Collaborative Annotation, Idea Magnets & CODAP to Drive Knowledge Advancement

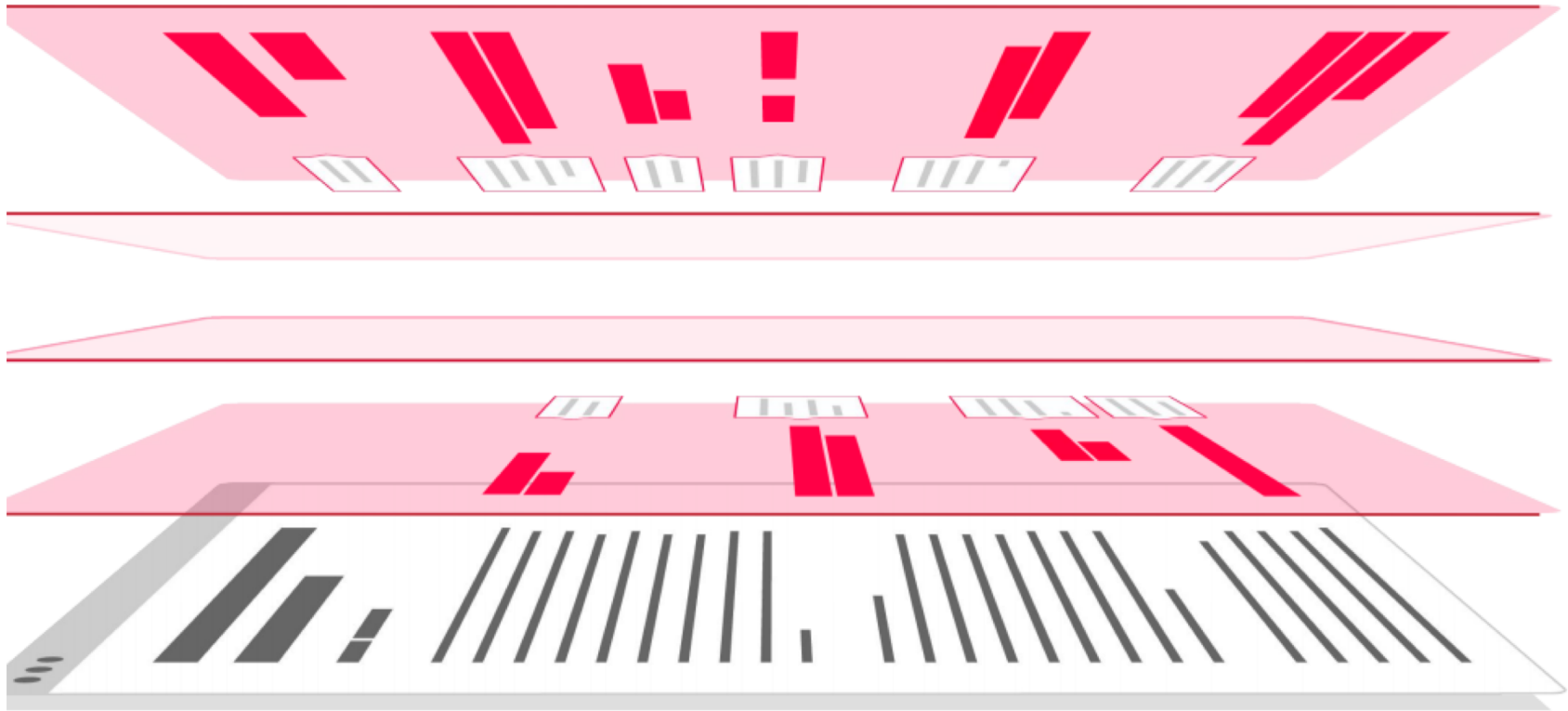Stacy A Costa & Leanne Ma – University of Toronto
Dr. Bodong Chen & Yu-Hui Chang - University of Minnesota
Ben Peebles – Dr. Eric Jackman Institute
June 17th, 2019

