners in the classroom. *Proceedings of the Tenth Americas Conference on Information Systems*, New York.

- McDevitt, T. (2013: Fall). Everyone likes a challenge: Gaining students' attention with interactive games and authentic assignments. *Pennsylvania Libraries: Research and Practice*, 1(2). DOI: 10.5195/palrap.2013.25

- Myrick, J. G. (2015). Emotion regulation, procrastination, and watching cat videos online: Who watches Internet cats, why and to what effect? *Computers in Human Behavior*, 52: 168-176. DOI: 10.1016/j.chb.2015.06.001

- Skoles, A. & Bloxsidge, E. (2017). Have you voted? Teaching OSCOLA with Mentimeter. *Legal Information Management*, 17: 232-238. DOI: 10.1017/S1472669617000457

- Tao, J., Fore, C. and Forbes, W. (2011). Seven best face-to-face teaching practices in a blended learning environment. *Journal of Applied Learning Technology,* 1(3): 20-29.

- Underwood, J. D. M. & Farrington-Flint, L. (2014; 2015). *Learning and the E-Generation*. Chapter 8: Games, Learning and Education. Hoboken: John Wiley & Sons.

- Voelkel, S. & Bennett, D. (2013). New uses for a familiar technology: Introducing mobile phone polling in large classes. *Innovations in Education and Teaching International*, 51(1): 46-58, DOI: 10.1080/14703297.2013.770267