Critical Thinking, Creative Thinking and Communication

EKU's
Quality Enhancement Plan (QEP)

EKU will graduate informed critical and creative thinkers who communicate effectively.

http://www.qep.eku.edu/

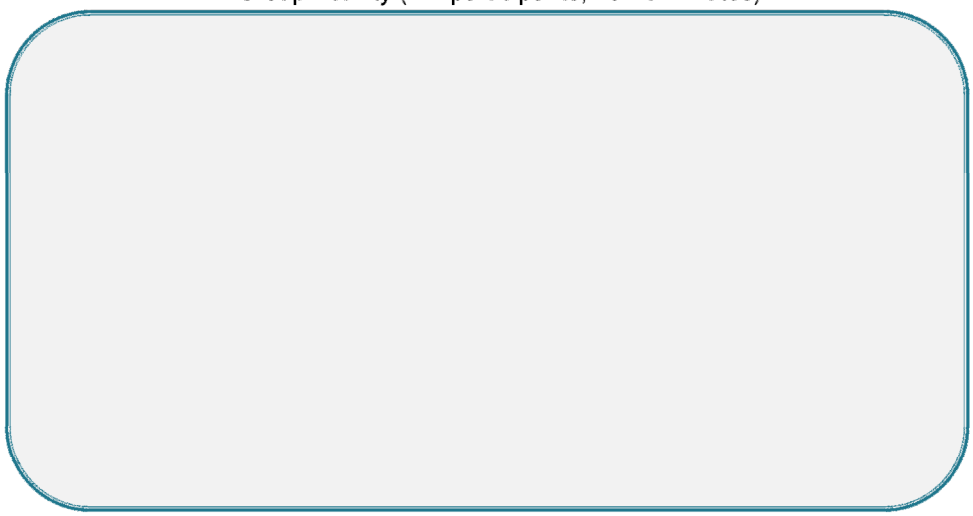
Scenario

- Group activity
  (2-4 participants, 10-15 minutes)
- Consider the possible steps required in thinking critically about this scenario:

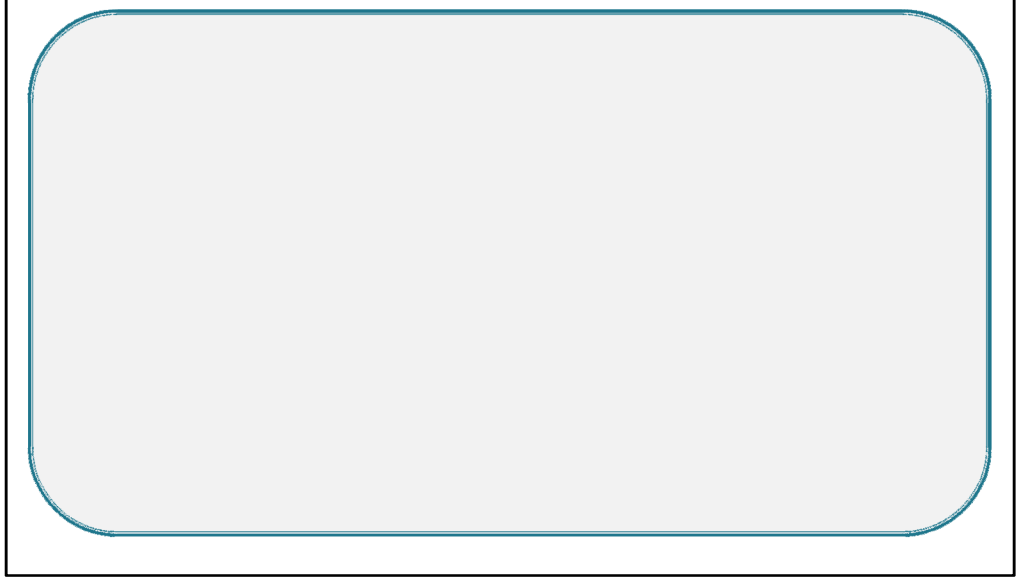
  "Notice in mail about contaminants released in the domestic water supply."