UNIVERSITY OF TORONTO
OISE | ONTARIO INSTITUTE
FOR STUDIES IN EDUCATION

Pilot Project

- GRADE SIX CLASSROOM OF TWENTY STUDENTS

- 6 SESSIONS EACH LASTING AROUND 45 MINUTES

- STUDENTS LOOKED AT WORLD ISSUES

- WANTED TO SEE BENEFITS OF THESE TOOLS AND HOW THEY CAN BE LAYERED UPON KF, TO ADD ADDITIONAL FUNCTIONALITY

Worldwide Issues

- Sexism
- Discrimination
- Climate change
- War/weapons
- Poverty/hunger
- Economy/greed
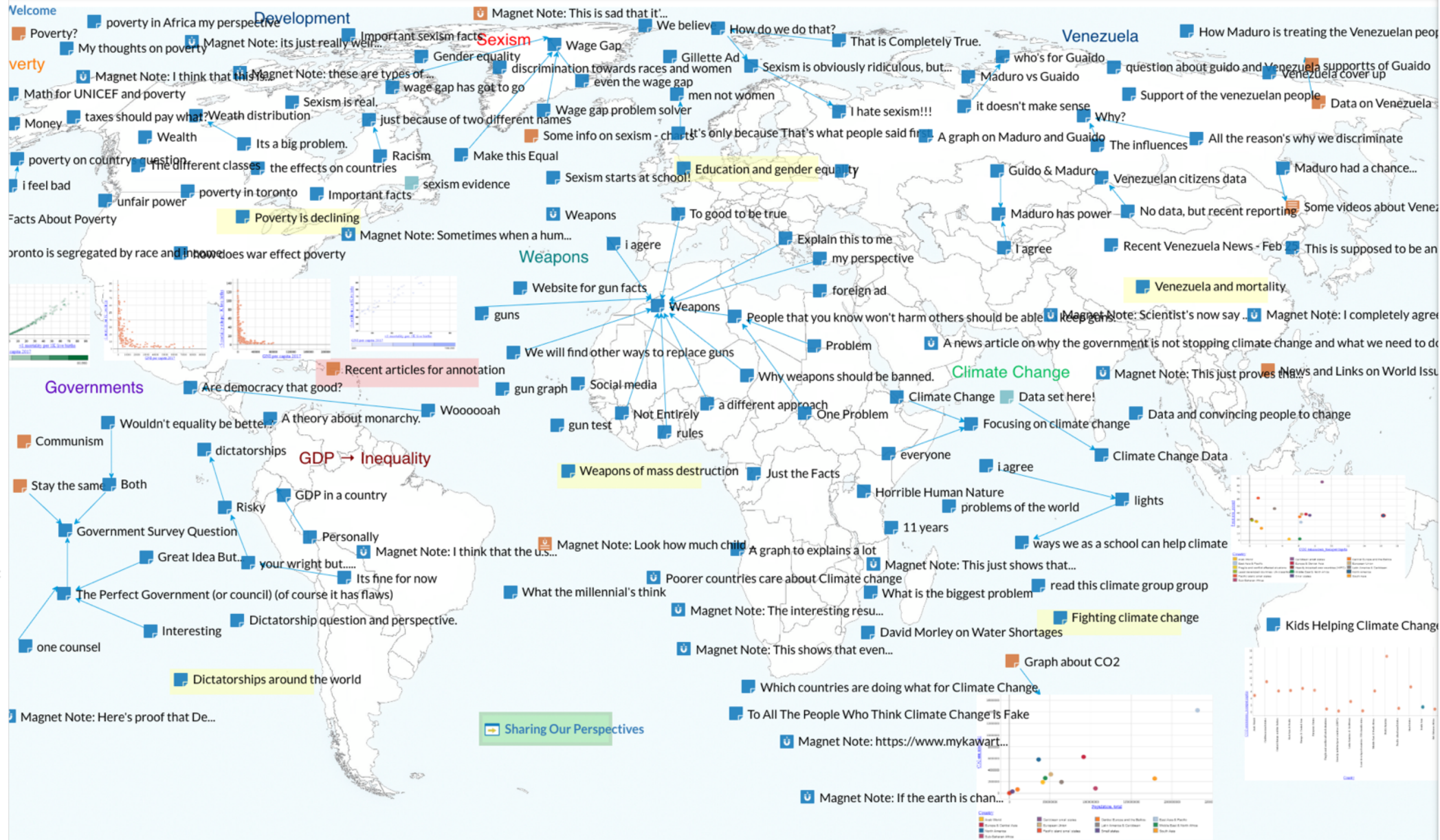- Child labour/child abuse
- Illegal activities
- Animal cruelty

Pilot Study Framing Research Questions

RQ1: TO WHAT EXTENT DOES DATA EXPEDITION FACILITATE THE DEVELOPMENT SCIENTIFIC/DATA LITERACY/ WORLD ISSUES?

