Ernest Hemingway STEAM School: Building and Expanding

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Practice in a STEM lesson

- The Power of Objects (Lee Schmitt, Hamline University)
  - Objects can be used to develop student curiosity about a time period, event, a person or a natural phenomenon.
  - This is done preferably before students start the unit of study.
  - Pictures are OK, but 3-D objects are better to extend student fascination, and speculation.

"The Liars Club" (Using the power of objects)

- List three adjectives that describe your object.
  - Close your eyes and come up with three more adjectives.
- Describe the sound the object makes.
- Draw the object: Details, scale (measure), & accurate.
- Label your drawing, make up names for the parts of the object if you need to.
- Speculate what it is made of, what materials?
- Record three questions about your object.

“The Liars Club”

- Who do you think would (have) use(d) this object? Why do you think that?
- What do you think is it used for? Why do you think that?
- What environment (or region of the world) do you think it is from? Why do you think that?
- What’s your object’s story?
- Share this story with others at your table.

Continuum of Engagement

FLOW

- finds & pursues passion & purpose
- enjoys designing & showcasing process & product
- is intrinsically motivated to own & drive learning
- is in control & responsible for learning

CONNECT

- applies inquiry to discover and explore new ideas
- connects to others with same interests
- learns from others & enjoys teaching others
- feels more in control & responsible for learning

COMMIT

- builds relationship with teacher
- investigates topic for lesson or project
- starts taking responsibility for their learning

COMPLIANT

- is not talking about their learning
- follows directions from teacher
- learns about goals and objectives for learning from teacher

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The Story's in the Snow

- Examine the artificial snow and identify three different animal tracks.
- Follow one of the animals and draw a map/ diagram of your animal's path & describe what you infer it did in this area.
- How did your animal interact with another animal?
- How did another animal interact with your animal?
- What animal you obse here in the snow?

The Story's in the Snow (cont')

- How many different species can you identify in this area?
  - Please list all animals you can identify.
- How many predators? How many prey? How many scavengers?
- Which animals arrived first on this scene?
  - What evidence supports your ideas?
- Where would you expect this area to be?
  - What evidence supports your ideas?
- Ready to go outside and try this with real tracks?
  - Let's use these same methods stories in the snow.

The STEAM Acronym

Reexamining *STEAM* with how effective teaching and learning occurs.

- ***S***cientific thinking, questioning and investigating
- ***T***echnology use and creation
- ***E***ngineering design and problem solving
- ***A***rt is the application of human creativity and imagination.
- ***M***athematical computation, data analysis and interpretation

STEAM is not what we teach,
it's HOW we teach.

Math Inquiry

The answer is in this room!

- Pick a partner.
- Pick a question from the pile provided.
- Determine how the team answer to the chosen question.
- Collect data.
- Analyze your data with a "visual" of your findings on poster paper. (Graphs and Illustrations, are good.)
- Write a discussion of your team's results, 1-2 paragraphs max.
- Create an ***Infographic*** that explains your team's question, patterns found in the data and an explanation of the findings.
- We will do a quick Walk About and each team will get one minute to present findings to the large group.

How is this a STEM/STEAM/ESTEM lesson?

- Where is the science?
- Where is the math?
- Where is the engineering?
- Where is the technology?
- Where do we Read, Write, Listen & Speak (Literacy)?
- Where is the social studies?
- Where is the creativity?
- Where is the collaborative work?

Expanding the Use of Technology

- Seesaw: journaling, activities, assessing, portfolio, book snaps, videos

Taking your classroom online

- Voki (Create talking characters. Only the student version is free.)
- Padlet (A collaborative space for students to respond.)
- Today's Meet (A platform to hear all students' voices during class.)
- Chatterpix (Create talking pictures (ipad).)
- Flipgrid (Create videos for assessment or engagement.)
- Weebly (Build webpages or portfolios.)

Continuum of Voice

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EXPRESSION

- offers opinions & answers questions
- Creates Learner Profile (LP) on how they learn best

CONSULTATION

- takes surveys
- provides input and feedback
- shares PLP and works on PLP with teacher

PARTICIPATION

- attends activities with role in decision making
- articulates action steps to meet learning goals

PARTNERSHIP

- collaborates with teachers and learners
- contributes to design of lessons, projects and assignments

ACTIVISM

- identifies problems and generates solutions
- advocates for change in and outside of school

LEADERSHIP

- guides group as leader of change
- co-plans and makes decisions
- accepts responsibility for outcomes