Scenario -- Revisited
Seeking Better Ways of Doing Things

Group Activity (2-4 participants; 10-15 minutes)



Scenario -- Revisited
Seeking Better Ways of Doing Things



Critical Thinkers…….

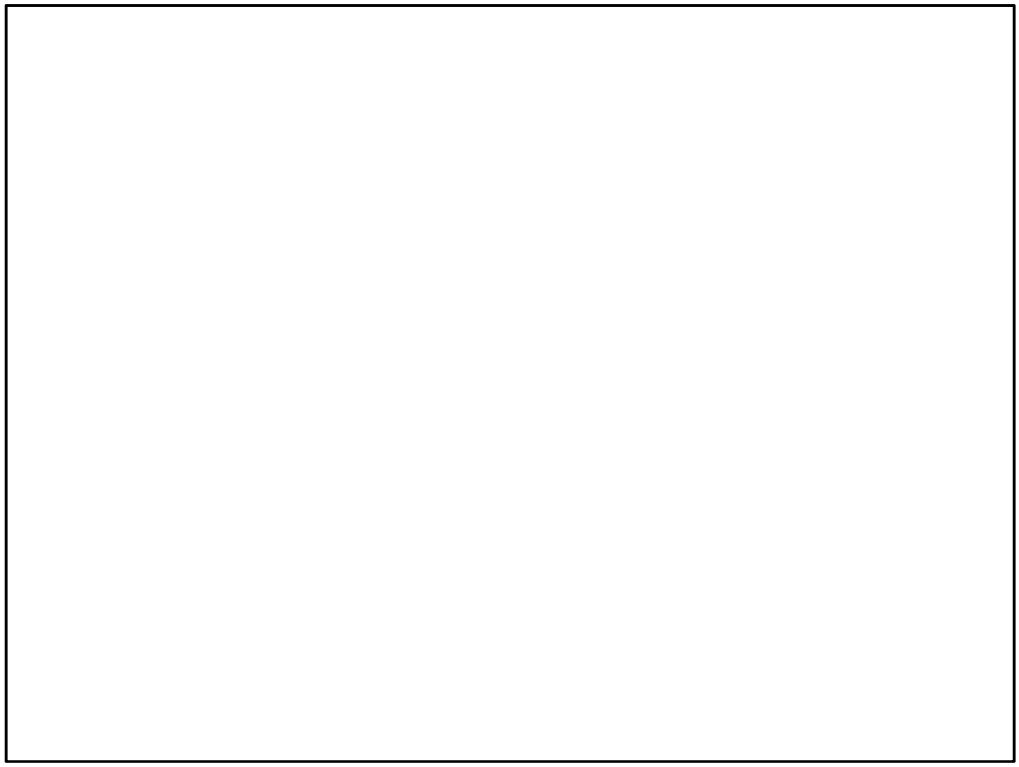
- Seek better ways of doing things
- Formulate the problem clearly
- Work on significant problems or issues
- Examine their assumptions
- Draw on concepts and logic while solving problems
- Gather relevant information
- Consider multiple viewpoints and possible implications
- Reach reasonable solutions and conclusions
- Rely on standards for guiding their thinking
- Believe in the power of their minds

E to the fourth power: E^4

- Students will **Explore** and use relevant information in order to gain knowledge and solve problems
- Students will **Evaluate** information and ideas using appropriate methods
- Students will **Expand** and generate their own ideas and express them effectively
- Students will **Express** a point of view and develop it with awareness of alternatives

QEP Initiatives and Programs

- Infusing Critical Thinking (CT) into the
  - General Education (GE) Program
  - Student Learning Objectives (SLOs) campus wide (EKU syllabus policy, pg. 2)
- First Year Academic Orientation Course—GSD 101 (Foundations of Learning)
- Thinking & Communicating Across the Curriculum (TCAC)
- Service-Learning Project (SL)
- Noel Studio for Academic Creativity
- Citizens' Assembly for Critical Thinking About the United States (CACTUS)
- Co-Curricular Learning Community (CCLC)
- Instructional Strategies Professional Learning Community
- …

