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Attributes, Characteristics and Code of Conduct of a Critical Thinker

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Attributes, Characteristics and Code of Conduct of a Critical Thinker

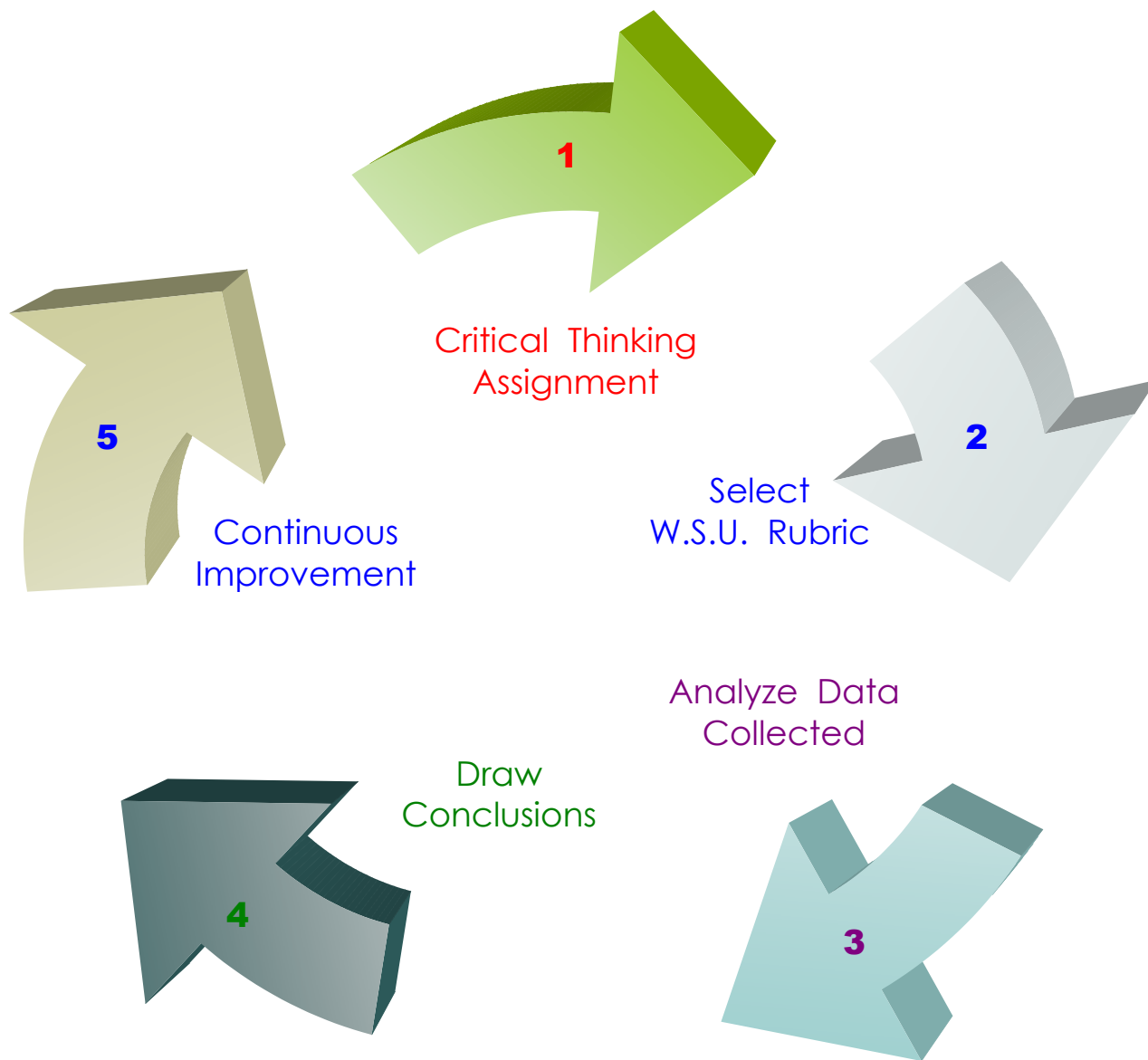
Ronald Earley and Mysore Narayanan, Miami University, Ohio.