RQ2: HOW DO STUDENTS USE THE CODAP/ HYPOTHESIS, BUILDONS & BUILD THEIR KNOWLEDGE IN THESE INVESTIGATIONS?

New Note

Drawing

Attachment

View

RiseAbove

View Link

Scaffolds

Authors

Groups

Workspace

Search

Settings

Assessment

Exit

Welcome

Development

poverty in Africa my perspective

Poverty?

My thoughts on poverty

Magnet Note: its just really well...

Important sexism facts

Sexism

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How Maduro is treating the Venezuelan peop

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Explain this to me

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I agree

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One Problem

Focusing on climate change

Data and convincing people to change

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dictatorships

GDP → Inequality

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everyone

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Stay the same

Both

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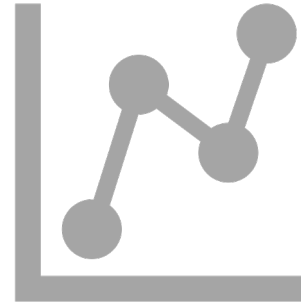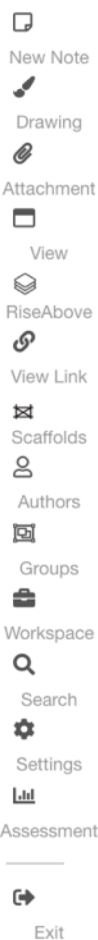Education and gender equality

To get to this point we wanted students to always think the following when contributing:

What evidence or data backs up that perspective

What GRAPHS, CHARTS, MAPS or STATISTICS will make that perspective clear?

Left Sidebar

New Note
Drawing
Attachment
View
RiseAbove
View Link
Scaffolds
Authors
Groups
Workspace
Search
Settings
Assessment
Exit

Map Canvas

Welcome
Development
poverty in Africa my perspective
Poverty?
Magnet Note: This is sad that it'...
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Venezuela
How Maduro is treating the Venezuelan peop...
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Right Panel — IDEA MAGNETS

Search

TAGS
- #CC 5
- #climatechange 2
- #Just do it 1
- #nike 0   #POV 1
- #serena williams equilityjust do it 0
- climate change 0

