Developing Research Posters

Roxanna Reyna-Islas

CEN

COLLEGIATE EDU-NATION

The great opportunity through Collegiate Edu-Nation (CEN)

There are several ways that teachers, departments, and schools incorporate long-term research projects into the science curriculum. Sometimes starts with a single teacher helping a few ambitious students who perform their research before and after school (through 4-H projects).

Edu-Nation helps and supports schools to include research components throughout the curriculum so that upon graduating, students have conducted multiple research projects at various levels of difficulty

The STEM Research Project through CEN

- One of the components of CEN is the Science Technology, Engineering, and Math (STEM) research through 4-H project-based learning. The projects on the STEM fields can be tested using the **scientific method**, that is an inquiry process used to systematically:

  - Study
  - Investigate
  - Provide explanations for observed phenomenon

By

  - Observing
  - Measuring
  - Testing ideas

The First Step Is
Topic Selection

- Have a general idea of the entity to be investigated is very important!
  - Always select a topic that can be aligned with the specific grade level TEKS
  - Make sure that the studied entity and time of the year are a good combination (growing plants, collecting insects, etc.)
  - Select the place where the actual experiment is going to be performed (a classroom, greenhouse, farm, the playground, etc.).
  - If working with subjects (people), where are they going to be interviewed or participate (the times, in a classroom, always consider safety for the minor)

General Topic Selection

- Addressed local (county, district, state-level) concerns, activities, and events with students
  - County agents are a great resource (they assess local needs, work with county advisory groups)
  - Use local newspapers, web reports, etc.
- Make a rough expense estimate
- Times to be able to use the entity
  - Are they going to be shipped?
  - Do they have to be a certain height, age, stage, etc.
  - Are they going to be available at that time of the year (season)?

The Second Step Is
Time Management

- Decide how much time is needed and/or available for a specific research project
- Next look at school calendars, time of the year (weather, etc)
- Then establish the deadlines (as with any other unit plan, starts with the end in mind)
  - Together with the deadlines it is essential to identify the location, times and person in charge where the specific task is being performed

Sample Timeline

APPROXIMATE DATES TO WORK ON	EXPERIMENT	DEPARTMENT
March 20th - 24th	Literature Research	AVID
March 20th – 24th	Experiment/Data Collection	Ag
	PAPER COMPONENTS	
April 3rd – 7th	Writing Introduction	AVID
April 5th – 7th	Work Cited or References	S. Study
April 3rd -7th	Materials and Methods	Science
April 3rd – 7th	Results and Conclusions	Ag
April 3rd – 7th	Graphs and Charts	Math
April 10th -11th	Grammar, Spelling, etc. Check	ELA
April 10th -11th	Abstract	AVID
April 10th -11th	Acknowledgements	Ag
April 17th – 18th	Poster Creation	Science
April 19th – 20th	Poster Editing	ELA
April 21st	Score base on Rubric	Science
April 21st	Poster Final Approval	Ag
April 26th	Poster Printing	Technology
April 24th – 25th	Practice Oral Presentation	AVID
April 27th – 28th	Presentations	

Sample Experiment Design

Topic: Effects of different brooder floor space on chicks 4-8 weeks old

Main Question: Does different brooder floor space affects chick weight?

Relevance: Importance of poultry industry in Texas (egg production)

Independent Variables (IV): Number of chicks per brooder floor space

Dependent Variable (DV): Weight gain by chick group (by brooder)

Data Collection layout: Each team will be provided with 12 chicks, they will be distributed into 2 brooders, both brooders will have the same floor space (28" X 24"), one brooder will contain 4 chicks and the other will contain 8 chicks. Chicks will be 4 weeks old at the beginning of the experiment, and the observation period will last 4 weeks. Chicks will be weighted (as brooder group) once a week.

Introduction Key Points
What are layer chickens? (common laying chicken breeds)
Characteristics (physical)
Recommended temperature, humidity environment for 4-8 weeks old chicks
Effects of confined chickens (floor space recommended for adult chickens)
Egg market (Texas production, USA production)

Materials and Methods (per team)
12 female chicks (Rhode Island Reds)
2 brooders (28" X 24")
Wood shavings
Waterers
Feeders

Texas A&M AgriLife Extension

Sample Experiment Design

Date/Time	Brooder #	Temperature	Weight	Observations

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TEXAS A&M AGRILIFE EXTENSION

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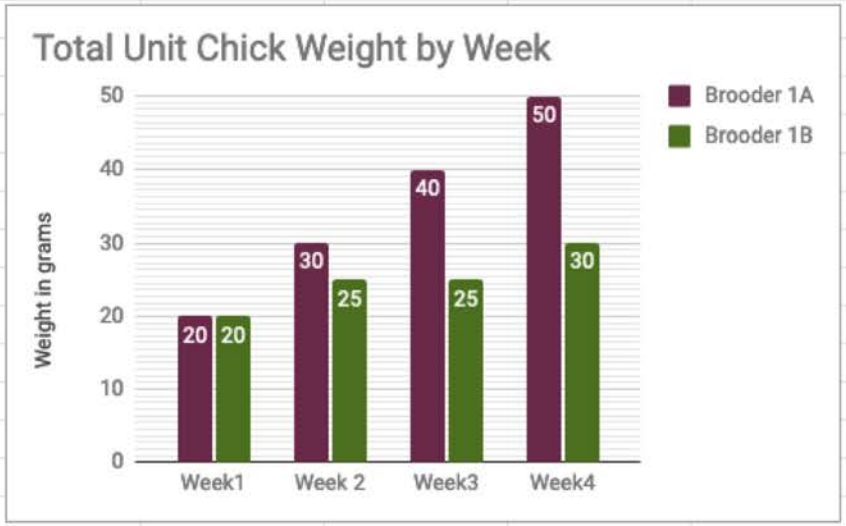
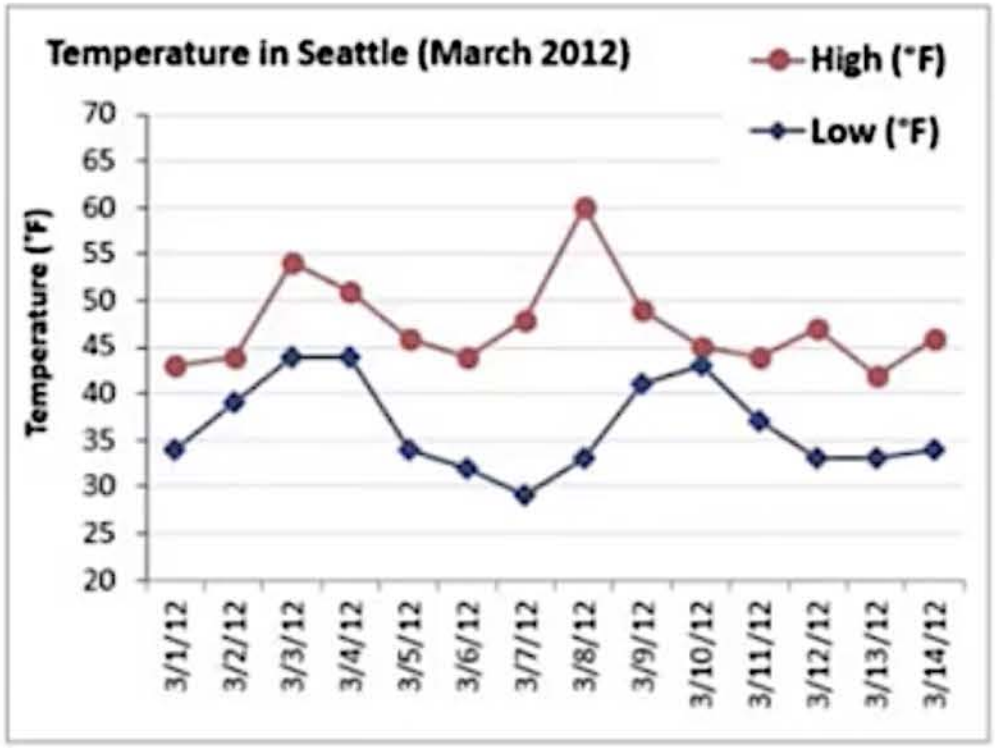
7th Grade Data 2017-2018

File Edit View Insert Format Data Tools Add-ons Help Last edit was on November 13, 2017