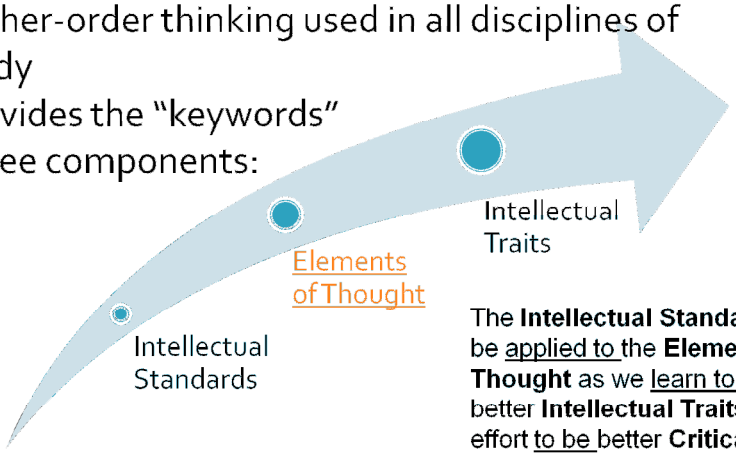


EKU's Definition of Critical Thinking

- *Critical and creative thinking are dynamic and deliberate processes where learners are active participants in intellectual activities in which they explore, evaluate, expand and express in relation to problems, scenarios, and arguments in order to reach sound and innovative solutions, decisions, and positions.*

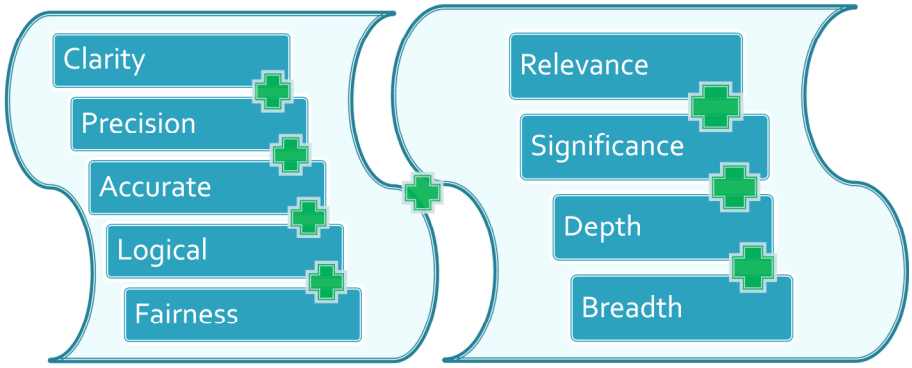
Critical Thinking

- Paul-Elder model of Critical Thinking
- Higher-order thinking used in all disciplines of study
- Provides the "keywords"
- Three components:



The **Intellectual Standards** can be applied to the **Elements of Thought** as we learn to develop better **Intellectual Traits** in an effort to be better **Critical and Creative Thinkers!**

Intellectual Standards



Example: Evaluating the statement "homework will be assigned" using selected intellectual standards.

Nine Intellectual Standards

1. Clarity
2. Accuracy
3. Precision
4. Relevance
5. Depth
6. Breadth
7. Logic
8. Significance
9. Fairness

Clarity	Could you elaborate further? Could you give me an example? Could you illustrate what you mean?
Accuracy	How could we check on that? How could we find out if that is true? How could we verify or test that?
Precision	Could you be more specific? Could you give me more details? Could you be more exact?
Relevance	How does that relate to the problem? How does that bear on the question? How does that help us with the issue?
Depth	What factors make this a difficult problem? What are some of the complexities of this question? What are some of the difficulties we need to deal with?
Breadth	Do we need to look at this from another perspective? Do we need to consider another point of view? Do we need to look at this in other ways?
Logic	Does all this make sense together? Does your first paragraph fit in with your last? Does what you say follow from the evidence?
Significance	Is this the most important problem to consider? Is this the central idea to focus on? Which of these facts are most important?
Fairness	Do I have any vested interest in this issue? Am I sympathetically representing the viewpoints of others?