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ANNOTATIONS

oliver6   2019-04-08

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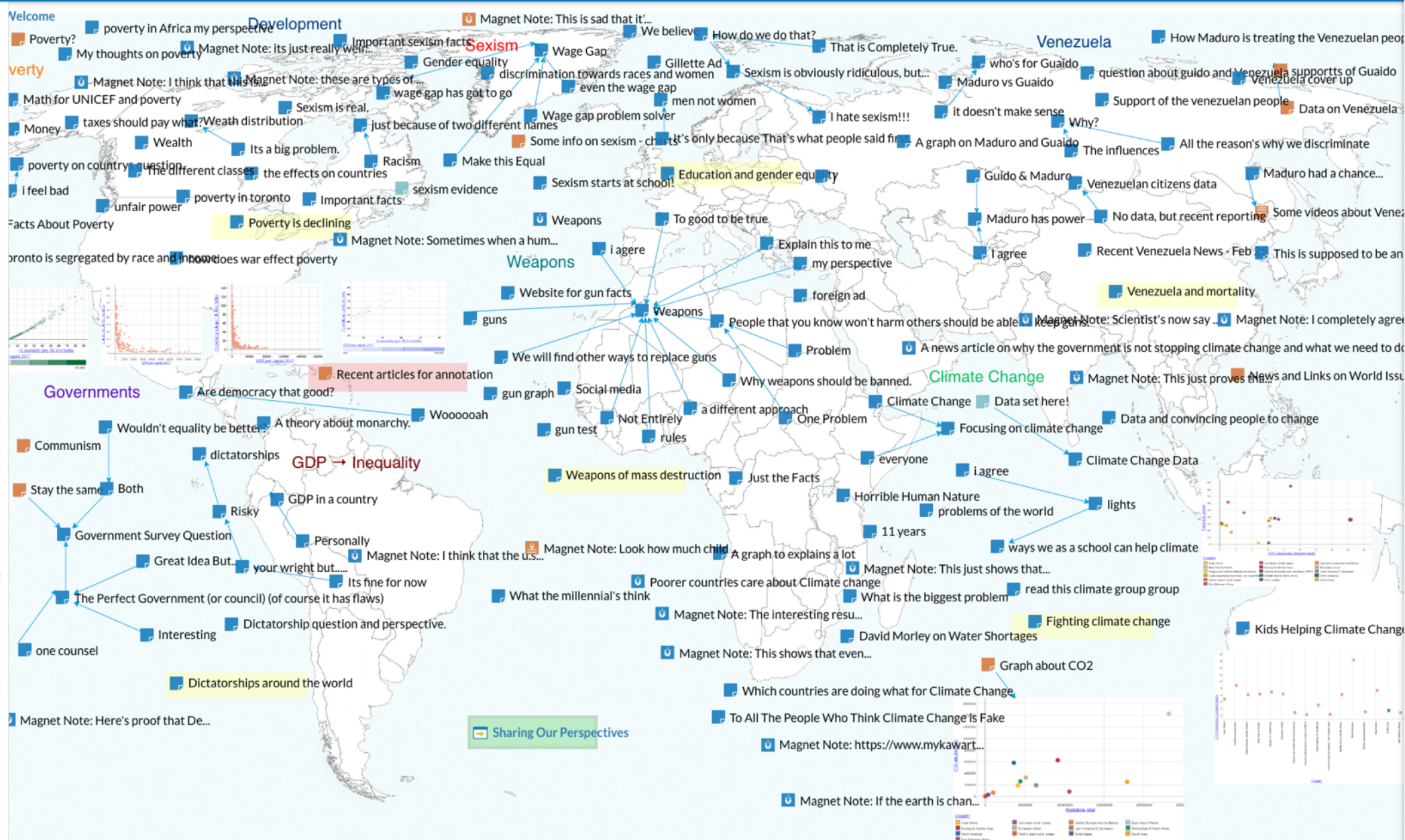
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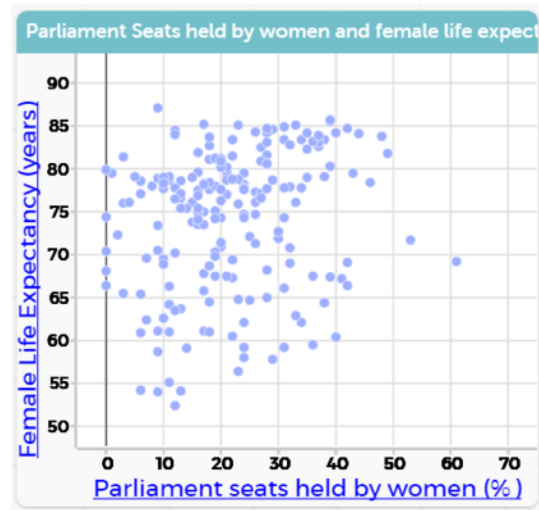
chloem6   2019-04-08