		Week1	Week 2	Week3	Week4
Brooder 1A		20	30	40	50
Brooder 1B		20	25	25	30




Temperature in Seattle (March 2012)
High (°F)
Low (°F)
Temperature (°F)
70
65
60
55
50
45
40
35
30
25
20
3/1/12
3/2/12
3/3/12
3/4/12
3/5/12
3/6/12
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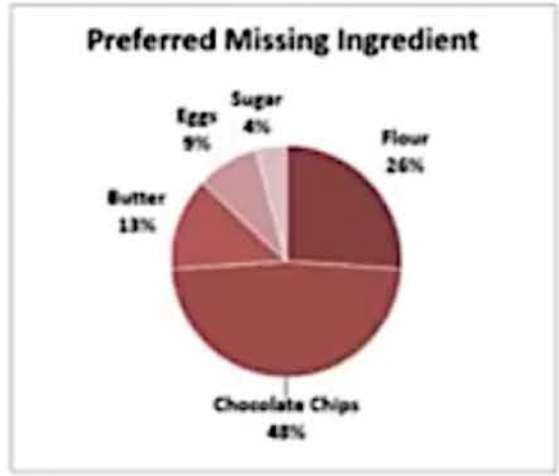
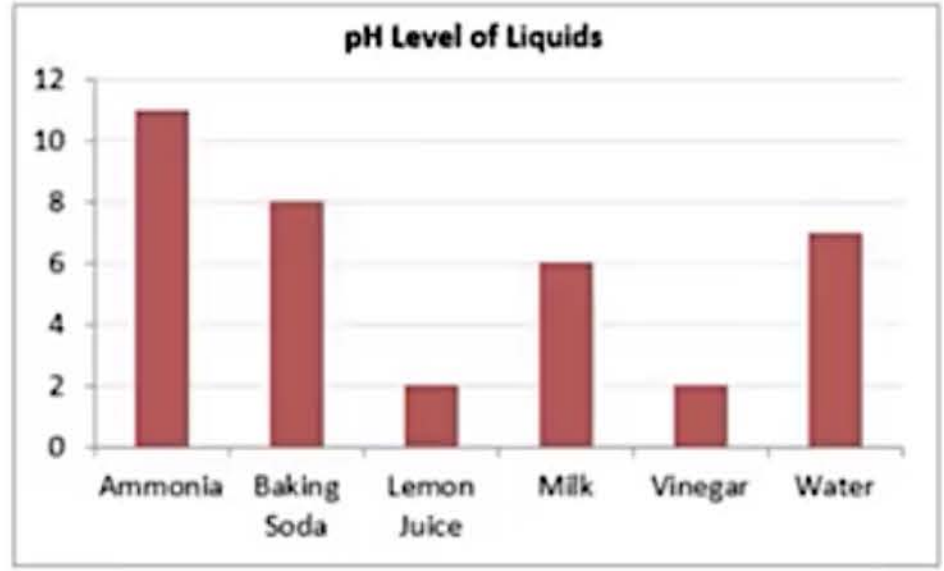
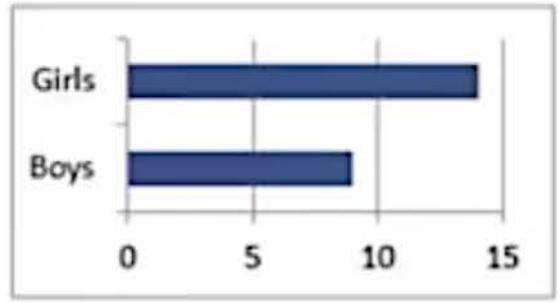
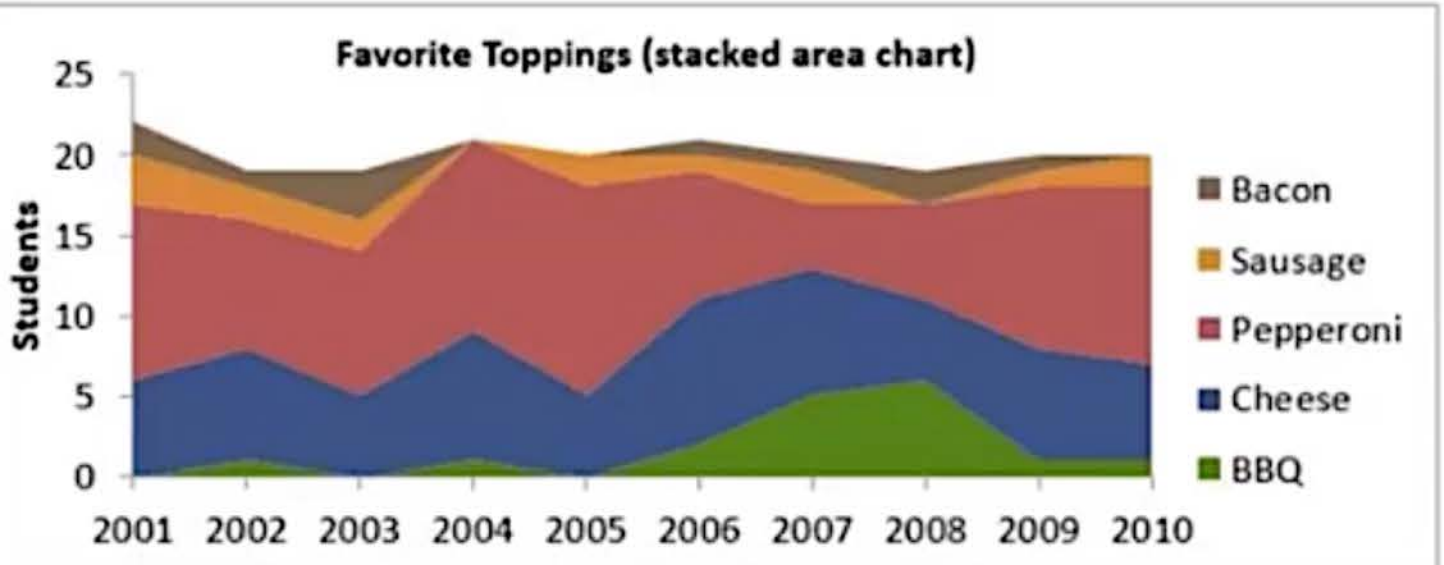
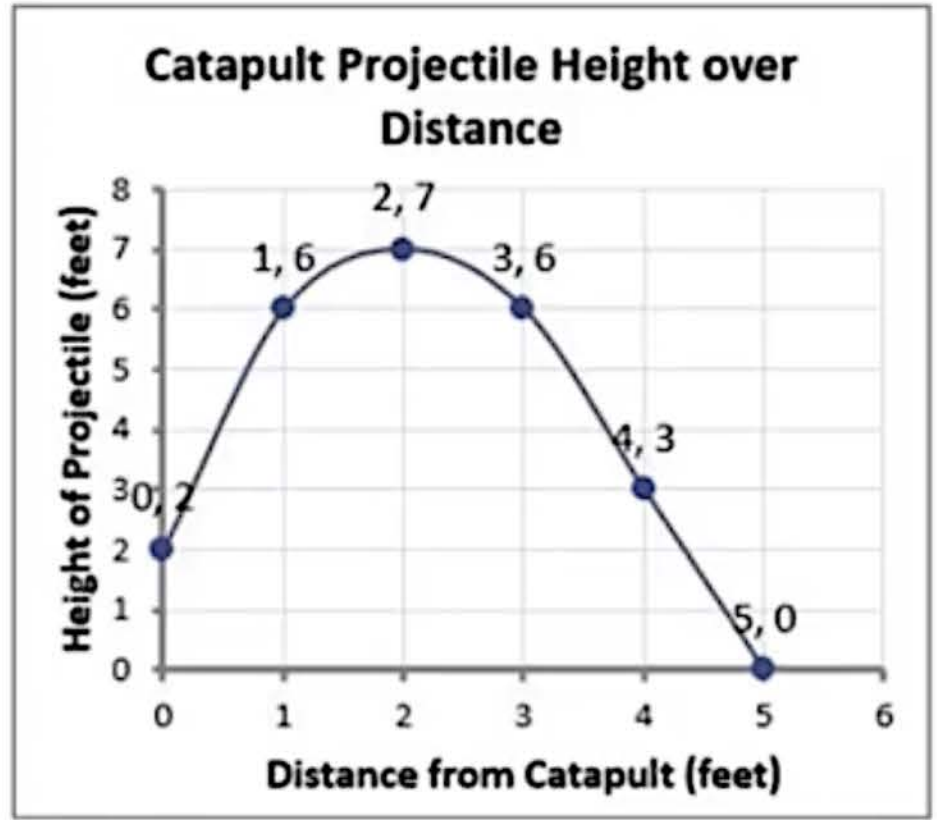
3/9/12
3/10/12
3/11/12
3/12/12
3/13/12
3/14/12


Preferred Missing Ingredient
Sugar 4%
Eggs 9%
Flour 26%
Butter 13%
Chocolate Chips 48%


pH Level of Liquids
12
10
8
6
4
2
0
Ammonia
Baking Soda
Lemon Juice
Milk
Vinegar
Water


Girls
Boys
0
5
10
15


Favorite Toppings (stacked area chart)
Students
25
20
15
10
5
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
Bacon
Sausage
Pepperoni
Cheese
BBQ


Catapult Projectile Height over Distance
Height of Projectile (feet)
8
7
6
5
4
3
2
1
0
0, 2
1, 6
2, 7
3, 6
4, 3
5, 0
0
1
2
3
4
5
6
Distance from Catapult (feet)

TEXAS A&M AGRILIFE EXTENSION

3 Kinds of Input

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Time	Numerical	Categorical
Every 5 minutes	Distance away	Different liquids
Every day	Depth	People
Random times during day	Hours of sunlight	Soil conditions

TEXAS A&M AGRILIFE EXTENSION

3 Kinds of Input

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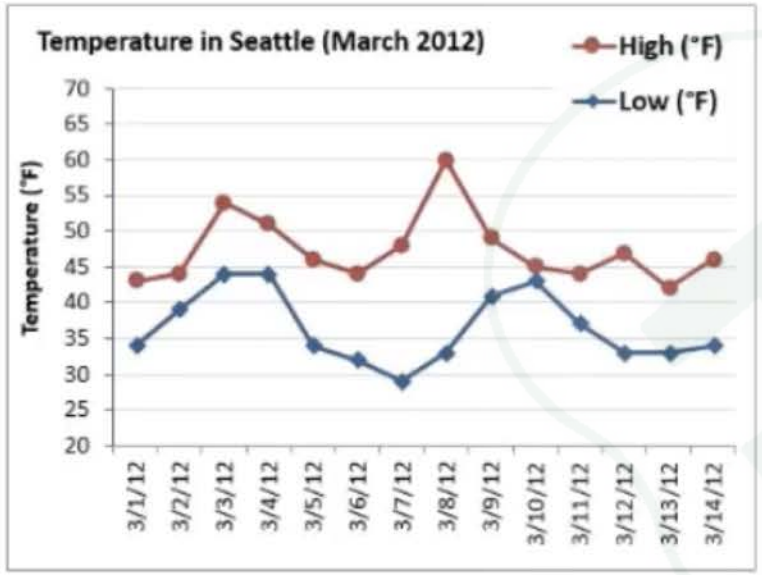
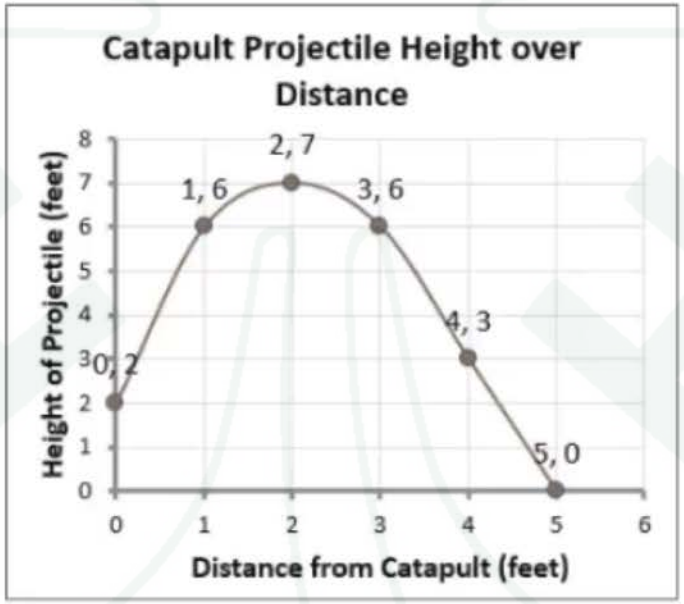
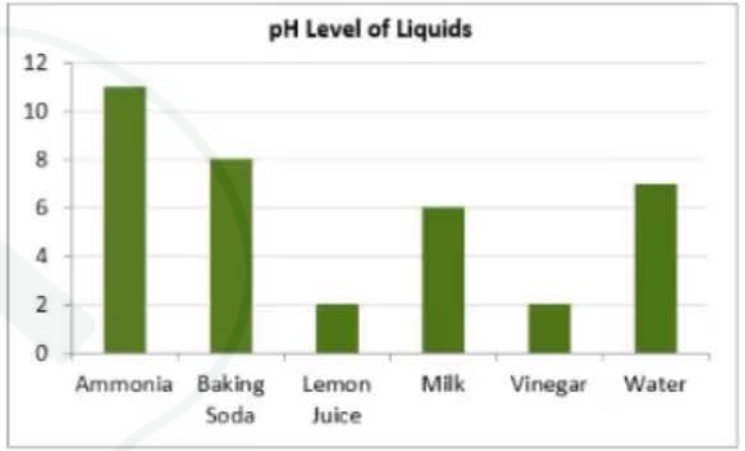
Time



Numerical



Categorical

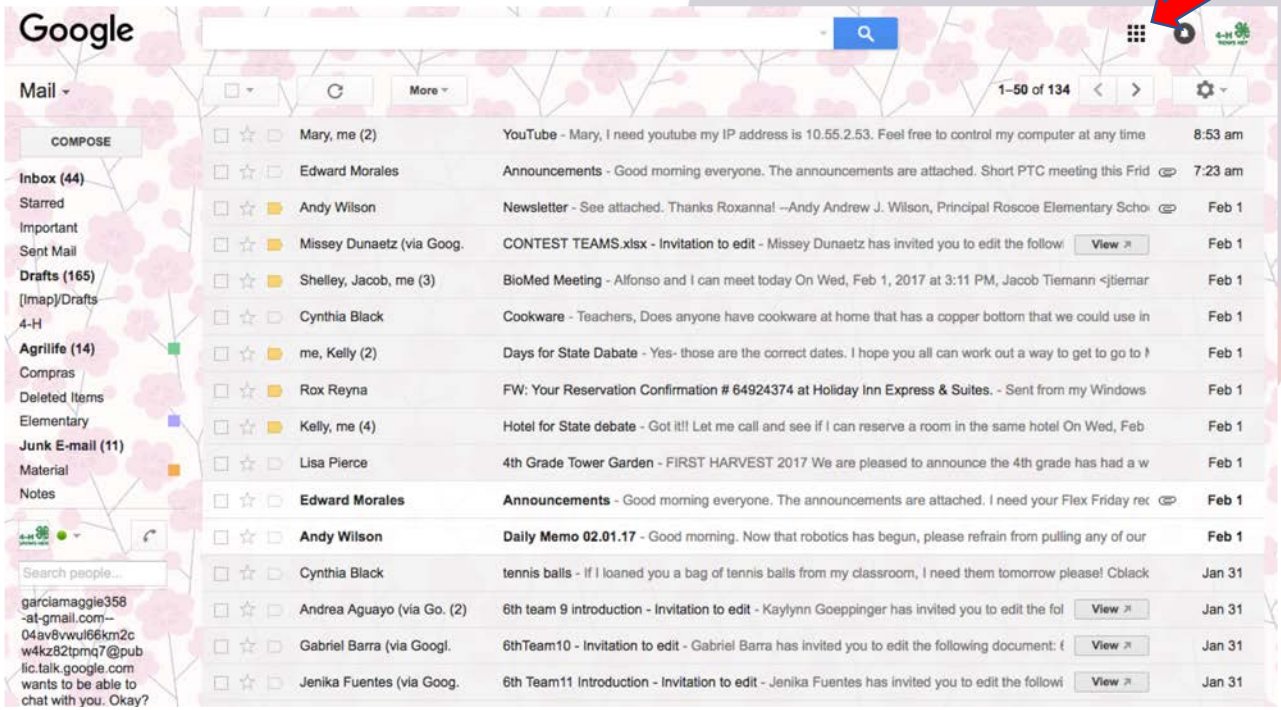


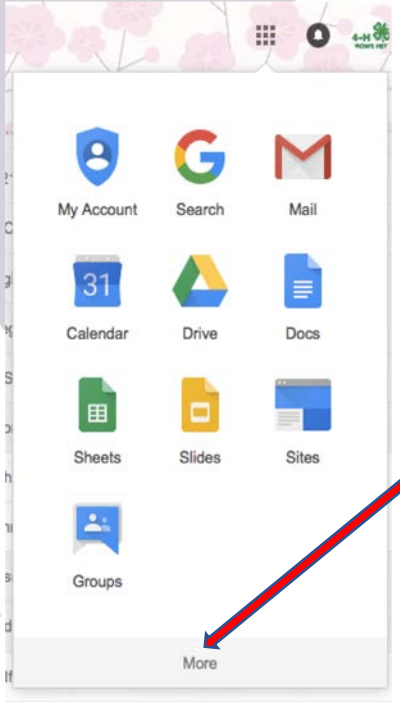
The main Google Apps we are using during our Research Projects or PBL are:

- Google Drive
- Google Classroom
- Google Docs
- Google Slides
- Google Sheets

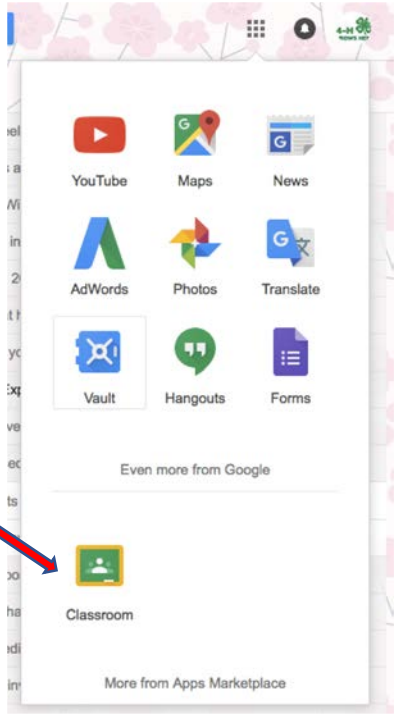
Access to Google Apps

- Login to your roscoe.esc14.net email (Teachers and Students)
- Then click on the google apps and you will see the list of apps





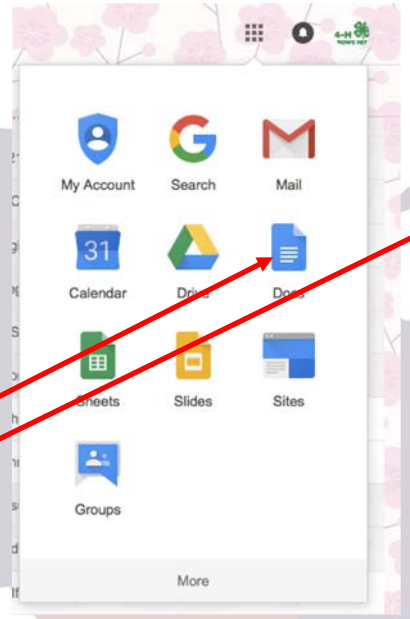
If you click on More. Other apps will appear, including Google Classroom

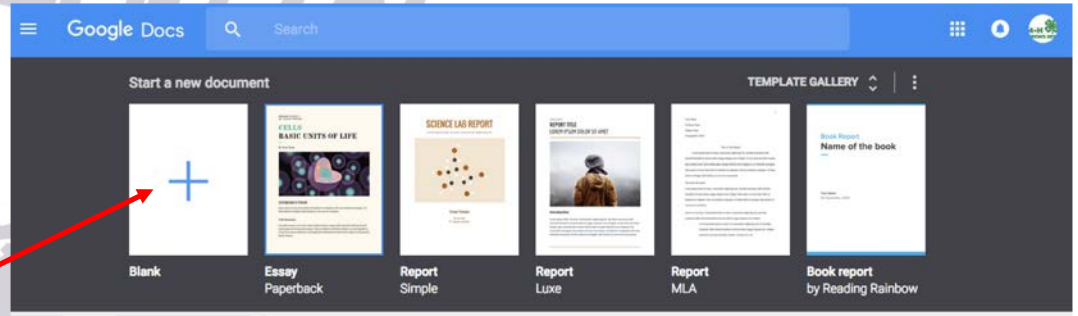


Creating a google document

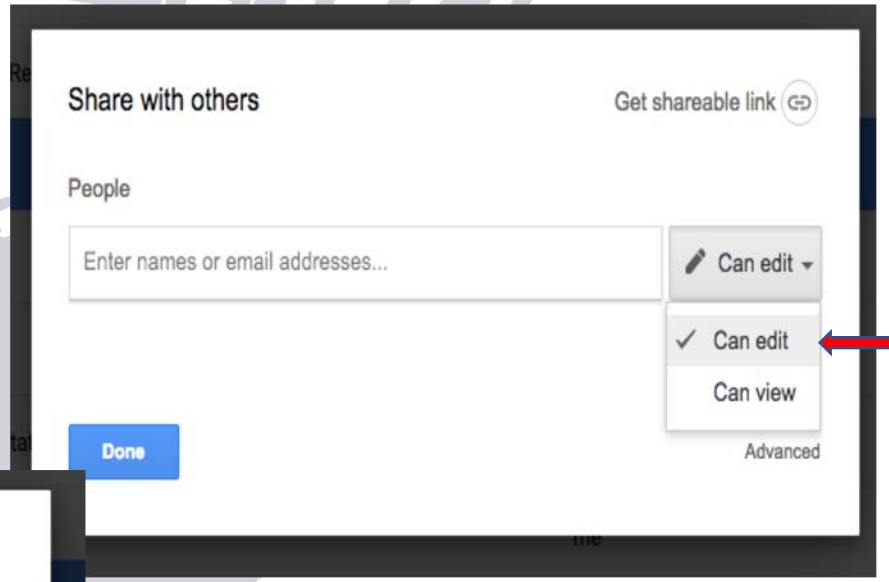
- Google Docs can be used to create Introductions, Materials and Methods, written results, conclusions, acknowledgements, References , etc.

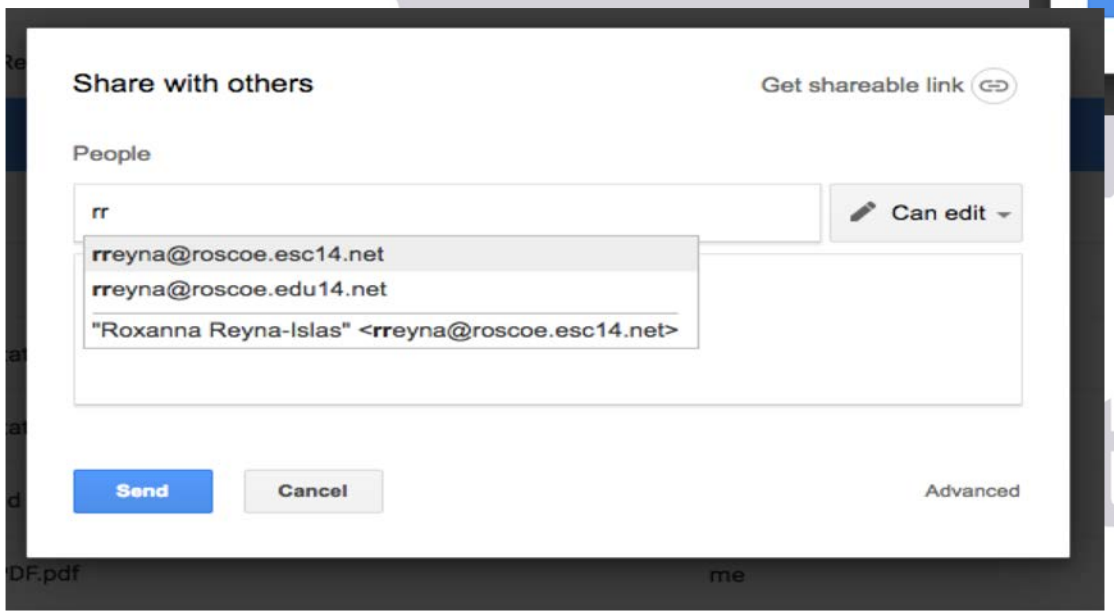
1. First go to Docs
2. Select Blank
3. Title your document
4. Share you document (with teachers and teammates)





After clicking on the Share button this box will appear, select can edit. Then, type the e-mail addresses of your teammates and teachers.

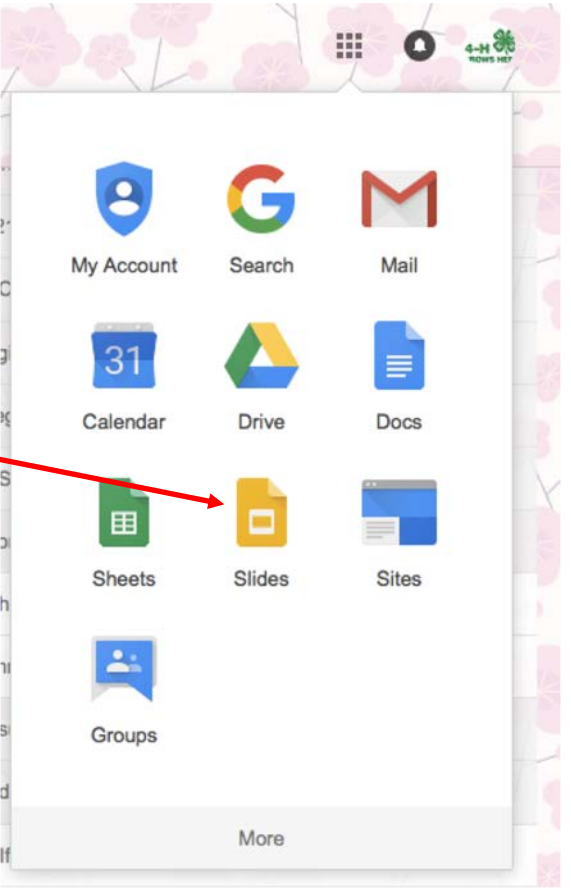


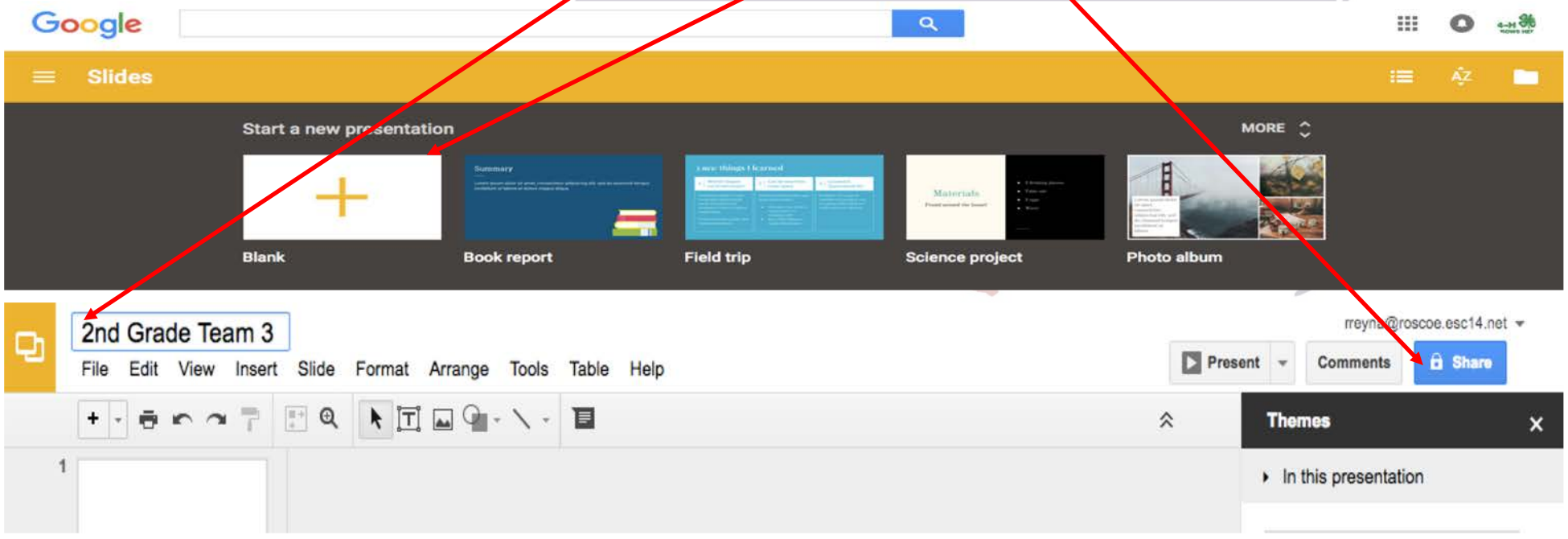


Click send, and the person will received an email invitation to see the file.

