

## EXPERIMENTAL COMPONENTS

*"Bavaria Has Issues..."*

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### SUMMARY

This lesson address the components of evidence used to support hypotheses. It addresses qualitative versus quantitative, as well as primary versus secondary. This would be a good lesson to start the year, and requires no prerequisite skills.

### ESSENTIAL QUESTION

How can evidence be evaluated and used?

#### DURATION

150 Minutes

#### TIME FRAME

3 - 4 Class Period(s)

#### SUBJECT(S)

Science, Social Studies,  
Mathematics

## LESSON SNAPSHOT

### 1. ENGAGE:

Students will gauge their abilities about data analysis before the lesson.

### 2. EXPLORE:

Students will play the game The Detective: Bavaria.

### 3. EXPLAIN:

Students will complete a honeycomb relatedness based on the academic language from the game.

### 4. EXTEND:

Students will identify different data sources and how the student will use them in lab handouts.

### 5. EVALUATE:

Students will reevaluate their abilities about data analysis.

## LESSON PROCEDURES

### 1. ENGAGE

Pass out a Post-it note to every student. Have the statement "I feel like I can do a good job of evaluating evidence and drawing conclusions." Students will do a Sticky Bar, where they write their name and how much they agree with that statement on a scale of 1-5, with 1 being highly disagree and 5 being highly agree. Have students hang onto their number, since they'll revisit it in Evaluate.

#### GROUP EFFORT

*If you want, create a number line for students to put their Post-it on. That way, as the lesson progresses, if they want to move their square up or down the number line they can, and you can quickly see how the students are doing for a formative assessment.*

### 2. EXPLORE

Pass out Chromebooks or any other way for students to get on a computer with internet access.

Direct students to the K20 Game Bavaria.

#### ACCESSING THE GAME

*You will need to have game access set up ahead of time. If you are using the iPad app, you only need to install the app to be ready to go. If, however, you need students to play the game via computer, contact either Will Thompson (will.thompson@ou.edu) or Javier Elizondo (elizondo@ou.edu) directly at the K20 Center to be granted access. Further contact information can be found at the end of the teacher's guide in the Attachments section.*

#### WHAT'S IT LIKE?

*This is set up into four different 'missions', with each mission being a little harder than the last one. A teacher's guide is attached to the lesson if background information is needed. In this lesson students will do all four missions now. If time runs out, their progress will be saved, so they can keep working the next day.*

#### TRACKING STUDENTS

*If you are having the students play the game on computers, it is possible to track student progress through the the Game Portal Teacher Dashboard where you access the game. Unfortunately, this functionality does not exist for the iPad version of the game.*

### 3. EXPLAIN

Once students have played all four levels of the game, group the students into groups of three and pass out the Honeycomb Harvest cards.