Teacher-Centered + Learner-Centered + Learner-Driven

Adapted from @StudentCentrHub

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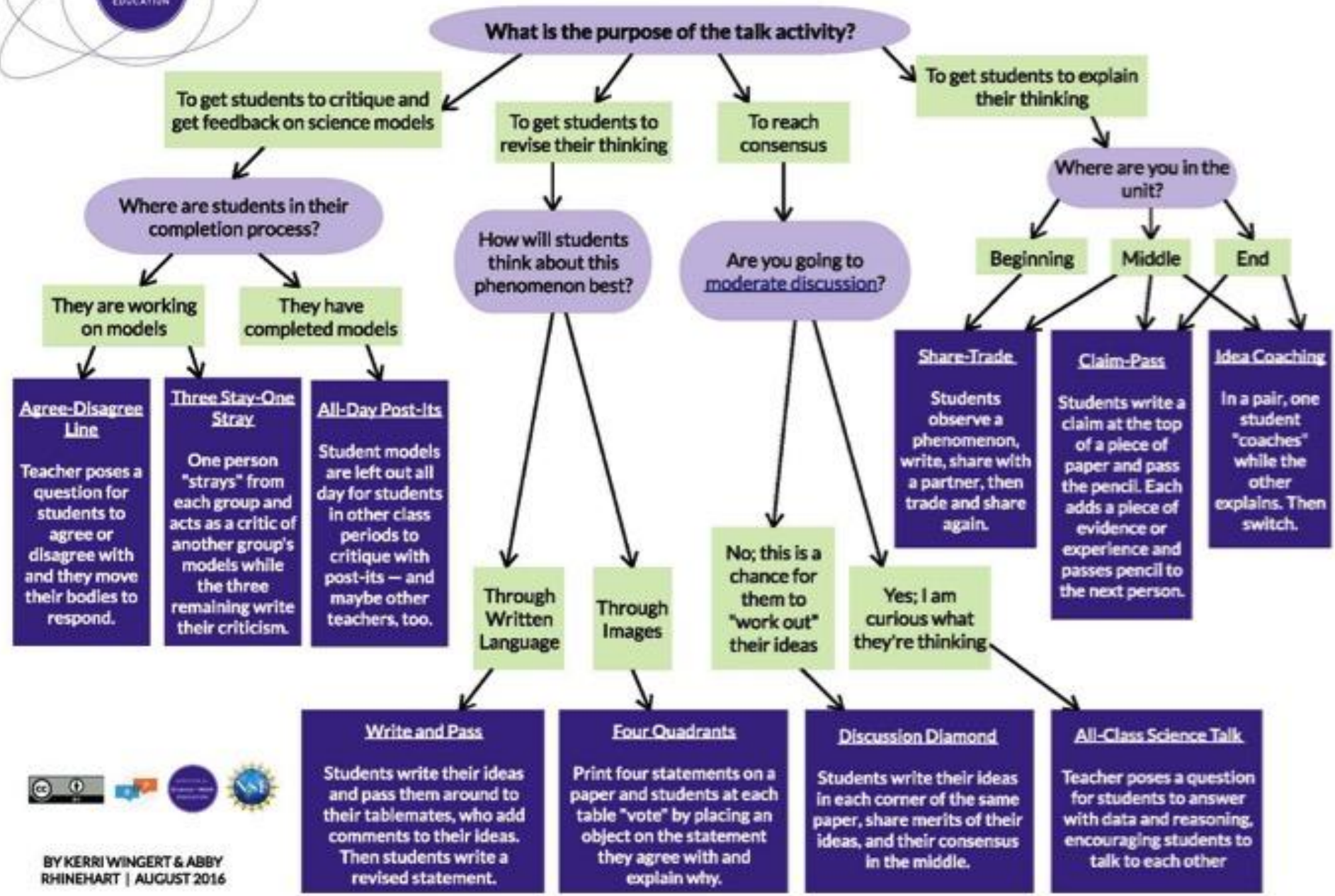
Talk Activities Flowchart

Which talk activities can I use with my students?



BY KERRI WINGERT & ABBY RHINEHART | AUGUST 2016

Questions?

Grade level team planning time for STEAM Night

- Please work in “Grade level teams”
- What would be a list of possible activities or “make & takes” families can do in your room?
- Consider an issue, question, or problem that students can solve as a theme: Water resources, changes on Earth, stewardship, sustainability or leadership.
- When planning, discuss how the theme for the unit can showcase student work from your classroom.
- Plan how STEAM can be learning for both at Hemingway and at home.
- Plan to reach out to area businesses, community groups or organizations that can pair with your school or grade level.