Creating the Poster

- The app used to create the poster is Google Slides
- After selecting Google Slides click on Blank
- Then title your document
- After that, share it by clicking the Share button





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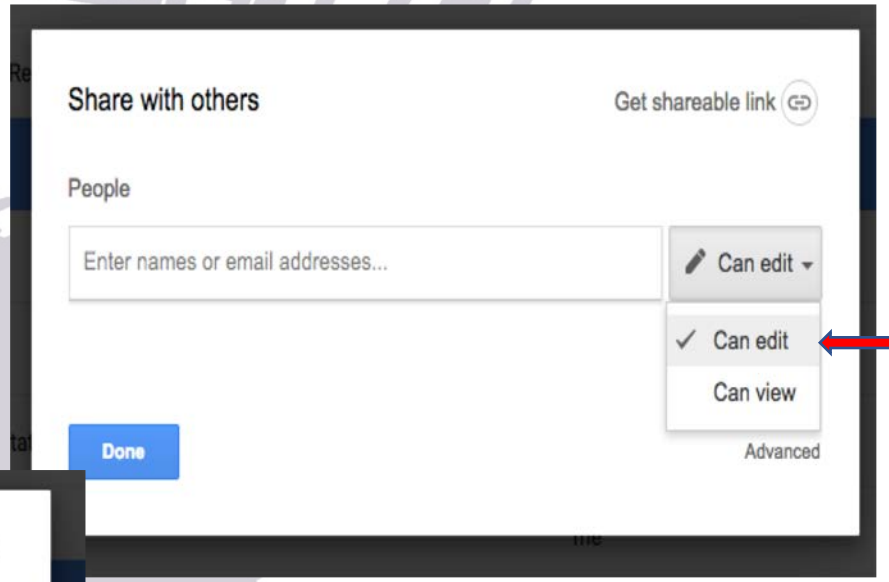
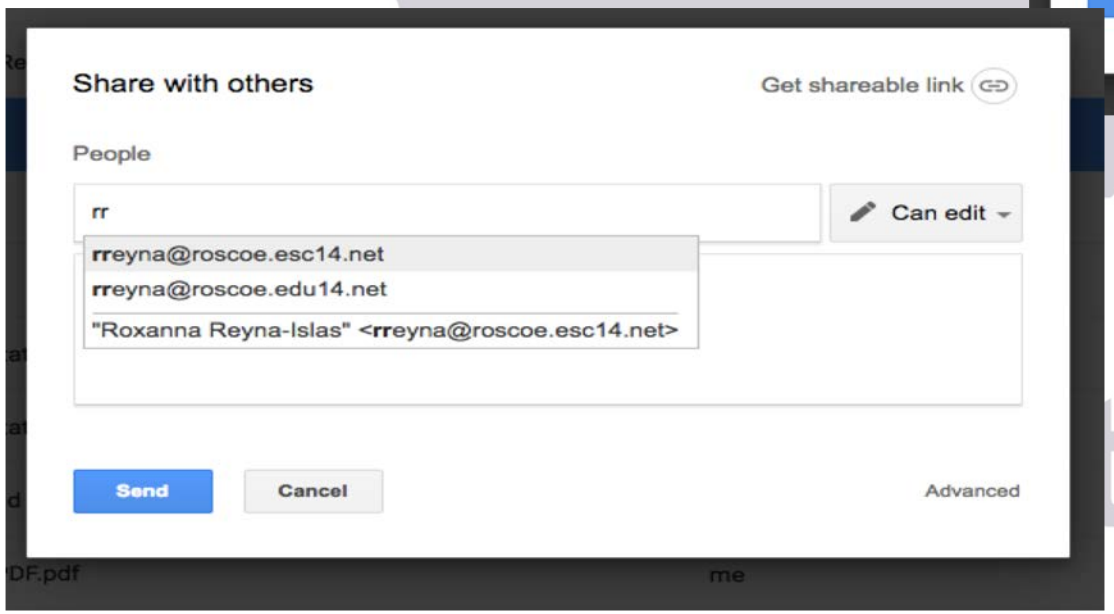
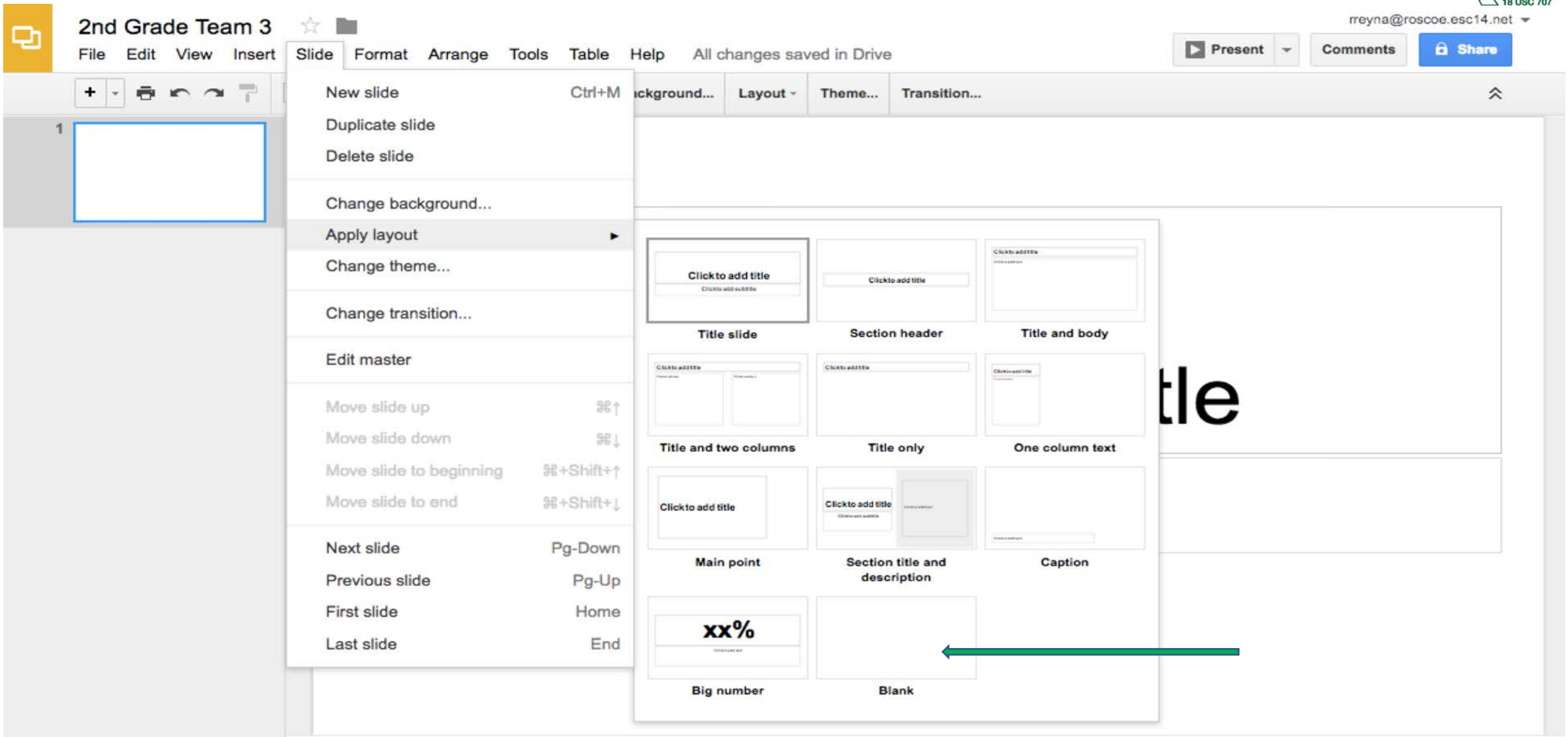
After clicking on the Share button this box will appear, select can edit. Then, type the e-mail addresses of your teammates and teachers.



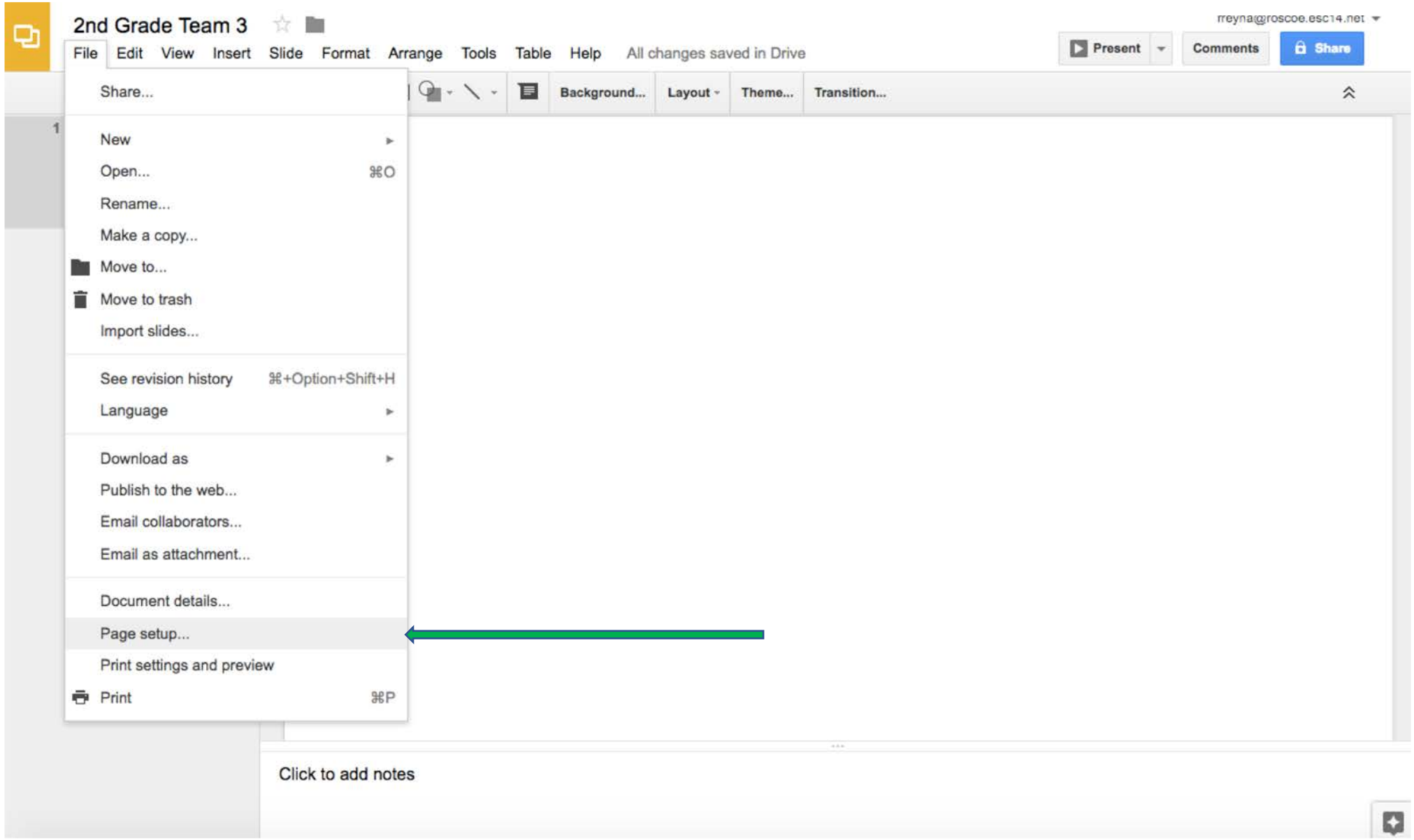


Click send, and the person will received an email invitation to see the file.

