

Strengthening Students' Critical Thinking Skills with Research-Focused Assignments

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Research + Critical Thinking

The amount of resources available requires 21st century students to incorporate information from a variety of sources and evaluate for relevance & credibility

Students with strong research and evaluation skills demonstrate a mastery of problem solving & analytical thinking desired by employers

Tips for Assignment Design

Collaborate with librarians to tie library research instruction and assignments with course learning outcomes

Set clear expectations for assignments and level of critical thinking or analysis required

Design assignments around fundamental & transferable skills such as distinguishing between popular & scholarly sources, using information ethically, or evaluating information found on the web



Encourage problem solving and communication among students

Update research assignments as library resources change

Critical thinking skills can be hard to measure; use creative solutions to assess students on their ability to synthesize information from a variety of sources and explore alternative concepts for presenting information

Discipline-Specific Research Assignments

Health Professions

Compare/contrast Internet vs. medical databases for research

Engineering

Promote thoughtful questioning (e.g. “How could you modify the program to make it more successful?”)

Business

Create case studies & analyze in groups

Analyze company financial statements over a 10 year period

Sciences

Evaluate scientific claims

Fine Arts

Research a sculpture’s lifecycle

Humanities

Develop objections to key arguments

Research & create posters on different viewpoints of controversial topics in literature or history

Social Sciences

Evaluative annotated bibliographies

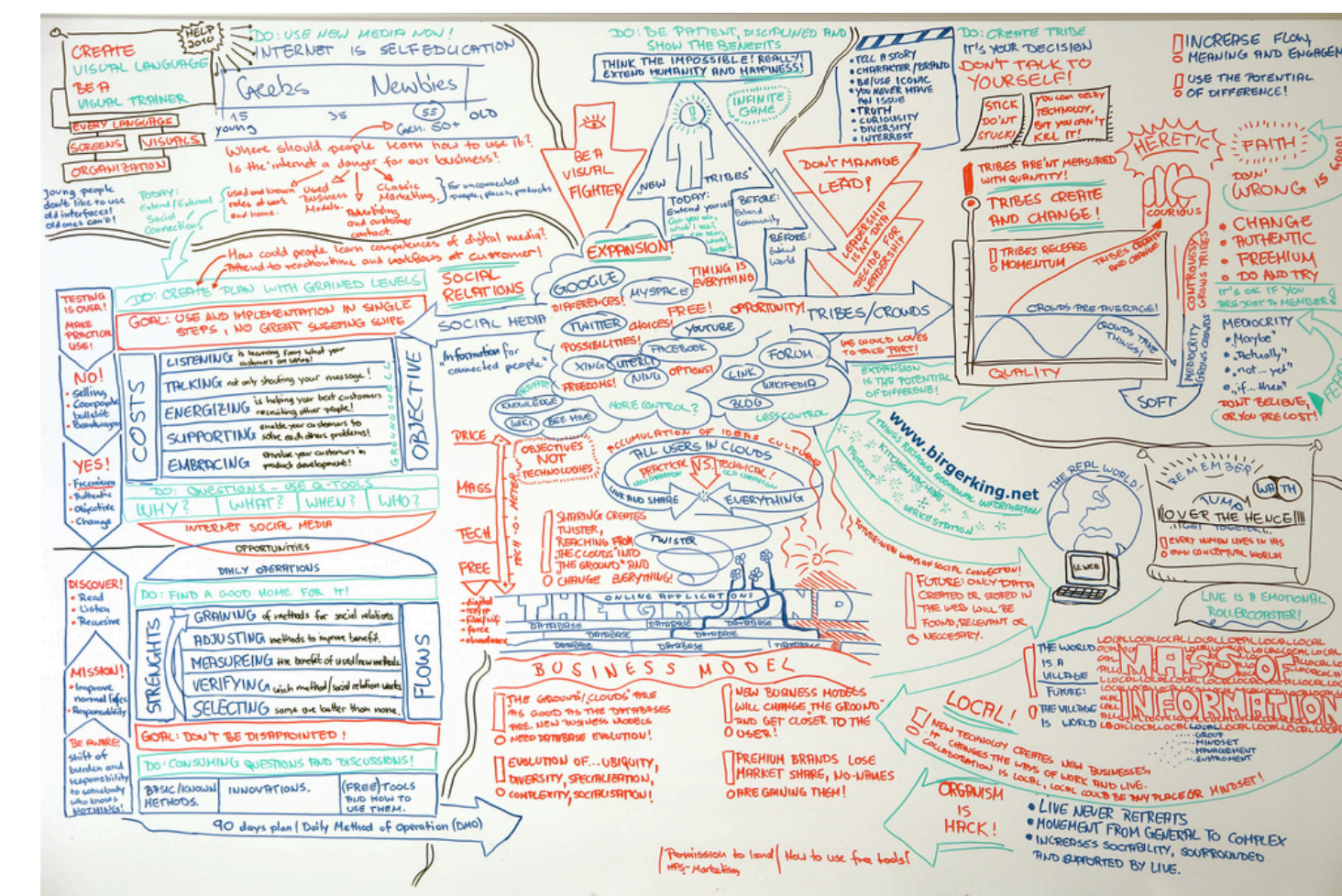
Write a “letter to the editor” of a disciplinary journal

All Disciplines

Research journals/logs

Read an editorial & find facts to support it

Check the accuracy of citations & track them down in the library



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Assessment Tools

Peer and self-assessments

Evaluate student portfolios

Standardized tests (ex. ETS Proficiency Profile, Watson-Glaser Critical Thinking Test or California Critical Thinking Skills Test)