Protest from the Venezuelan peole

VZ

justine6   2019-04-05

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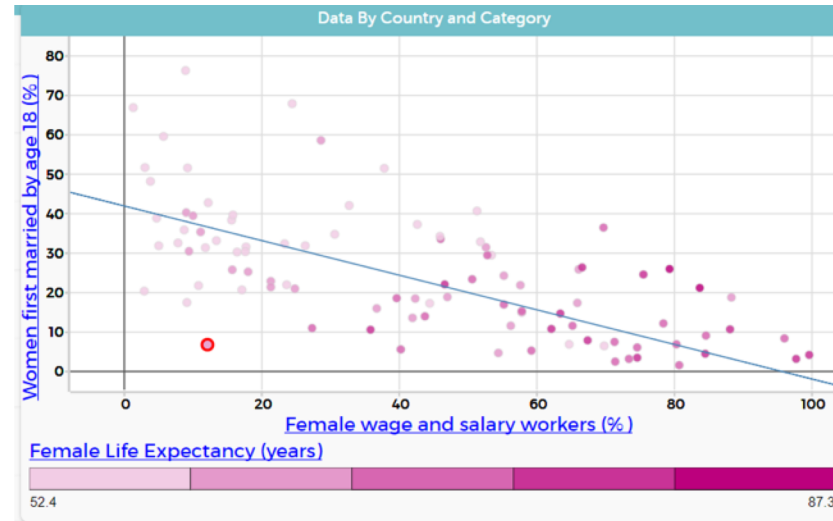I think that the u.s is now a flawed democracy is because of Trump.

mirabella6   2019-04-05

women won't achieve full equality in the areas studied by the World Bank

CODAP

Common Online Data Analysis Platform (CODAP)

Open-source software for dynamic data exploration

For Educators   For Developers

CODAP is free educational software for data analysis. This web-based data science tool is designed as a platform for developers and as an application for students in grades 6-14.

New Note
Drawing
Attachment
View
RiseAbove
View Link
Scaffolds
Authors
Groups
Workspace
Search
Settings
Assessment
Exit

Welcome

Development

poverty in Africa my perspective

Poverty?

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Search

TAGS

- ☐ #CC **5** ×
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women won't achieve full equality in the areas studied by the World Bank

Parliament Seats held by women and female life expect[ancy]

Female Life Expectancy (years)

Parliament seats held by women (%)

I thought if they live longer, they have more rights but it is completely random

Data By Country and Category

Women first married by age 18 (%)

Female wage and salary workers (%)

Female Life Expectancy (years)

52.4   87.3

My interpretation is that since there are blank spots in the top right and almost fully in the bottom left, so that means that the more women married by age 18, the more women aren't working for wage or salary. My guess is that if they got married early, they won't get a good education, so they will be reduced, willingly or not, to a housewife. The reason there are few countries in the bottom left is because if you are married after age 18, you have a bigger chance to get a better education for a good job. Except, this isn't foolproof, so some countries are their. For life expectancy, if you are working for money, you will have money to buy food, pay bills, so on.

Women and Development

Data By Country and Category

Female Life Expectancy (years) / *Female wage and salary workers (%)*
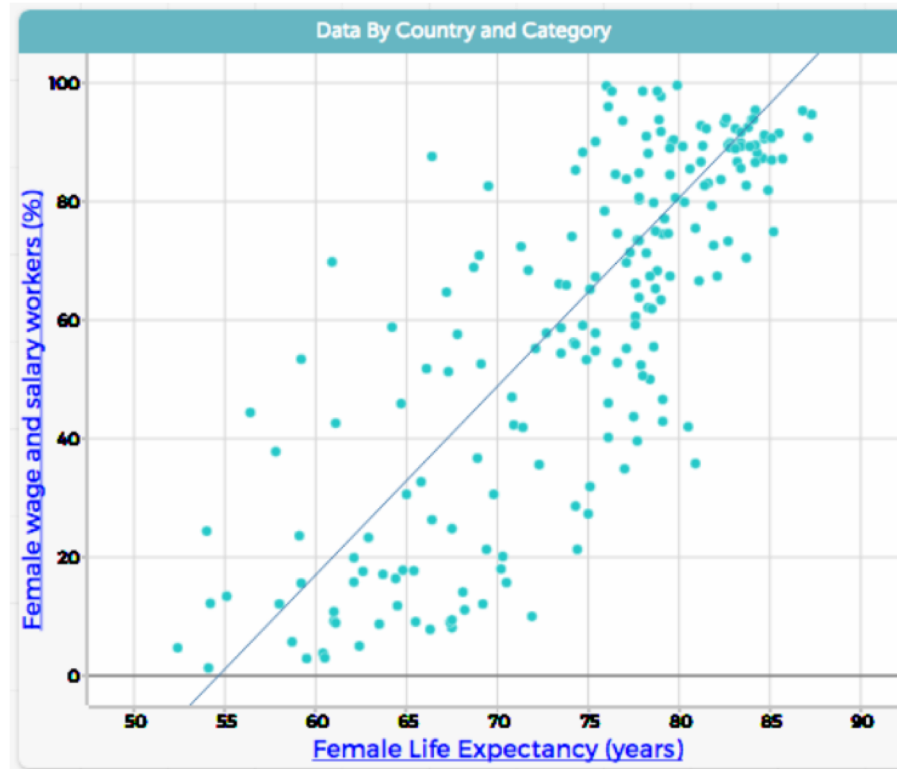
I think that this graph shows that:

1) Countries with higher female life expectancy also have a high percentage of female wage and salary.
2) It could also mean that female life expectancy depends on the female wage and salary. Because if the women of a country make good money as well as the men, the families will have more food and more luxuries, so therefore it is probable that the families (women), will live longer.

Data By Country and Category

Female wage and salary workers (%) vs Male wage and salary workers (%)

Female wage and salary workers = (0.991 9...

Women and Development

Data By Country and Category (229 cases)
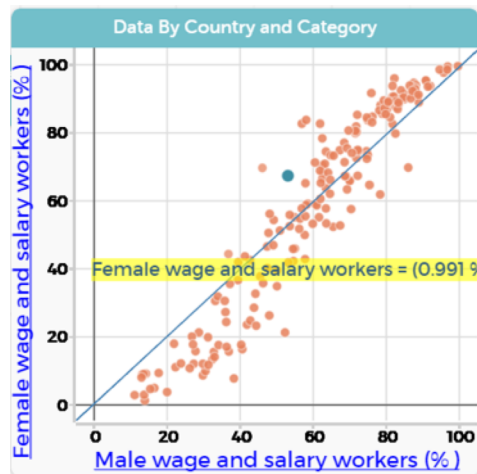
index	Country Name	Male Life Expectancy (years)	Female Life Expect (years)
88	Honduras	71	
89	Hungary	72.3	
90	Iceland	81.2	
91	India	67.1	
92	Indonesia	67.2	
93	Iran, Islamic Rep.	74.9	
94	Iraq	67.6	
95	Ireland	79.9	

As you can see these two variables have a relationship but not the strongest one. the biggest outlier is a country called Eswatini.
Male life expectancy is 54.4 years old and male wage and salary workers is 85%. Eswatini is a small country in south Africa and Africa doesn't have the best working conditions, so my thinking is that a lot of men are working but since there working conditions are bad they die at a young age.

Data By Country and Category

Female wage and salary workers (%)

ns with female participation in ownership
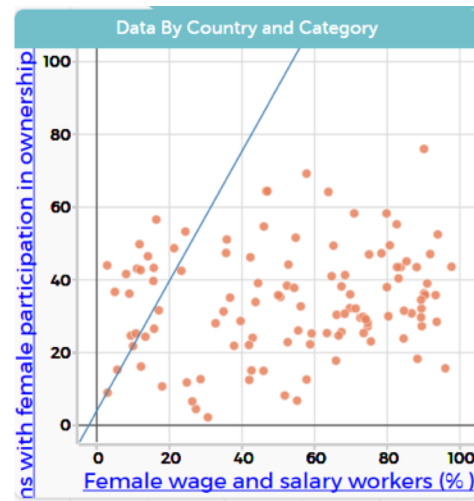
This doesn't make any sense. I thought that the more wage and salary workers, the more ownership women would have
. My question is, how come female participation in owner ship isn't compatible with female wage and salary workers.

Data By Country and Category

Parliament seats held by women (%) — vertical axis (0 to 70)

Women first married by age 18 (%) — horizontal axis (0 to 80)