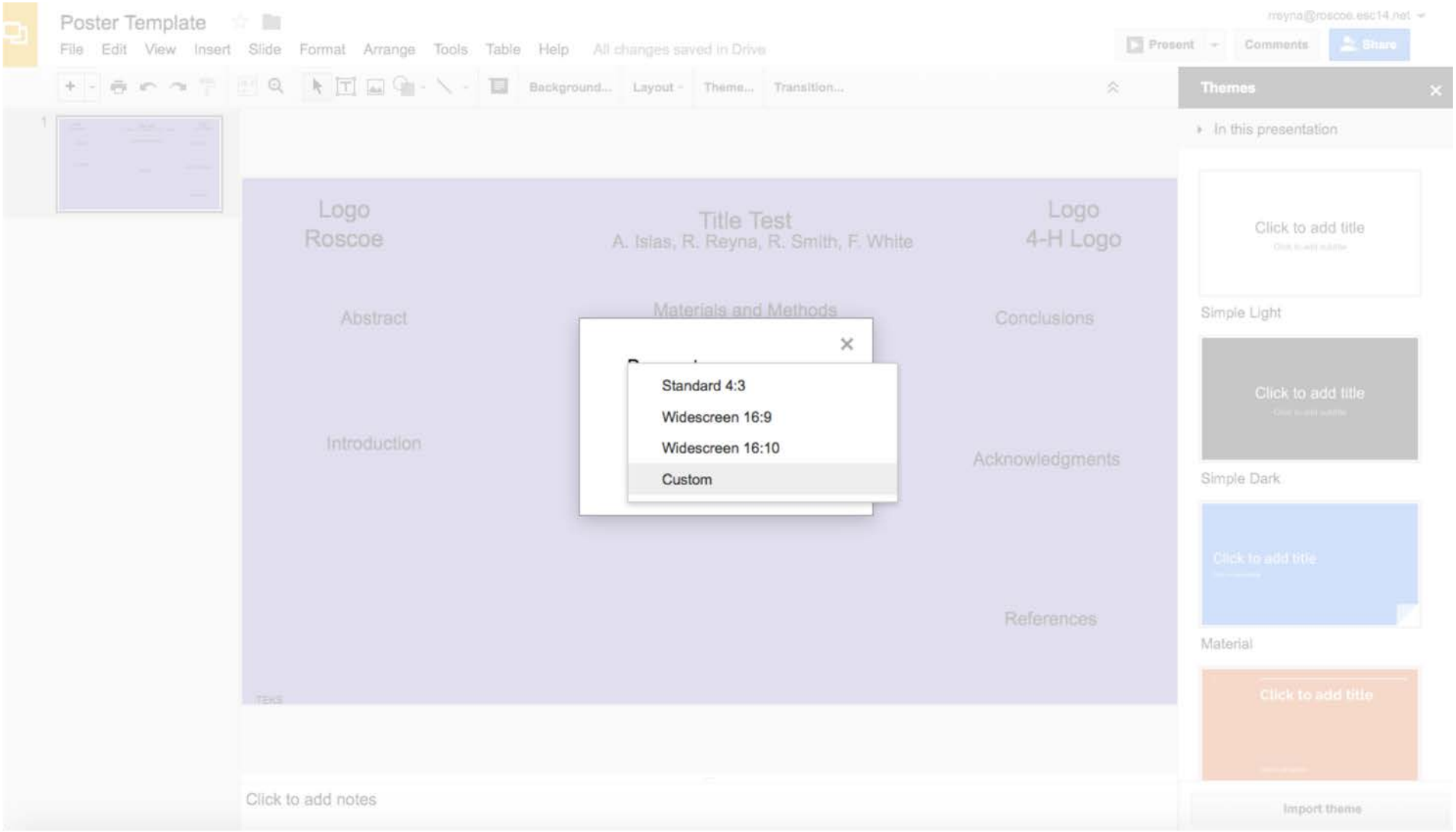
1. Change the slide layout to blank



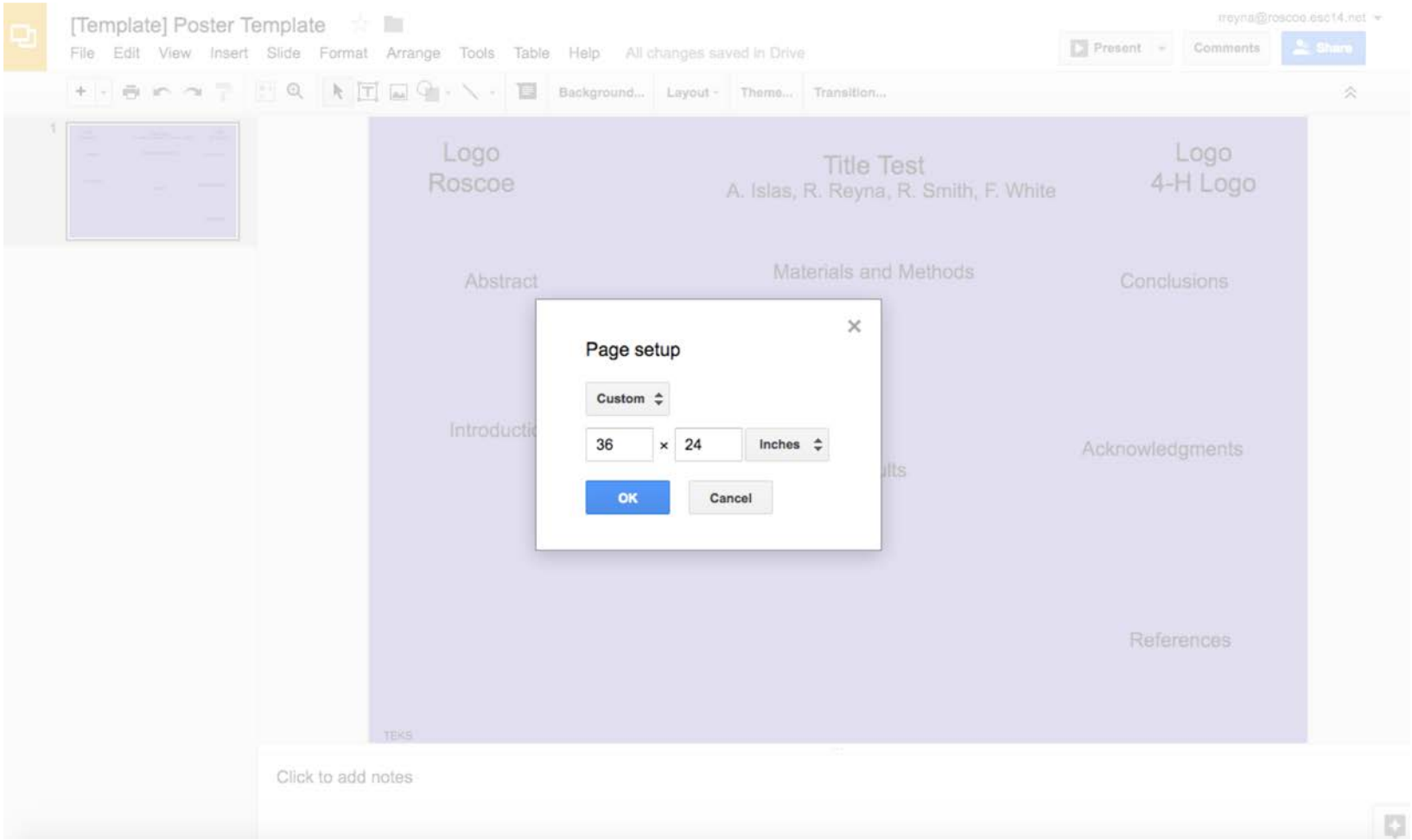
2.A Change the Page Setup



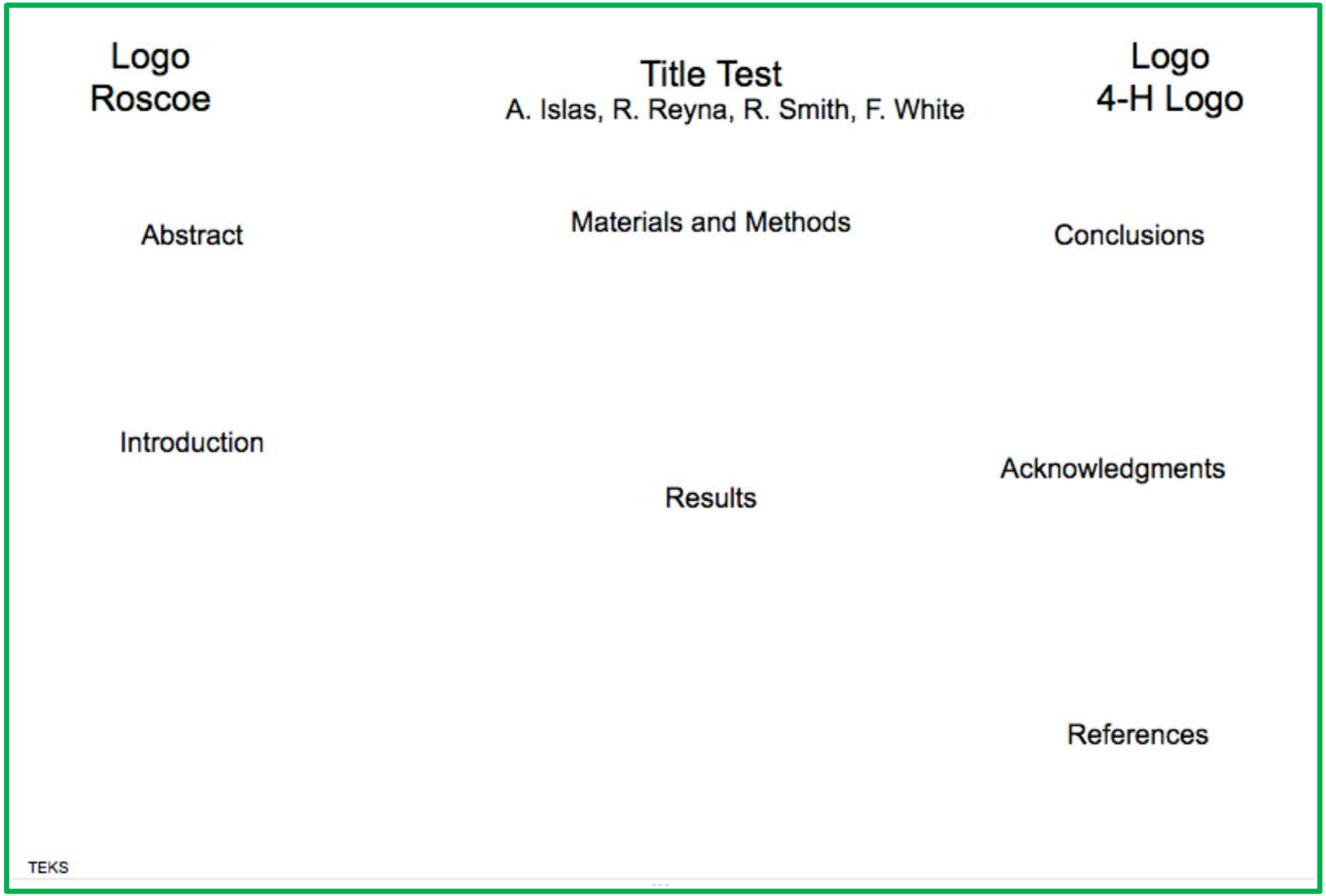
2.B Change the Page Setup selecting Custom