In a statement for the National Council for Excellence in Critical Thinking Instruction, Michael Scriven and Richard Paul indicate that *Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action.*

Inspired by their article, the authors researched and formulated a list of several attributes, characteristics and code of conduct of a critical thinker. In this poster presentation they outline how they have tried to incorporate some of Richard Paul's ideas into their classroom activities.

References:

1. National Council for Excellence in Critical Thinking website: <http://www.criticalthinking.org>.
2. Richard Paul, *Critical Thinking: What Every Person Needs to Survive in a Rapidly Changing World*. 1990. Rohnert Park, CA: Center for Critical Thinking and Moral Critique.
3. Elisha J. Nixon, "Teaching Students to Think Critically." *The Teaching Professor* 16.3, 2002.
4. Browne, M.N. and Keeley-Vasudeva, M. L. "Classroom Controversy as an Antidote to the Sponge Model of Learning," in *College Student Journal* (1992), pp. 368-72.



Use of Socratic Questions to Motivate Students' Critical Thinking capabilities.

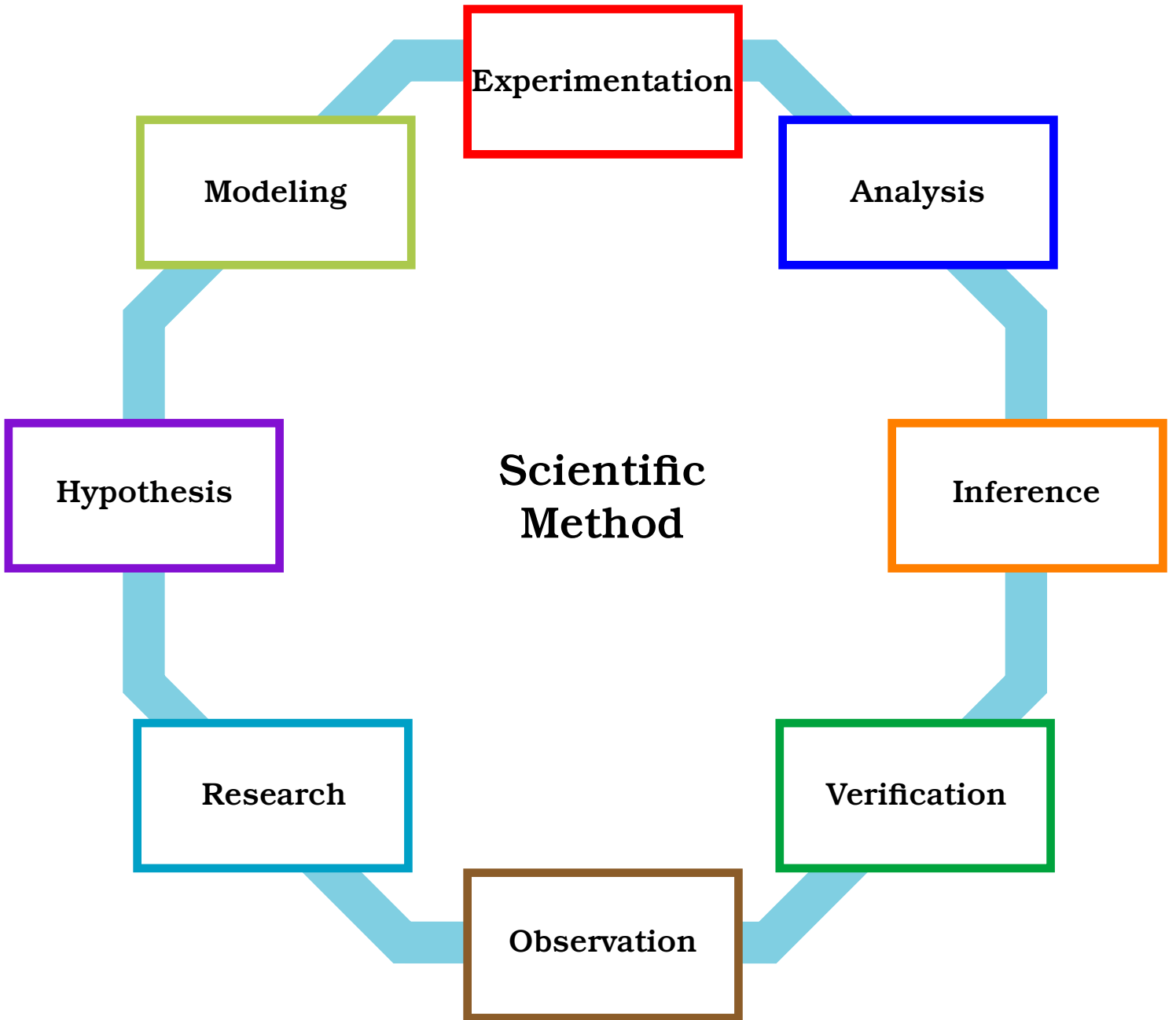
Richard Paul created a taxonomy of Socratic questions in support for problem based learning (PBL). The taxonomy is not a hierarchy in the traditional sense. The categories build upon each other, but they do not necessarily follow a pattern or design. One question's response will lead into another category of questioning not predetermined by the facilitator. In keeping with the problem based learning (PBL) philosophy, this aspect of the model is most conducive! The role of the skilled facilitator is to keep the inquiry “train on track,” but, also, to allow participants to “travel to a viable destination” of their own design. Paul suggests six types of questions that probe reasons and evidence:

1. Questions of Clarification
2. Questions that Probe Assumptions
3. Questions that Probe Reasons and Evidence
4. Questions about Viewpoints or Perspectives
5. Questions that Probe Implications and Consequences
6. Questions about the Question

A Socratic questioner should :

1. keep the discussion focused.
2. keep the discussion intellectually responsible.
3. stimulate the discussion with probing questions.
4. periodically summarize what has and what has not been dealt with and/or resolved.
5. draw as many students as possible into the discussion.

Reference : Paul, Richard, Critical Thinking: How to Prepare Students for a Rapidly Changing World, 1993.



Ask "Why" Five Times

From "What a Great Idea" by Chic Thompson.

Ask "Why" a problem is occurring and then ask "Why" four more times. For example...

1. Why has the machine stopped?

A fuse blew because of an overload

2. Why was there an overload?

There wasn't enough lubrication for the bearings

3. Why wasn't there enough lubrication?

A The pump wasn't pumping enough lubrication

4. Why wasn't lubricant being pumped?

The pump shaft was vibrating as a result of abrasion

5. Why was there abrasion?

There was no filter, allowing chips of material into the pump

Solution?

Install a filter !

The Critical Thinking Rubric : Courtesy of : <http://wsuctproject.wsu.edu/CT%20Rubric.doc>

1) Identifies and summarizes the **problem/question** at issue (and/or the source's position).

Emerging

Does not identify and summarize the problem, is confused or identifies a different and inappropriate problem.

Does not identify or is confused by the issue, or represents the issue inaccurately.

Mastering

Identifies the main problem and subsidiary, embedded, or implicit aspects of the problem, and identifies them clearly, addressing their relationships to each other.

Identifies not only the basics of the issue, but recognizes nuances of the issue.

2) Identifies and presents the STUDENT'S OWN **hypothesis, perspective and position** as it is important to the analysis of the issue.

Emerging

Addresses a single source or view of the argument and fails to clarify the established or presented position relative to one's own. Fails to establish other critical distinctions.

Mastering

Identifies, appropriately, one's own position on the issue, drawing support from experience, and information not available from assigned sources.

3) Identifies and considers OTHER salient **perspectives and positions** that are important to the analysis.

Emerging

Deals only with a single perspective and fails to discuss other possible perspectives, especially those salient to the issue.

Mastering

Addresses perspectives noted previously, and additional diverse perspectives drawn from outside information.

4) Identifies and assesses the key **assumptions**.

Emerging

Does not surface the assumptions and ethical issues that underlie the issue, or does so superficially.

Mastering

Identifies and questions the validity of the assumptions and addresses the ethical dimensions that underlie the issue.

5) Identifies and assesses the quality of **supporting data/evidence** and provides additional data/evidence related to the issue.

Emerging

Merely repeats information provided, taking it as truth, or denies evidence without adequate justification. Confuses associations and correlations with cause and effect.