#### PREP WORK

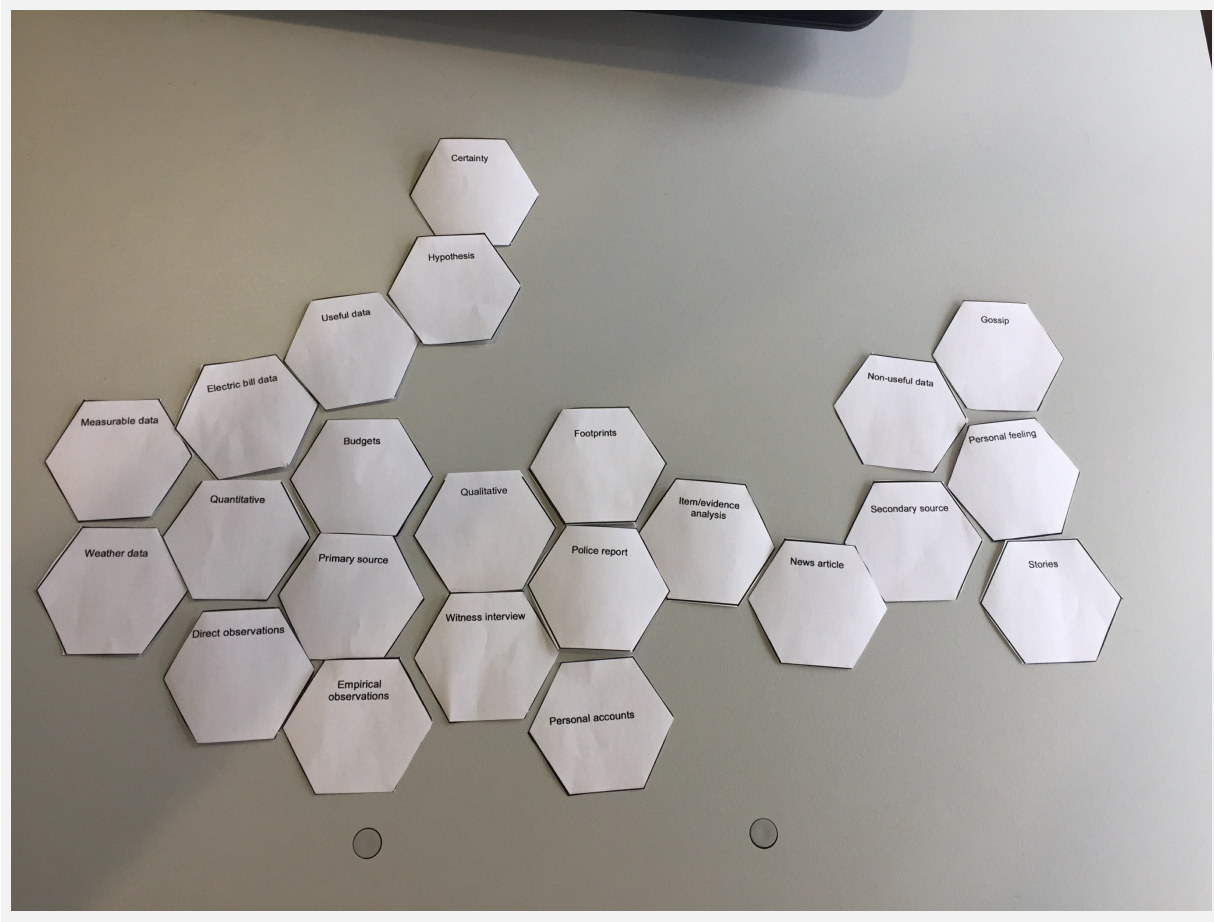
*You should cut out the hexagons before doing this activity.*

Tell the students to group together words as they relate to each other in a honeycomb format. To make this activity really great, don't tell the students how many groups or how to place the words, but rather just create a word web based on what they were offered.