2.C Change the Page Setup to custom 36 X 24 inches

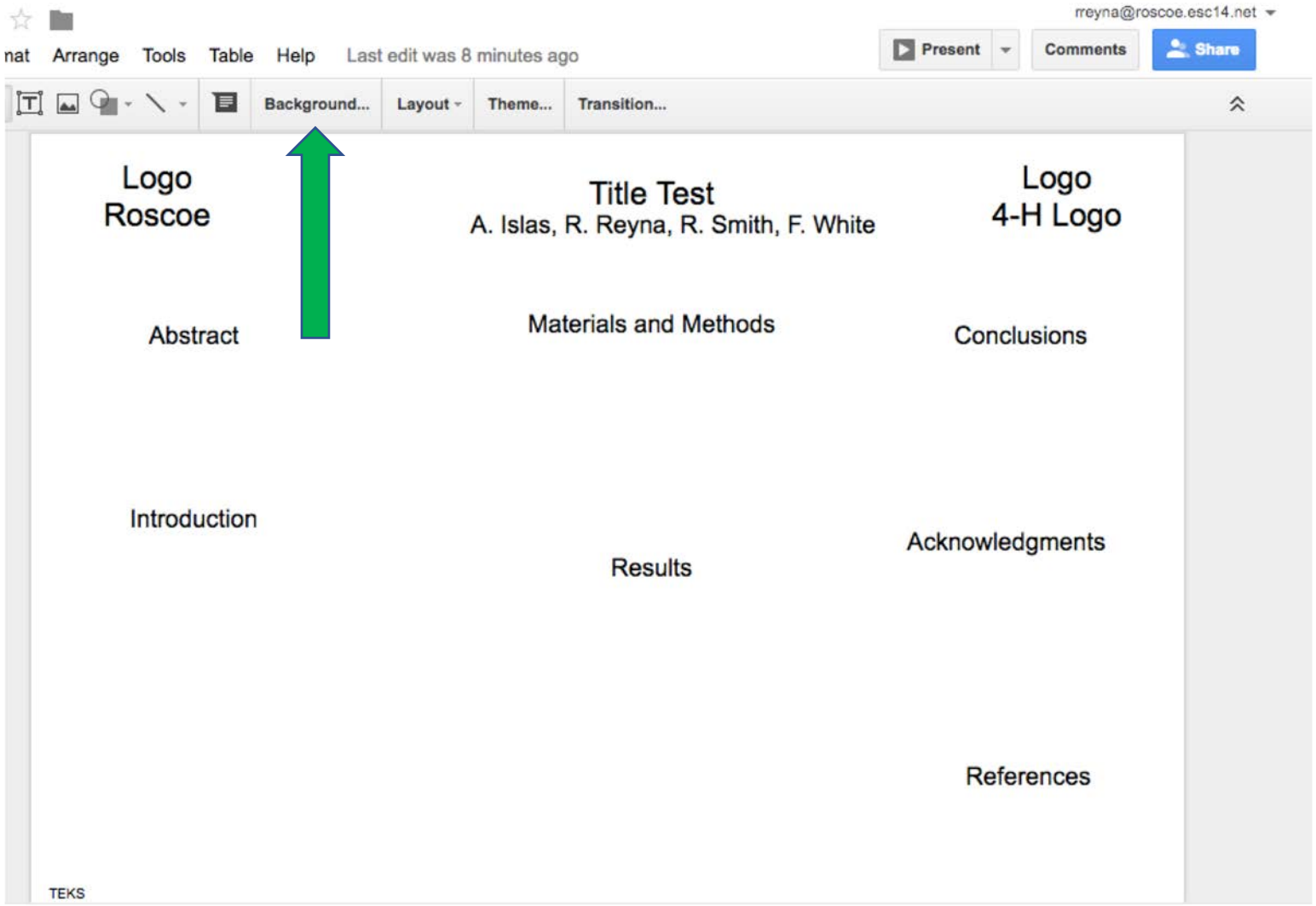


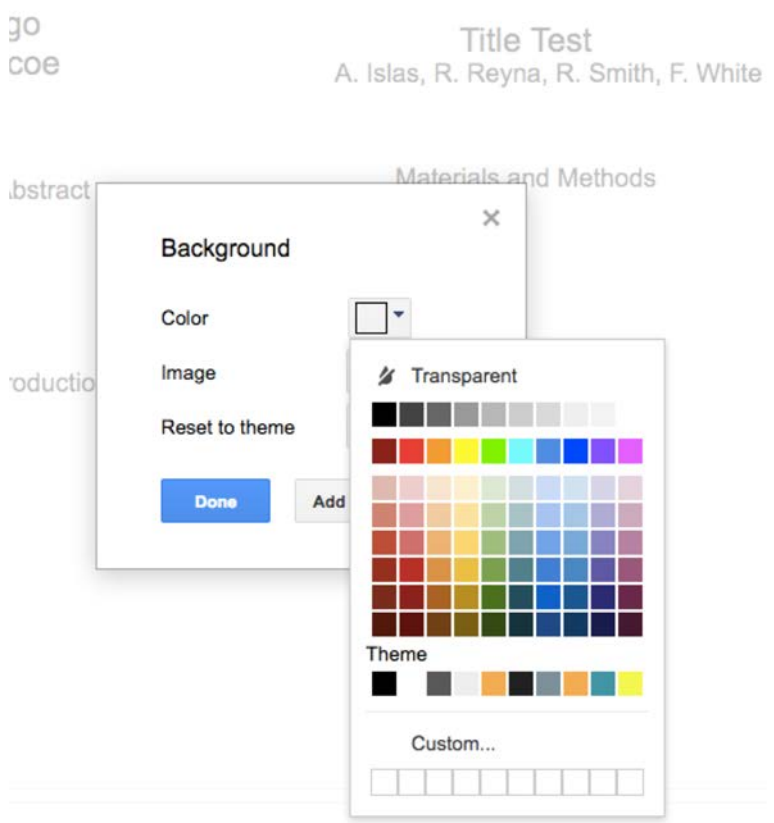
3. Add subtitles to the slide



4. Change Background color

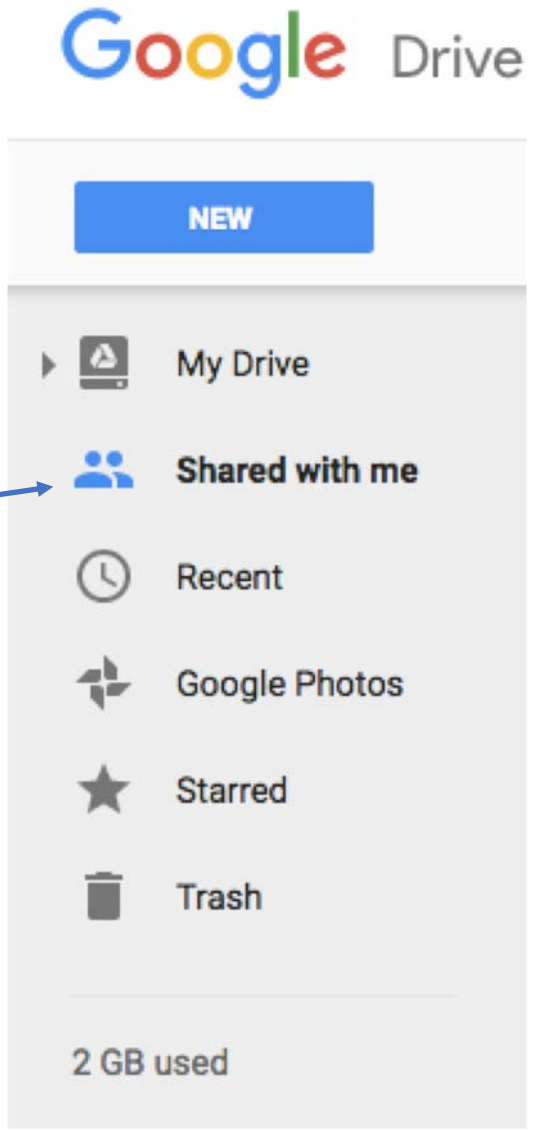
Go to Background, a new window will appear, then you can select a color





Sharing a document that is saved on Google Drive

- When a document was created using any of the google apps, it is automatically saved to your Google Drive.
- Also the documents that were shared with you can be accessed from your Google Drive by selecting “Shared With Me”.
- The documents that were shared with you, can be shared by you as well



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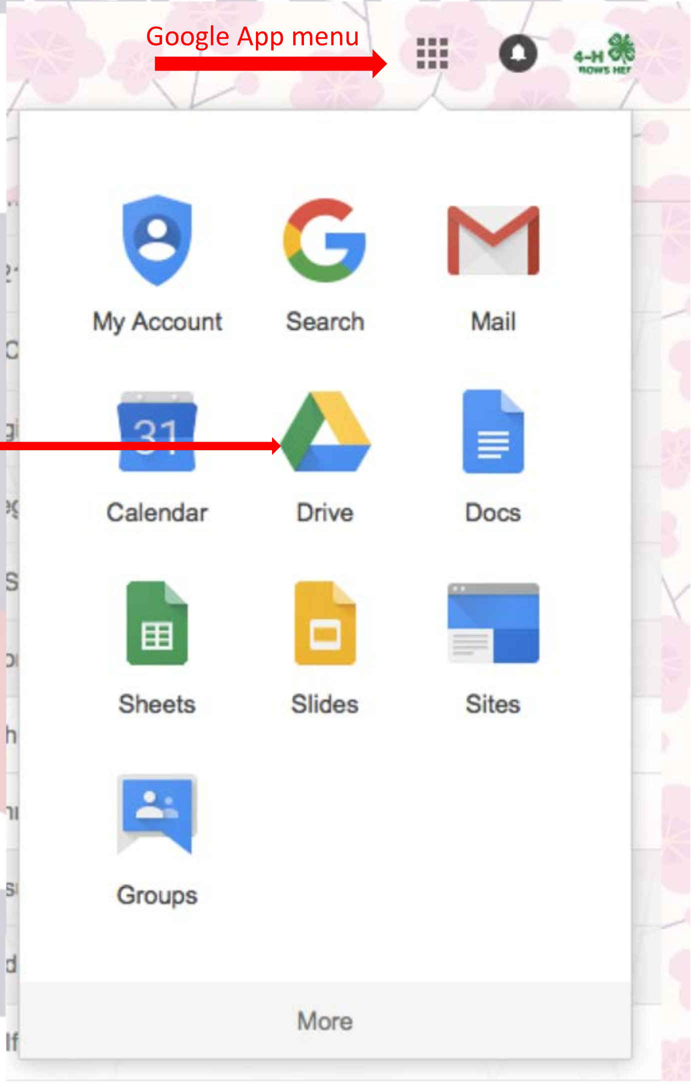
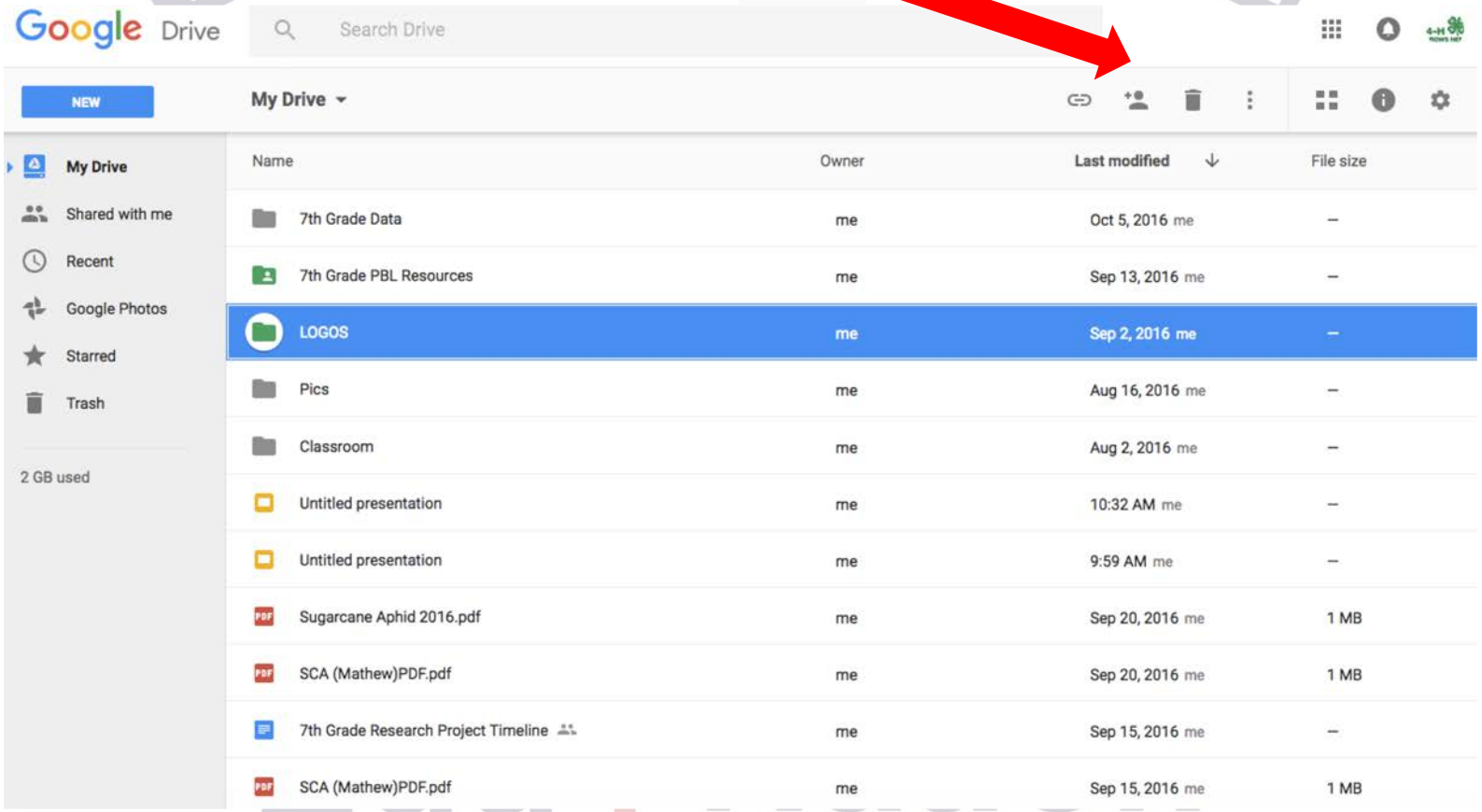
How to share a document using google slides, docs, or sheets?