Nondiscrimination laws? yes=1, no=0 (0 to 1)
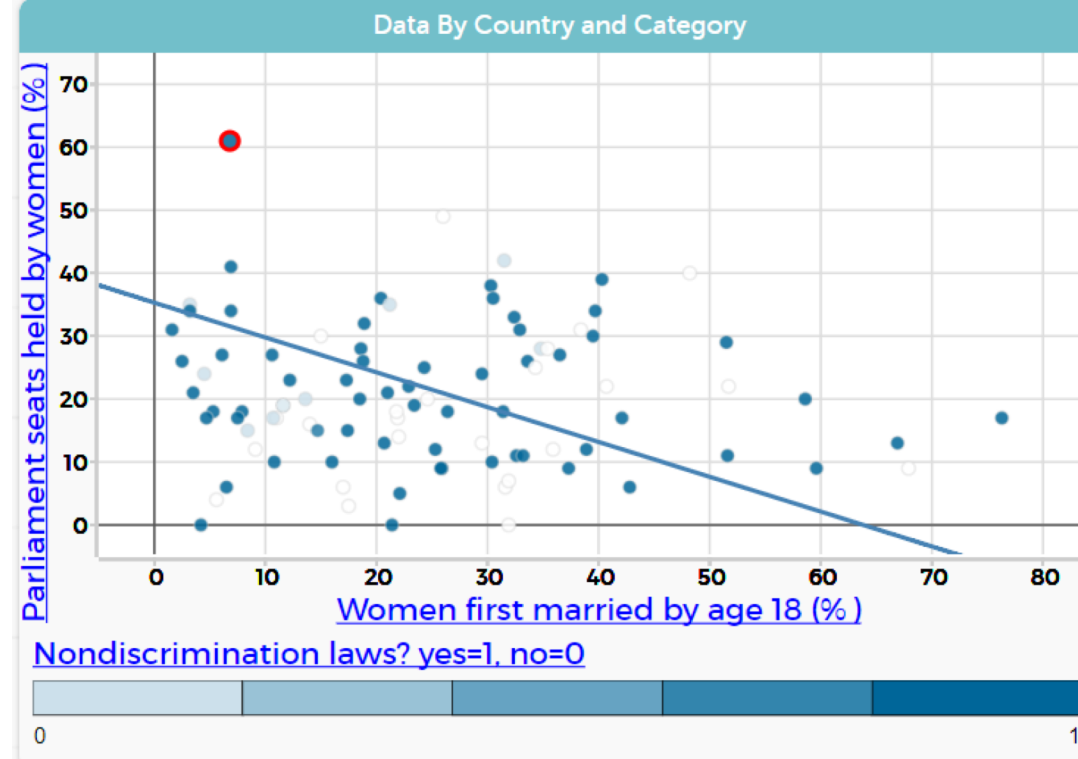
My interpretation is that first, nondiscrimination law have no effect, since even countries with nondiscrimination laws have a small amount of women in parliament, and a lot of women married by age 18.

The line is going in a down to the right pattern, and I think that if you are married by age 18, you will have a low education, which means you have a low chance of being able to get a parliament seat. That's why there are no countries in the top right. What I'm wondering is that why nondiscrimination laws have no effect on the other things. If it has no effect, why would it be put in place in the first place?

The combined fortunes of the worlds 26 richest individuals reached $1.4 trillion last year - the same amount as the total wealth of the 3.8 billion poorest people. I never realized the inequality of the distribution of

money was this bad.

What percent of countries support Guaido? I would want to have some good data on what percent of countries support Guaido

How can the GDP Here Trend affect inform other correlations?

what do you think will happen in later years with below

poverty line country's, and presidents in those

country's who can't take care of there countries. It says

that a third of Torontonians live below the poverty line.

Toronto also has the highest child poverty rate in

Canada.

do think they should even the wage gap. If two people do the same job and do the same amount of work, they should get paid the same. I wonder why in this point in the future there is still a wage

gap?

A Global Initiative

Results we Learned

- Students struggled a bit with annotation – not the task but, Overwhelmed with Knowledge online and what to begin to work with

- Students loved CODAP – once we showed them all the WHO Databased and clean data – students had strong data Literacy and examined how this could inform World News Trends. Students made predictions and new connections On why the world and explanations for ideas/ attributions in New stories – also helped debunk fake news

- Students made more informed theories with data to support They had ideas but used "I need data scaffold" as evidence that they needed to validate their ideas

- Students touched upon the following KB Principles

Touched Upon Use Of These Principles

Improvable Ideas

Read Ideas Authentic Problems

Constructive Use Of Authoritative Sources

Pervasive Knowledge Building

Future Directions?

- Get students to refine their data – and hope to have it Embedded right into KF.

- Work with a bigger dataset, and a longer study – maybe a Whole year / semester