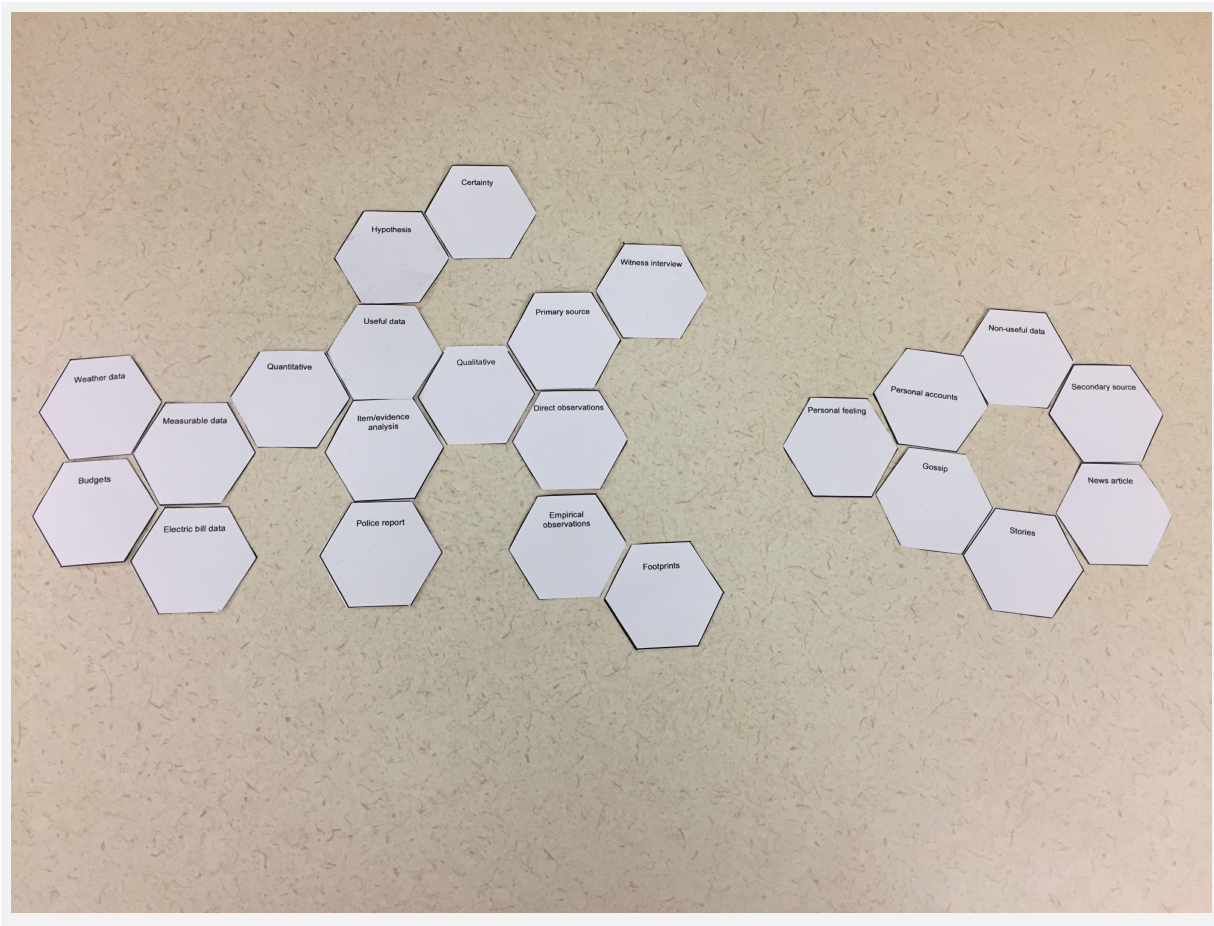
Once groups have finished their honeycomb, have groups share out why they put certain words in certain places.

#### LOOK FOR DIFFERENCES

*While the students are doing the honeycomb, walk around and see if they have big differences so you can point them out to get the discussion started. Keep in mind that there is no wrong way, and help students keep that in mind while they discuss.*