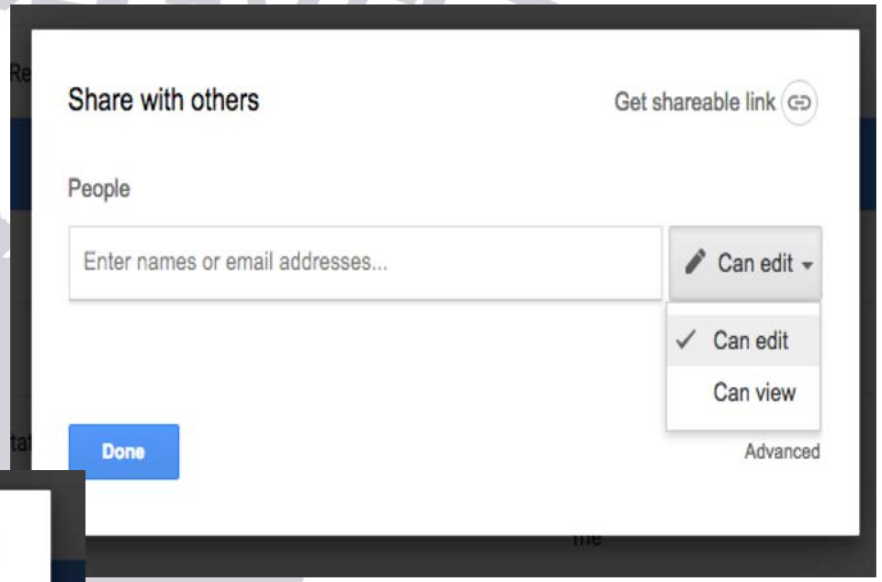
From the google app menu, select Drive

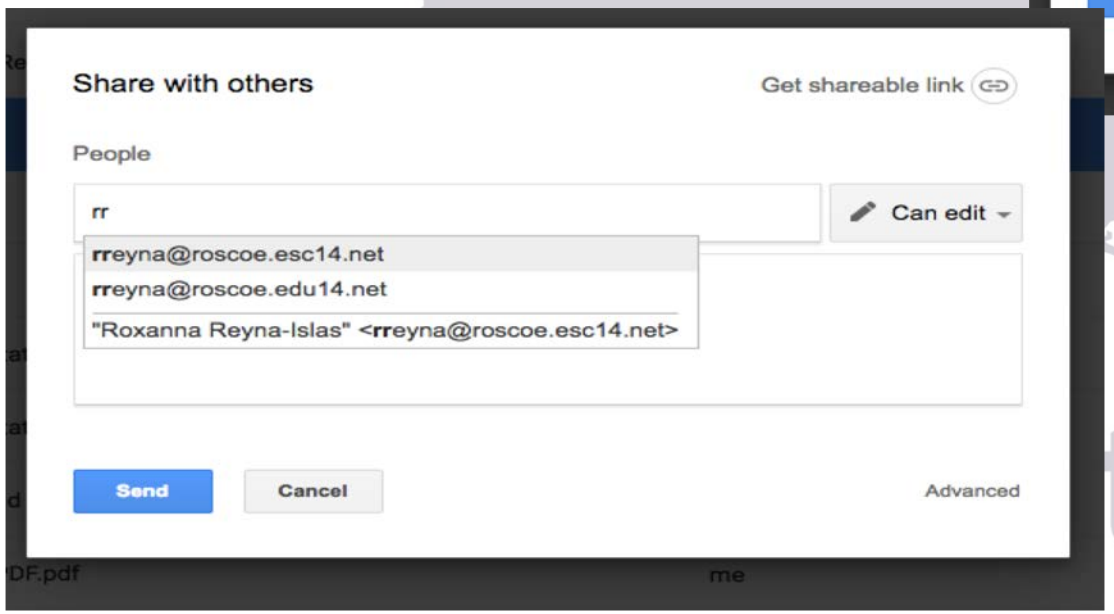


On google drive, select the file to be share and click on share button



After clicking on the share button this box will appear and you can select can edit or can view. Then, type the e-mail address of the person you would like to share the file with.





Click send, and the person will received an email invitation to see the file.

Using Google apps!
Benefit 1
Version History

Version History

- Being able to see progress by date
- Being able to see who made changes (who added information among team members)

Excluding Feral Hogs in Wildlife Feeders

J. Gonzales and C. Gray

Introduction

According to Graves (1984) "There is a rising population on feral hogs in Texas. This is becoming problematic for hunters. Feral hogs eat feed delivered by wildlife feeders before targeted wildlife, reducing the amount of feed available for game animals"). Research suggests that fences 28-34 inches tall effectively prevent hogs from reaching the feed, while allowing adult deer to gain access to feed (Mapston, 2004). To see if these precautions that hunters take is really affecting. We will be setting up 31 inch panels around the feeder. The distance that the panels will be around the feeder will be determined by how far the wildlife feeder throws the corn around the area of the feeder. The experiment will occur on land in Fisher County in Roby, Texas. A game camera will be placed approximately ten feet from the panels around the wildlife feeder.

The entity, in the study, is the feral hogs. The question is if the infestation of feral hogs will decrease around a wildlife feeder if 31 inch panels are setup. The results should be positive and represent that the feral hogs, will have no limitation to the corn that the wildlife feeder has thrown out for intended wildlife. For this experiment, there must be a better understanding about the feral hogs. Extensive amounts of research on feral hogs and their behavior, eating habits, socialness, amongst other things, with feral hogs should be studied.

Background Research

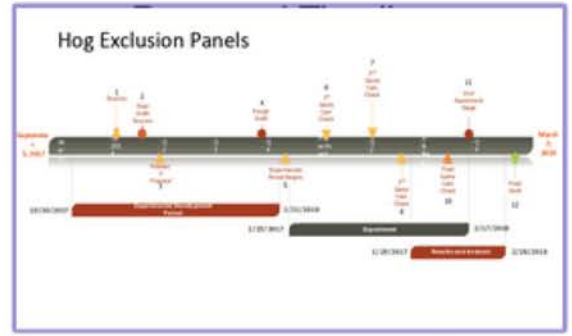
According to Clay (2007), "Whether it's crop damage, livestock predation, environmental degradation, or disease transmission, feral hogs play a substantial role.". Feral hogs have become an infestation world wide. In one case in the that happened in California, 200 people became sick and 3 people died by eating fresh spinach that was contaminated by E. coli. The E. coli was traced back to feral hogs manifesting in California. Feral hogs are hogs that came from a domestic background or have escaped, and through generation after generation they have adapted to learn how to survive thus creating feral hogs. "Last year, in Texas aline, our personnel took 14,507 feral hogs -- more than the total amount that we had taken throughout the entire county the year before!" The most common methods that are used to get rid of feral hogs are shooting them down, live traps, snares, and field shooting. The problem with this is that hogs adapt quickly and thrive in any environment that they move to. They also can graze on anything because of well fit stomachs for anything as well as following the fact that they are omnivores. According to Clay (2007) "Most landowners, especially farmers and ranches, view them as a real menace that causes damage to fences and deer feeders, kills livestock, and eats farm crops, as well as corn thrown from a deer feeder."). Feral hogs also breed quickly and once the female sow has piglets with minutes the piglets are up and moving around as they are quick to adapt. This creates infestation early on in farms, ranches, and personally owned land. Feral hogs are destructive for mainly two reasons. Feral hogs are tough and thick skinned which allows them to be aggressive with any target. They also travel in packs which creates more damage when you have a litter of 8-10 hogs traveling together trying to survive.

Proposed Materials and Methods

The Materials used were four 4 ft. x 20 ft. panels, and eight t-post. Each t-post was planted at each corner of the panels to keep them upright. The other four t-post were put in the middle of the panels for vertical support. A feeder with a 25-gallon bucket on top that held the corn. Eight 50-pound bags of corn filled into the feeder. The 25-gallon bucket feeder generally held one and a half bags of corn at a time. A game camera was then set up with a t-post holding it. The camera took pictures consistently for three weeks.

Results

As a result, the 4 ft. x 20 ft. panels escluded not only feral hogs, but also excluded the wildlife intended that was planned to hop over the panels to obtain the corn. After conducting the research the conclusion is that the panels were to tall for the intended wildlife to feel comfortable to jump in the panel area to obtain the corn thrown by the feeder. Another variable that the intended wildlife didnt jump over is because of the lack of area given to jump into.



References

Clay, H.C. (2007). Hogs Gone Wild. Retrieved from University of Nebraska-Lincoln:website:http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1065&context=hwi

Graves, H.B. (1984). Behavior and ecology of Wild and Feral Wine (Sus scruff). *Journal of Animal Science*.58,482-492.

Acknowledgements

We would like to thank Mrs. Parson for letting us have time in class to work on our PBL. We would also like to thank the FFA chapter for giving us the access to the corn feed that we need. I would also like to thank the administration for allowing us to perform this PBL.