Source: The Miniature Guide to Critical Thinking: Concepts and Tools, by Drs. R. Paul and L. Elder

Elements of Thought

Formulate questions or problems
- Define/ express/ state the problem or issue
- Sub-issues
- Consider questions linked to issue

Purpose
- Goal
- A closer view
- Deeper or broader reason it should be solved?
- Consider personal or social stake in solving or tackling the issue

Point of view
- Perspectives
- Thinking hats
- Walk in somebody else's shoes
- Outsider's or non-specialist viewpoint
- Multiple views exist concurrently

Assumptions
- Background information
- What can we take for granted
- Initial conditions
- Reasonable assumption based on context
- Presupposit-ion

Concepts
- Theories
- Definition
- Principles
- Models
- Axioms
- Theorems
- Rules
- Hypo-thesis
- Key words

Information
- Data
- Facts
- Observations
- Experiences
- Evidence
- Search for valid and external sources

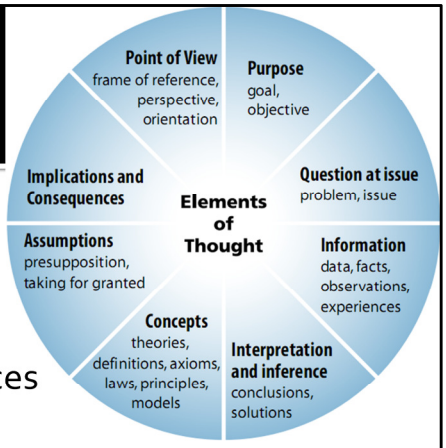
Solutions
- Judgments
- Conclusions
- Interpretations
- Discussion
- Must follow from the information and concepts under the stated assumptions

Consequences
- If solved then what?
- If not solved then what?
- Implications
- Potential positive, negative, and unexpected future outcomes
- Directions for future work

Example: Should I assign homework?

Eight Elements of Thought

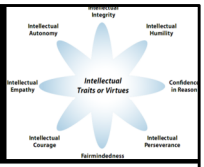
1. Purpose of the Thinking
2. Point of View
3. Assumptions
4. Implications and Consequences
5. Data, facts, and Experiences
6. Inferences and Judgments
7. Theories and Concepts
8. Answer a Question or Solve a Problem



Source: The Miniature Guide to Critical Thinking: Concepts and Tools, by Drs. R. Paul and L. Elder

Students will apply the Elements of Thought to analyze their reading and writing assignments

Intellectual Traits



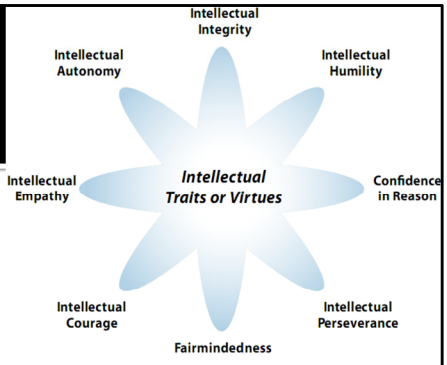
Consequences …

Positive Traits	Negative Traits
Fair Mindedness	
Intellectual Empathy	
Intellectual Perseverance	
Confidence in Reason	
Intellectual Independence	
Intellectual Courage	
Intellectual Humility	
Intellectual Integrity	

As the branch is bent, the tree will grow?

So can assigning homework help with any of this?