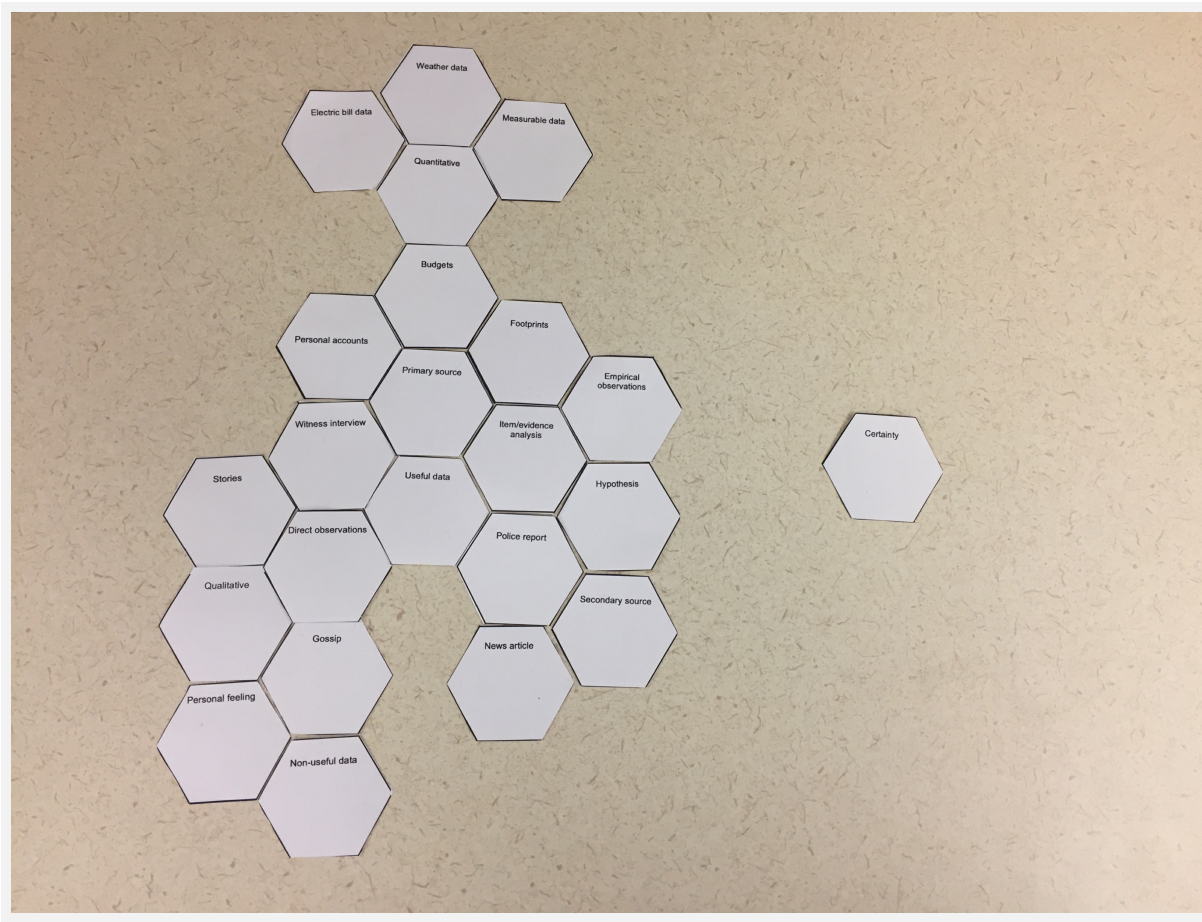


*This is just one example of how the honeycomb can happen.*



*Here's another example of how someone grouped the words.*





*Another example! All are right, but all are different.*

#### 4. EXTEND

Keep students in their groups, and pass out one of the lab handouts provided in the attachments to each group. Keep in mind, there are many labs you can provide, and only three have been given in this lesson for the sake of keeping the lesson file small.

#### PICK YOUR FAVORITE

*The lab handouts included in the attachments are options. Decide which fit your curriculum. OR, pick your own. You don't have to use the handouts include; they're more for inspiration than required.*

In the groups, have students create two Justified Lists, one for quantitative and one for qualitative data. The students will read through the lab handout, and determine what kind of data they are collecting in that particular lab, and why they know it is either quantitative or qualitative. When they are done, have groups share out what they've written.

#### 5. EVALUATE

Tell the students to look back on the number they assigned themselves for the statement "I feel like I can do a good job of evaluating evidence and drawing conclusions." Prompt students to think about how they'd rank themselves now, and why. Have students write, as an Exit Ticket, what they changed their number to and why. Encourage them to use as many words from the lesson as possible, and not just talk about personal feelings.

#### FROM A 5 TO A 5

*Some students may stay at their number, but have a different reason. That's fine, tell them to write about how their perspective has changed based on what they've learned.*

## STANDARDS

- Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

## MATERIALS LIST

- Chromebooks or enough computers with internet access for every student
- Copies of the Honeycomb sort (cut out before the lesson)
- Copies of lab handouts
- Post-it notes

## ATTACHMENTS

- [The Detective Bavaria Instructors Guide.pdf](#)
- [Chemistry Lab Extend.pdf](#)
- [Biology Lab Extend.pdf](#)
- [Physics Lab Extend.doc](#)
- [Bavaria Honeycomb Explain.docx](#)

## RESOURCES

- Honeycomb Harvest (Explain): <https://learn.k20center.ou.edu/strategy/6f19b778b73e4c339d1a7d9653001825>
- Sticky Bar (Engage): <https://learn.k20center.ou.edu/strategy/d9908066f654727934df7bf4f505ee0f>
- Exit Ticket (Evaluate): <https://learn.k20center.ou.edu/strategy/d9908066f654727934df7bf4f505d6f2>
- Justified List (Extend): <https://learn.k20center.ou.edu/strategy/d9908066f654727934df7bf4f5074d76>
- K20 Center Bavaria Game (Explore): <https://k20center.ou.edu/games/detective-bavaria/>