Does not distinguish between fact, opinion, and value judgments.

Mastering

Examines the evidence and source of evidence; questions its accuracy, precision, relevance, completeness.

Observes cause and effect and addresses existing or potential consequences.

Clearly distinguishes between fact, opinion, & acknowledges value judgments.

6) Identifies and considers the influence of the **context** * on the issue.

Emerging

Discusses the problem only in egocentric or sociocentric terms.

Does not present the problem as having connections to other contexts-cultural, political, etc.

Mastering

Analyzes the issue with a clear sense of scope and context, including an assessment of the audience of the analysis.

Considers other pertinent contexts.

7) Identifies and assesses **conclusions, implications and consequences**.

Emerging

Fails to identify conclusions, implications, and consequences of the issue or the key relationships between the other elements of the problem, such as context, implications, assumptions, or data and evidence.

Mastering

Identifies and discusses conclusions, implications, and consequences considering context, assumptions, data, and evidence.

Objectively reflects upon the their own assertions.

Rubrics based on Likert Scale

5

Has demonstrated excellence.
Has provided documentation.
Evidence of critical thinking skills.
Very good performance

Has analyzed important data precisely.
Has answered key questions correctly.
Has addressed problems effectively.
Has evaluated material with proper insight.
Has used deductive reasoning skills.
Has used inductive reasoning skills.
Has employed problem solving skills.
Has discussed consequences of decisions.
Has been consistent with inference.

3

Has demonstrated competency.
Adequate documentation.
Critical thinking ability exists.
Acceptable performance.

Data analysis can be improved.
More effort to address key questions.
Need to address problems effectively.
Expand on evaluating material.
Improve deductive reasoning skills.
Improve inductive reasoning skills.
Problem solving skills need honing.
Must discuss consequences of decisions.
Has been vague with inference.

1

Poor, unacceptable performance.
Lacks ability to think critically.

Absence of analytical skills.
Answers questions incorrectly.
Addresses problems superficially.
Lacks documentation.
Inability to evaluate material.
Shows no deductive reasoning power.
Inductive reasoning power non existent.
Poor problem solving skills
Unaware of consequences of decisions.
Unable to draw conclusions.

BLOOM'S TAXONOMY LEVELS

Assessment	Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
In-class Examinations						
Take-home Examinations						
Laboratory Reports and Exams						
Oral Examinations						
Short Quizzes						
Multiple-choice Tests						
Problem Solving Exercises						
Short Essay Assignments						
Extended Writing Assignments						
Oral Presentations						
Student-led Seminars						
Research Reports						
Design Project Write-up						
Computer-based Assignments						
Co-op Work Placement Reports						
Descriptive Learning Logs						
Learning Portfolios						
Poster Presentations						
Individual Projects						
Group Projects						

Reference : Student Assessment in Higher Education. A Handbook for Assessing Performance.

Authors : Kevin Cox, Allen Miller and Bradford Imrie 1998 Kogan Page.

LIKERT SCALE ANALYSIS

RUBRIC COURTESY OF WASHINGTON STATE UNIVERSITY, PULLMAN, WA. 99164.

THE CRITICAL THINKING RUBRIC

Strongly Agree - Agree - Undecided - Disagree or Strongly Disagree. (5-4-3-2-1)

SA A UN D SD

1	Identifies and summarizes the problem/question at issue (and/or the source's position)					
2	Identifies and presents the STUDENT'S OWN perspective and position as it is important to the analysis of the issue.					
3	Identifies and considers OTHER salient perspectives and positions that are important to the analysis of the issue.					
4	Identifies and assesses the key assumptions .					
5	Identifies and assesses the quality of supporting data/evidence and provides additional data/evidence related to the issue.					
6	Identifies and considers the influence of the context on the issue.					
7	Identifies and assesses conclusions, implications and consequences .					