APRIL 2019

April 18, 2019, 12:04 PM
Current version
Cynthia Black

April 18, 2019, 11:22 AM
Jayden Gonzales

April 17, 2019, 2:04 PM
Jayden Gonzales
Caleb Gray

April 16, 2019, 1:08 PM
Jayden Gonzales

MARCH 2019

March 21, 2019, 9:54 AM
Caleb Gray

MAY 2018

May 3, 2018, 10:02 AM
Shelley Gunter

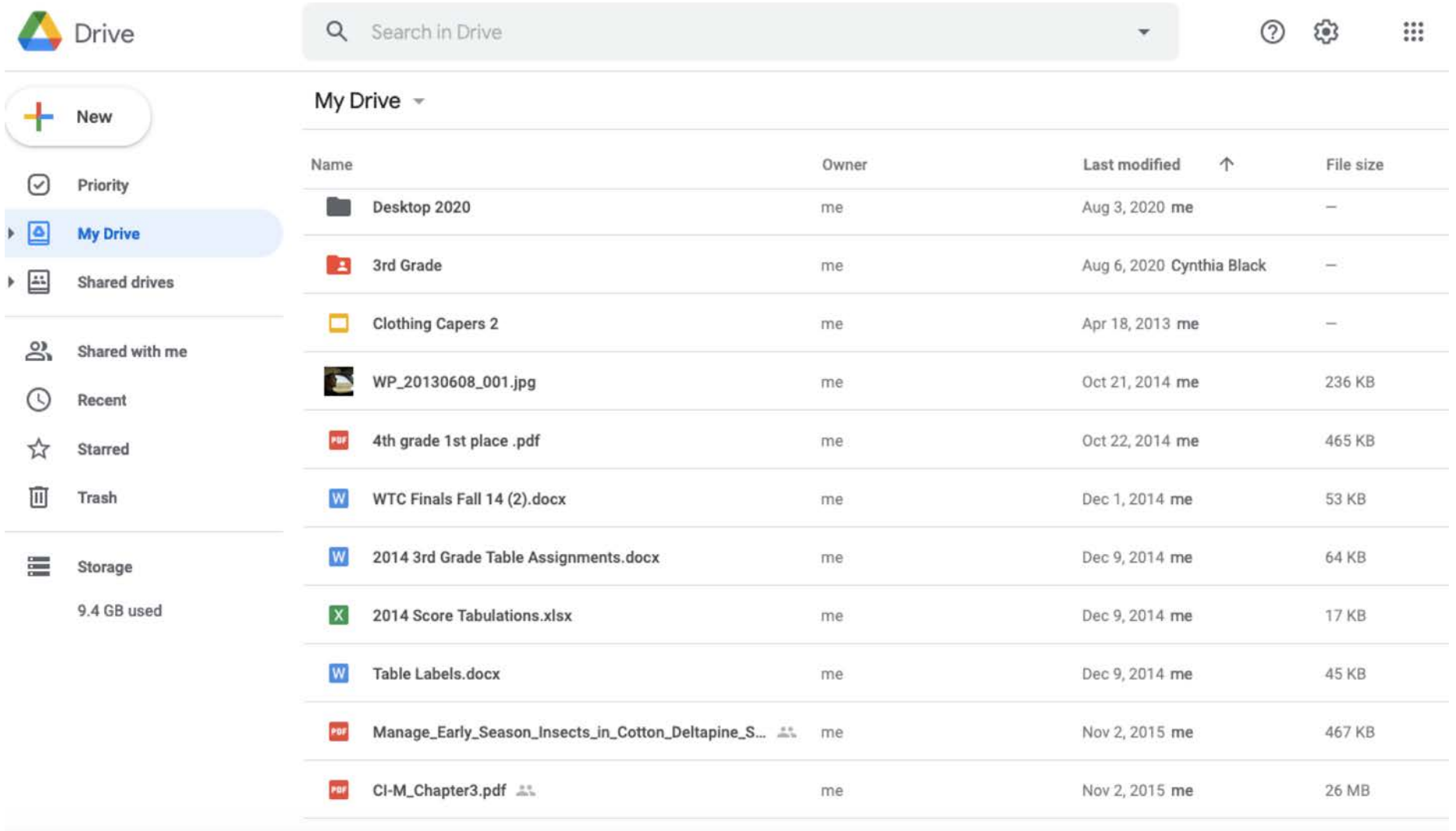
May 3, 2018, 9:25 AM
Caleb Gray

May 1, 2018, 10:51 AM
Jayden Gonzales

Using Google apps!

Benefit 2

Stored and Saved



Poster Presentations

APPROXIMATE DATES TO WORK ON	EXPERIMENT	DEPARTMENT
March 20th - 24th	Literature Research	AVID
March 20th – 24th	Experiment/Data Collection	Ag
	PAPER COMPONENTS	
April 3rd – 7th	Writing Introduction	AVID
April 5th – 7th	Work Cited or References	S. Study
April 3rd -7th	Materials and Methods	Science
April 3rd – 7th	Results and Conclusions	Ag
April 3rd – 7th	Graphs and Charts	Math
April 10th -11th	Grammar, Spelling, etc. Check	ELA
April 10th -11th	Abstract	AVID
April 10th -11th	Acknowledgements	Ag
April 17th – 18th	Poster Creation	Science
April 19th – 20th	Poster Editing	ELA
April 21st	Score base on Rubric	Science
April 21st	Poster Final Approval	Ag
April 26th	Poster Printing	Technology
April 24th – 25th	Practice Oral Presentation	AVID
April 27th – 28th	Presentations	

School Presentations Judge By Community Participants

Poster Grading Rubric

Grade Level: _____ **Team Number:** _____

Poster Title: _____

POSTER LAYOUT

15 Possible Points

5	3	1	Total
The poster is exceptionally attractive in terms of design, colors and contrast, and font size	Poster is attractive but seems disorganized, empty or crowded	Poster has a very poor design	
Poster Contains all required elements: Title, Authors names, logo(s), abstract, introduction with literature cited (a minimum of two), materials and methods, results, images, figures, conclusions, references (corresponding with literature cited in introduction), and acknowledgements	Poster contains most required elements	It is missing more than three required elements	
No spelling or grammar errors are present	Few spelling or grammar errors are present	Excessive spelling or grammar errors are present	

POSTER CONTNET

Abstract
10 Possible Points

5	3	1	Total
It is brief and concisely describes the purpose	It poorly describes the purpose	It is too brief, does not describe the purpose	
Methods, results and conclusion are well summarized	Methods, results and conclusion are not clear	Methods, results and conclusion are not present	

School Presentations Judge

Poster Grading Rubric

5	3	1	Total
Description of **the problem** provides critical background on the need for and importance of the current research study	Description of **the problem** is weak and/or poorly documented	**The problem** is not described	
Sufficient background on **entity**'s qualities (and care and safety, if applicable) are well described	Background research on **entity** is weak and/or incomplete	Background research on **entity** is absent	
Background research on **Independent Variable** meets both of the criteria listed: Research (1) supported the manipulation of this variable and (2) indicated that manipulation addressed the hypothesis or research question	Background research on **Independent Variable** meets only one of the two criteria	Meets neither criteria	
Background research on **Dependent Variable** meets both of the criteria listed: (1) DV is a good variable to measure or observe in response to IV; and (2) known association of DV with IV are described	Background research on **Dependent Variable** meets only one of the criteria	Meets neither criteria	
Hypothesis is present (1) written as a testable statement or question; (2) includes IV and DV; and (3) includes prediction that can be supported or rejected	Missing one of the criteria	Missing all three criteria	

Introduction
25 Points Total

Materials and Methods
10 Possible Points

10	5	3	Total
Description of how the experiment was set up for data collection is detailed enough that another individual could replicate it	Description missing small details that would make it easier for someone to replicate the research	Description is missing critical details necessary for someone to be able to replicate the research	

Out of school Competitions

Poster Guidelines: Poster should be no larger than 48'' wide by 30" deep (the distance from front to back) 108" high (from floor to top, includes table if project is on table top). Note that tables are generally 24" wide, but can vary with convention location. Items that do not adhere to the poster must fit on the tabletop within the dimension of the unfolded poster. Avoid lights, banners, shelves, etc. that are outside of the poster dimensions.

Final written report – The final written report should chronicle the 4-H member's or team's work on the chosen research topic. Content should be organized with the following headings:

4-H Discover Science Method Research Poster Contest

- Title Page – Include title of entry, contestant name(s), category, age division, and county.
- Abstract – Brief and concise description of the purpose, hypothesis, research methods, results and conclusions. (Use no more than 5 to 6 sentences)
- Introduction – State the question or problem being studied and why it is important.
- Literature Review – Provide an overview of what research has already been done to address the problem or issue. Be sure to cite references.
- Materials and Methods – Describe the manner in which the study or experiment was conducted. After reading this section, readers should have sufficient information to replicate the study.
- Results – Summarize data and final results obtained from the study or experiment. It is helpful to present results using graphs and/or tables.
- Discussion & Conclusions – Discuss what conclusions you draw from the results. Answer whether your hypothesis was supported or rejected based upon the results. Suggest what further study is needed based on your results.
- References (APA Format) – List significant sources of information used in your final written report. Refer to the following document for help on citing references:

Out of school Competitions

Project Presentation Regulations

The project presentation replaces the project poster boards used during in-person fairs. You may prepare your Project Presentation for SEFH using any software tools that you desire such as PowerPoint or Google Slides, but the final document submitted for display to the judges must satisfy the following requirements:

Presentation Format Requirements

1. The file must be a single PDF document limited to no more than 500 MB.
2. The PDF presentation document must be without animation or active hyperlinks.
3. The document must not have instructions to open in "full screen mode." Eliminating this mode automatically precludes page transitions and embedded videos or animations, so do not attempt to include these in your Presentation. (This provision should be reserved in your video presentation video if you need something to move to illustrate your project.)
4. The page background color must be a light color, not affect readability.
5. Text color must be predominantly dark to support readability.
6. All text should be easily readable when viewing the entire page at once. The smallest recommended font size of body text is 14 pt. and an 18 pt. font is recommended. Exception: You may use a smaller font size, down to 10 pt., for figure captions or photo credits.

Voiceover Video Presentation

Participants are asked to create a voiceover presentation will replaces the student's verbal presentation for SEFH 2021.

Requirements

a. The video must not exceed 7 minutes. Including any introductory concluding remarks.
b. This video must be submitted as a YouTube link.
c. The use of plain language is encouraged as judges may not be a direct content expert of your field of study.

Additional Information

1. The video presentation is a replacement of the judge interview component of face-to-face judging. As such, be sure to structure your voiceover presentation utilizing the same structure as your Presentation. However, avoid reading directly from your Presentation. Instead, use the Presentation as a guide to highlight important key aspects of your project.
2. If you feel a video clip is necessary to demonstrate your project, it would be appropriate to include short clips during your voiceover video presentation. Ensure that your video presentation is within the D&S guidelines.
3. It is highly recommended that you do not include anyone in your video other than the student researchers of the project. Any additional individual(s) would require a consent form, if the individual is under age, parental release is also needed.
4. Do note, once a video is submitted, SEFH will not edit or alter any video.

TEXAS A&M AGRILIFE EXTENSION

18 USC 707

TXSEF TEXAS Science & Engineering FAIR
Texas A&M University

COVID-19 UPDATES AWARDS GENERAL INFO STUDENTS, PARENTS AND TEACHERS VOLUNTEERS/JUDGES

About the Fair

The Fair plays an important role in the lives and future careers of many students as they learn the critical thinking skills that necessary to thrive in any field. The science fair is more than creating a science project; it is a complete educational process through which students learn:

- To follow directions and complete the scientific process
- To gain knowledge outside a classroom setting
- To work with mentors and peers
- To hone their presentation skills
- About competing honestly and fairly

Goals

Provide a setting where outstanding students showcase their research projects in the fields of science, technology, engineering, and mathematics.

By the Numbers

- 2-day event
- Hosted by Texas A&M Engineering since 2019
- 21 project categories between life and physical sciences
- 1,200+ projects between two divisions
- 100 volunteers
- 350+ judges

Student & Teacher Accountability

Develop accountability in the classroom is imperative! The expectation for the Collegiate Edu-Nation School adopters is that each student from 3rd to 12th grade will participate in a research project or 4-H Project Base Learning. Establish a grading system to stimulate students is a great way to hold them accountable. Also, general evaluations (Through AgriLife Extension) will be used to determine; basic concept understanding, program satisfaction, public spiking, and teamwork confidence.

TEXAS A&M AGRILIFE EXTENSION

School Science and Engineering Project Evaluation

MARKING INSTRUCTIONS
CORRECT: ● INCORRECT: ⊘ ⊗ ◒ ◔

18 USC 707

1. **How satisfied are you with the following things about the School Science & Engineering Project?**

	Not at all	Slightly	Somewhat	Mostly	Completely
The extra activities offered by the school 4-H program.	○	○	○	○	○
The STEM education I am receiving.	○	○	○	○	○

2. **As a result of participating in the School Science & Engineering Project Project lessons and activities . . .**

	Yes	No	Unsure
I understand how to create and test a hypothesis.	○	○	○
I understand the difference between Independent Variable and Dependent Variable.	○	○	○
I understand the value of good data collection.	○	○	○
I understand the basic elements that a scientific poster should have.	○	○	○
I am excited about conducting more research projects in the future.	○	○	○

3. **As a result of participating in the School Science & Engineering Project Project lessons and activities . . .**

	Strongly Disagree	Disagree	Agree	Strongly Agree
I feel more comfortable speaking with others.	○	○	○	○
I feel more willing to listen to others.	○	○	○	○
I feel more comfortable giving a speech to a group of people.	○	○	○	○
I feel more confident in my abilities as a leader.	○	○	○	○
I feel more confident in explaining and defending my research to others.	○	○	○	○

4. **What is the most significant thing you have learned in the project?**

5. **Gender:** ○ Male ○ Female

6. **I consider myself to be:** ○ African American ○ Asian American ○ Native American ○ White ○ Other

7. **I consider myself to be:** ○ Hispanic ○ Non-Hispanic

8. **Grade:** ○ 3rd ○ 4th ○ 5th ○ 6th ○ 7th ○ 8th ○ 9th ○ 10th ○ 11th ○ 12th

9. **Where I live:** ○ On a farm or ranch ○ In a suburb of a city
○ In a town with less than 10,000 people ○ Central city/urban center
○ In a Town/city with 10,000 - 50,000 people

38756

Please provide any additional comments on the back of this page. **Thank you!**