Eight Intellectual Traits

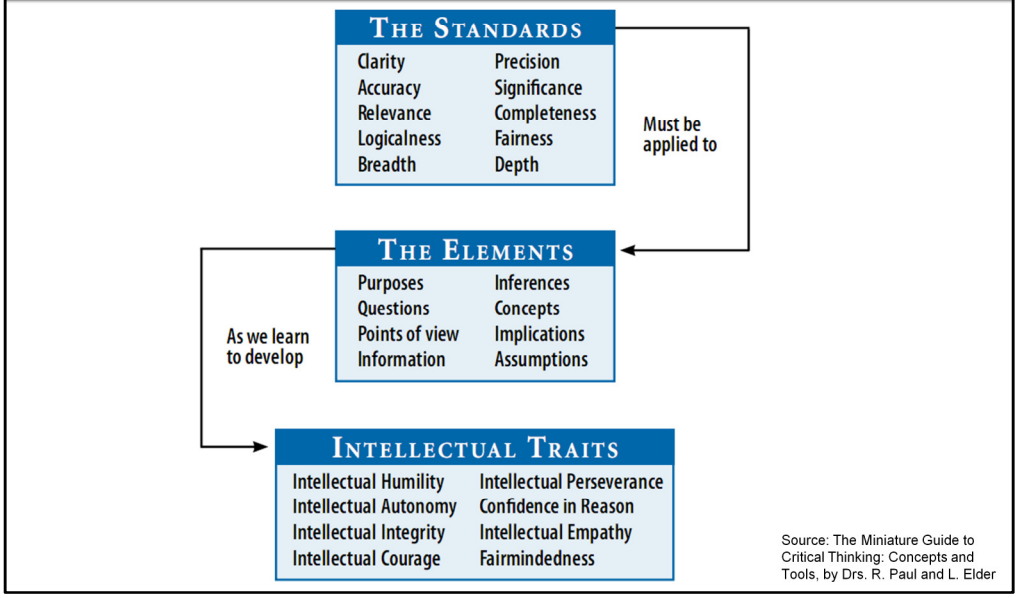


Source: The Miniature Guide to Critical Thinking: Concepts and Tools, by Drs. R. Paul and L. Elder

1. Intellectual Integrity
2. Intellectual Independence
3. Intellectual Perseverance
4. Intellectual Empathy
5. Intellectual Humility
6. Intellectual Courage
7. Confidence in Reason
8. Fair mindedness

Intellectual Standards are applied to a student's thinking using the Elements of Thought so that these eventually become part of the regular thought process of our students, as they develop constructive Intellectual Traits

Putting it all together ...



Source: The Miniature Guide to Critical Thinking: Concepts and Tools, by Drs. R. Paul and L. Elder

Clarifying Your Ideas: SEEI

1. **State** your main point: "I think....."
2. **Elaborate** on your main point in several sentences: "In other words....."
3. **Exemplify** or give an example of your main point: "For example....."
4. **Illustrate** or give an illustration of your main point: "It's like....." A picture or even a return demonstration of a skill

Using SEEI

- SEEI a course concept such as :
  What does it Mean to Study?

- **S:** to study means to read the textbook and assignments and process the information in a meaningful way so that you can use the knowledge again.
- **E**: In other words it takes time, effort, and occurs after much thought.

SEEI continued……

- **E:** For example, to really study means to read all the material, read my class notes, use the eight elements of thought to mentally think through the concepts, theories or definitions used in class and be able to apply that information in various situations.
- **I :** It is like a tennis player preparing for a big match, he/she practices each day, works out with weights, eats nutritious foods, gets rest, and meditates in preparation so that he/she brings their "A" game to the match (or exam).

SEEI for Specific Competencies

- State: the Concept or discipline-related Skill
- Elaborate: on the Skill and gather necessary equipment to successfully perform the skill
- Exemplify :or verbally discuss the skill and how it is used in a specific discipline
- Illustrate: Perform the specific skill correctly

Let's Practice……..

- **SEEI** the concept of **Critical Thinking** or a **concept central** to your course:

What is the Central Question of your Course?

What is Central to the course you are teaching?

What information is essential for the student to know and reason through?

Move to the **Fundamental and Powerful Concepts** to convey the information necessary to answer the Central Question(s)

Fundamental and Powerful Concepts

- When learning a discipline, students must learn to :
  1) Think Critically within that discipline
  2) Wade through the vast amount of information and decide what is most important and useful

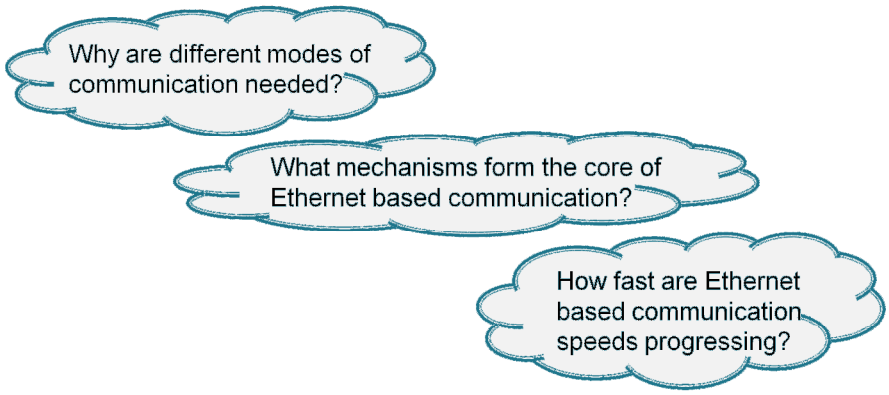
- **Fundamental and Powerful Concepts** are a relatively small number of the most **Useful and Central** to the discipline