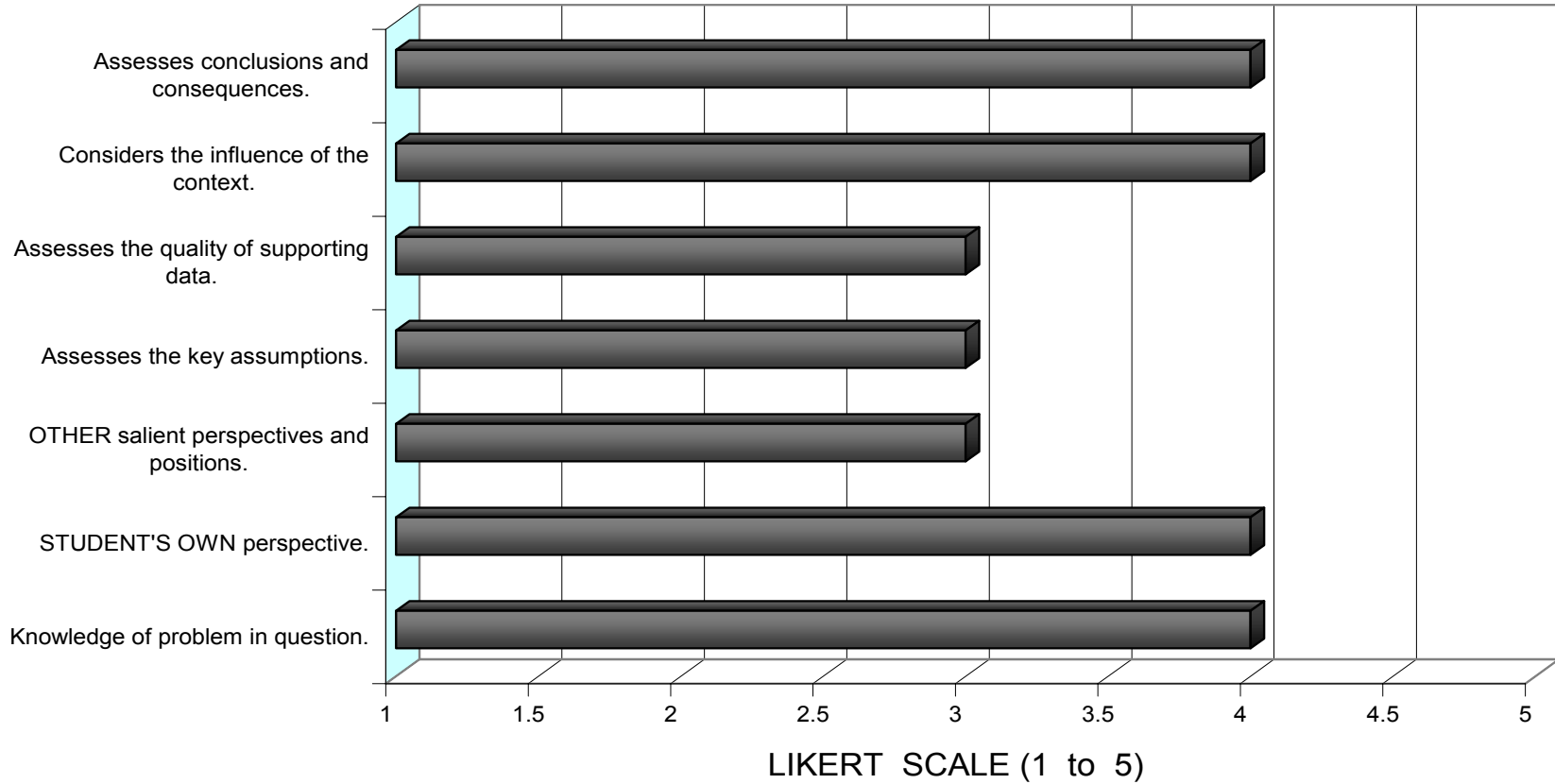
The data collected are ordinal: they have an inherent order or sequence, but one cannot assume that the respondent means that the difference between agreeing and strongly agreeing is the same as between agreeing and being undecided.

Descriptive Techniques

Summarize using a median or a mode (not a mean); the mode is probably the most suitable for easy interpretation.

Express variability in terms of the range or inter quartile range (not the standard deviation).
 Display the distribution of observations in a dotplot or a barchart (it can't be a histogram, because the data is not continuous).

CRITICAL THINKING RUBRIC



References:

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