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Capstone course reflections

Rubrics

Rubric Examples

RUBRIC for Information Literacy and Critical Thinking					
General Education Information Literacy & Critical Thinking learning outcomes	Excellent	Good	Satisfactory	Poor	Failing
Define a problem, argument, thesis & recognize need for information to solve it	Research problem is sharply focused. Key concepts and issues are precisely identified to facilitate search for resources.	Research problem defined with clarity. Related concepts referenced in relation to problem.	Research problem clear and workable. Related concepts referenced in relation to problem.	Research problem lacks focus. Many issues overlooked.	No definition of research problem or direction. Unawareness of impact of issue.
Find information by appropriate means of searching & retrieve resources in variety of media	Employed effectively a wide range of search tools, databases, catalogs and various formats and media.	Variety of tools used in first wide range of formats.	Range of search tools used and representative range of formats.	Limited awareness of available tools.	No tools used.
Discriminate among sources for accuracy, authority, appropriateness to task	Information drawn from the resources was consistent, logical, cross-checked for accuracy. Origin of information, verified, production of information investigated and considered for authority and scholarly dependability. Discerned objectivity from bias or propaganda. Reviewed for high quality, from variety of perspectives, and its current best practice in area of study.	Information drawn from sources consistent, logical, generally accurate. Origin of quality information of best practices in discipline. Objective and unbiased. Best practices in discipline.	Information consistent and logical. Origin of source dependable. Facts employed with objectivity. Characteristics of best practices in discipline.	Information used without consistency. Some problems of logic in application of facts. Unaware of bias slant of sources. Confusion in discipline. Unaware of best practices.	Erroneous information. Contradictory information. Origin of sources unaccounted for. Unaware of bias slant of sources. Confusion in discipline. Unaware of best practices.

Assessing Skill in Problem Solving			
Technique	Description	What to do with the data	Effort Required
Problem Recognition Tasks	Assess how well students can recognize various types of problems commonly used in your discipline. Begin by choosing examples of several related but different problems that students find difficult to distinguish. Create a form and ask students to match the examples to a list of problem solving techniques.	Quickly scan the responses and tally the number of correct and incorrect answers. Provide feedback to the class.	Preparation: Medium In class: Low Analysis: Low
What's the Principle?	Assess how well students can identify the principle that best applies to a problem. Identify the basic principles students learn in your course. Create problems or examples that illustrate each principle. Create a form and ask students to match the principles to the examples.	Tally the number of right and wrong answers making a note of patterns that develop. Share results with the class.	Preparation: Medium In class: Low Analysis: Low
Documented Problem Solution	Assess how well students solve problems and how well they understand the problem-solving process. Select a few multi-step problems with varying levels of difficulty. Ask students to draw a line down the middle of a sheet of paper. Direct students to solve the problems showing all their work on the left side of the page. On the right side of the page, ask them to write the steps they used to solve the problem as if they were explaining it to a classmate who needed help.	Quickly skim through the responses. Identify three responses in which the solutions are correct and well documented. Identify three responses in which the answers are incorrect but the solutions are well documented. Make notes. Share three or four insights with students in class.	Preparation: Low In class: Medium Analysis: Medium - High

Community College of Allegheny County - Techniques for Assessing Critical Thinking Skills

Critical Thinking Rubric			
Date: _____	Course: _____	Student: _____	
TRAIT	Unacceptable	Acceptable	Exemplary
PROBLEM / ISSUES	Does not frame the correct problem.	Frames the correct problem but does not recognize the nuances of the issues.	Frames the correct problem and recognizes the nuances of the issues.
QUALITY OF EVIDENCE	Merely repeats the information provided, taking it as truth or denies evidence without adequate justification.	Examines the evidence and its source and questions its accuracy, precision, relevance, and completeness.	Attempts to observe cause and effect and addresses existing or potential consequences. Attempts to clearly distinguish between fact, opinion, and acknowledges value judgments.
ASSUMPTIONS	Does not identify the appropriate assumptions that underlie the issues.	Identifies some of the key assumptions.	Identifies and questions the validity of the key assumptions that underlie the issues.
PERSPECTIVES	Presents only one perspective and fails to discuss other salient perspectives.	Identifies other salient perspectives drawn from outside information in a sophisticated manner.	Addresses and analyzes salient perspectives drawn from outside information in a sophisticated manner.
CONCLUSIONS	Fails to identify conclusions, implications, and consequences.	Identifies and discusses conclusions, implications, and consequences.	Demonstrates a high level of analytical ability to identify and discuss conclusions, implications and consequences.
Total Score			

Developed by Wichita State University Barton School of Business Critical Thinking Task Force

Evaluate Information and Its Sources - Assessment Immersion 2010			
Evaluate Information and Its Sources Critically	Performance Level Label 3	Performance Level Label 2	Performance Level Label 1
Original Text	Thoroughly (systematically) present assumptions and several relevant contents when presenting a position.	Identifies own and others' assumptions (sometimes labels assertions as assumptions) when presenting a position.	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions) when presenting a position.
Applies Criteria	Student: <ul style="list-style-type: none">Provides a detailed analysis of information or its source.Uses a limited comprehensive list of standard evaluation criteria.	Student: <ul style="list-style-type: none">Provides a superficial analysis of information or its source.Uses a limited standard list of evaluation criteria.	Student: <ul style="list-style-type: none">Does not provide an analysis of information or its source.
Analyses Assumptions	Student: <ul style="list-style-type: none">Recognizes, acknowledges, and ameliorates his/her own assumptions related to information and its sources.	Student: <ul style="list-style-type: none">Recognizes and acknowledges his/her own assumptions related to information and its sources.	Student: <ul style="list-style-type: none">Does not recognize or acknowledge his/her own assumptions related to information and its sources.

Rubric accessed via RAILS (Rubric Assessment of Information Literacy Skills) (www.railstrack.info)