Group or individual practice…..

- What are the **Fundamental and Powerful** Concepts of a **course** OR a **Particular Unit** within a course?
- **Just list 3 maybe 4**
- This takes time and thought so do not get frustrated!

Critical Thinking in the Classroom: Question Clouds

Start out lecture with the main questions that will be addressed For example, in a course on Computer Networking, while discussing current state of communication, one may lead with the following questions:



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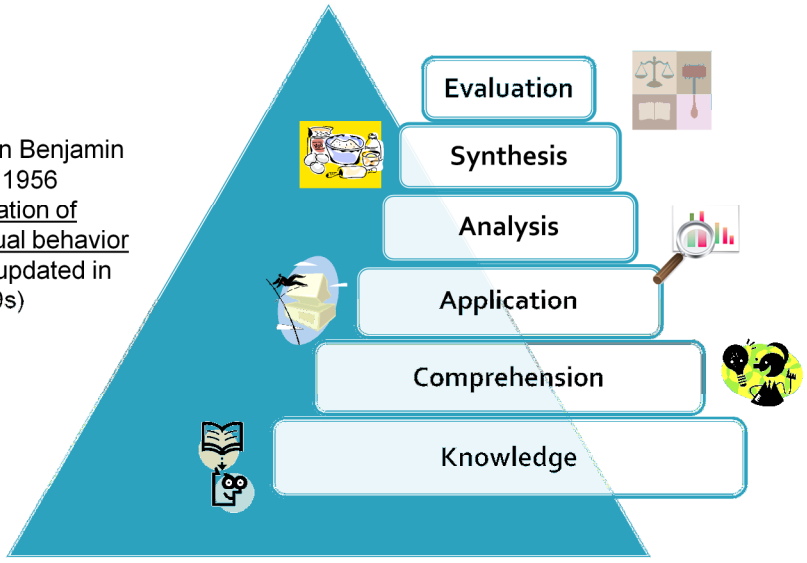
Critical Thinking in the Classroom: Critical Incident Questionnaire (CIQ)

- Encouraging students to reflect on their learning: Meta-cognition
- Anonymous submission of weekly CIQs
  - ❑ At what moment in class this week did you feel most engaged with what was happening?
  - ❑ At what moment in class this week were you most distanced from what was happening?
  - ❑ What action that anyone (teacher or student) took this week did you find most affirming or helpful?
  - ❑ What action that anyone took this week did you find most puzzling or confusing?
  - ❑ What about the class this week surprised you the most? (This could be about your own reactions to what went on, something that someone did, or anything else that occurs).

Source: http://www.stephenbrookfield.com/Dr._Stephen_D._Brookfield/Critical_Incident_Questionnaire_files/CIQ.pdf

Critical Thinking in the Classroom: Thinking Skill Pyramid

Based on Benjamin Bloom's 1956 classification of intellectual behavior (further updated in the 1990s)



This is a TEAM Effort

- We all have the responsibility as educators to facilitate the learning process and infuse critical and creative thinking into each and every course on EKU's campus to create better thinkers and effective communicators!
- Support is available through the Teaching Learning Center and the QEP Coaches group
- Email: qep@eku.edu
- QEP website: http://www.qep.eku.edu/
- Bev Hart (beverly.hart@eku.edu, 859-622-1869)
- Vigs Chandra (vigs.chandra@eku.edu, 859-622-1187)

The "Five Minute University"

Source: http://www.youtube.com/watch?v=kO8x8eoU3L4

Critical Thinking Framework