

Essay Question Development & Analytic Thinking

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OCT. 10, 2014

Assessment Workshops - Oct. 10, 2014

East AM

10 am - noon

Essay Question Development - 8-144 (2 PD)

West PM

3 pm - 5 pm

Essay Question Development - 11-216 (2 PD)

* Introductory Writing and Discussion....

- ▶ Please write one essay question specific to your discipline – of no more than four sentences (you will not have to turn it in.)
- ▶ Which kind of exam questions do you prefer to create and why? (For example, essay questions, multiple choice questions MCQ, etc.) What do you hope to get out of this workshop....
- ▶ A bit of background: composition theory, performance assessment, computerized grading, game design, UCF graduate students....

Purpose

- ▶ This workshop has been designed to share research findings and effective practices for writing and grading essay exam questions.
- ▶ We will practice critiquing questions and developing our own. We will also look at controversial issues related to this form of assessment.
- ▶ The workshop has been designed around the blue book *Analytic Thinking* by Dr. Linda Elder and Dr. Richard Paul (2010.) Participants should be able to apply the standards they provide to (1) develop effective essay questions; (2) critique essay questions; and (3) create learning activities to prepare students for this kind of assessment.

Learning Outcomes

Participants should be able to....

- ▶ Apply standards for analytic thinking to:
 - ▶ Create your own essay questions
 - ▶ Critique your own essay questions
 - ▶ Teach students how to answer essay questions
- ▶ cite key research findings regarding the impact of essay questions on students' thinking skills.
- ▶ distinguish between effective and ineffective questions.
- ▶ develop an activity to teach students how to tackle essay questions.
- ▶ share five tips for more reliable and effective grading of essays.
- ▶ discuss current innovations such as computerized grading for essay exams.

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Constructed Response (Essays) Questions Restricted + Extended Response

<http://www.edcan.org/pdf/EdCanFactSheetEssays.pdf>

Restricted response essays limit both content and response as indicated within the question. The restricted response essay addresses a limited sample of the curriculum or learning outcomes.

Restricted Response

May commonly be known as:

Problem solving exercises focus on solving a problem and decision making processes. In nursing contexts, clinical data is presented and the learner must demonstrate their ability to assess, analyse, plan, implement and evaluate.

Case studies present certain, but not all, key elements of a clinical situation resembling real-life scenarios. The learner must combine these elements with information acquired from previous educational experiences. With additional resources the learner works through a sequence of increasingly complex activities.

Other terms may be used to describe these assessment methods, they include scenario-based activities or context- dependent item sets.

Extended response essays can be considered a form of performance assessment or complex achievement.

These essays provide the freedom of response to a question and assess the ability to research a topic, creatively organize, integrate and evaluate ideas, and construct an argument.

Quiz.....

Test Item Quiz (check the box)	True	False	Not Sure...
1. Essay exams are easier to construct than are objective exams.			
2. Essay exams require more thorough student preparation and study time than objective exams.			
3. Essay exams require writing skills where objective exams do not.			
4. Essay exams teach a person how to write.			
5. Essay exams are more subjective in nature than are objective exams.			
6. Objective exams encourage guessing more so than essay exams.			
7. Essay exams limit the extent of content covered.			
8. Essay and objective exams can be used to measure the same content or ability.			
9. Essay and objective exams are both good ways to evaluate a student's level of knowledge.			

* Brainstorm.... How to decide...

What are questions we can ask....

Do you have a large group of students?

Do you plan to reuse the exam?

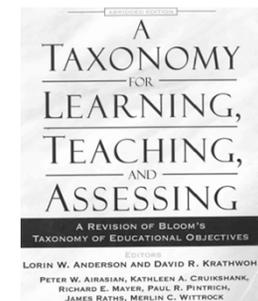
Are you confident in your ability to objectively grade essays?

Are you confident in your ability to write clear MCQ items?

What are your intended learning outcomes....

Learning Outcomes + Bloom's Taxonomy Friends of the Essay Question Writer

Synthesizing	appraise argue assess categorize check	choose convince criticize critique	debate decide defend detect
Analyzing	analyze attribute categorize	compare conclude contrast deconstruct	defect differentiate discriminate distinguish
Applying	apply calculate change	combine complete connect	demonstrate determine employ
Comprehending	abstract aggregate arrange associate	clarify classify compare conclude	describe detect discuss distinguish
Remembering	collect define describe	duplicate find identify	label list locate



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?

* A checklist of questions you can ask to target intellectual standards... (*The Blue Book*, p. 9)

1. Think of how you would use this list to develop essay questions with the goal of asking students to apply their analytical thinking skills....
2. Looking at your prior reflective writing, see if you can modify it by adding some of the questions from this list.

What if MCQs were the only option...?

- ▶ What is gained and what is lost in a world where, as a *student*, you can only take MCQ exams?
- ▶ What is gained and what is lost in a world where, as an *instructor*, you can only create MCQ?

Sample Prompt 1

Assignment: Does a person's character determine that person's success in life? Plan and write an essay in which you develop your point of view on this issue. Support your position with reasoning and examples taken from your reading, studies, experience, or observations.

- ▶ What could we learn when reading their responses [in terms of their academic skills]?
- ▶ What else would you want to see demonstrated that this question does not get at...
- ▶ What prior [classroom] experiences did they need to have in order to be able to respond?
- ▶ What values are we communicating to the students through the kinds of essay questions we ask?

As you read the passage below, consider how [the author] uses

- evidence, such as facts or examples, to support claims.
- reasoning to develop ideas and to connect claims and evidence.
- stylistic or persuasive elements, such as word choice or appeals to emotion, to add power to the ideas expressed.

[Source Text Will Appear Here]

Write an essay in which you explain how [the author] builds an argument to persuade [his/her] audience that [author's claim]. In your essay, analyze how [the author] uses one or more of the features listed above (or features of your own choice) to strengthen the logic and persuasiveness of [his/her] argument. Be sure that your analysis focuses on the most relevant aspects of the passage.

Your essay should not explain whether you agree with [the author's] claims, but rather explain how the author builds an argument to persuade [his/her] audience.

Sample Prompt 2

- ▶ Compare and contrast with the prior essay question

The Redesigned SAT 2016 – Essay Questions

In a break from the past and present of much standardized direct-writing assessment, the Essay task is not designed to elicit students' subjective opinions but rather to assess whether students are able to comprehend an appropriately challenging source text and to craft an effective written analysis of that text. Rather than merely asking students to emulate the form of evidence use by drawing on, say, their own experiences or imaginations, the Essay requires students to make purposeful, substantive use of textual evidence in a way that can be evaluated objectively.

To evaluate thinking we must apply intellectual standards

(*The Blue Book*, p. 8)

We can apply these standards as we evaluate our own essay questions...

Clarity:	understandable, the meaning can be grasped
Accuracy:	free from errors or distortions, true
Precision:	exact to the necessary level of detail
Relevance:	relating to the matter at hand
Depth:	containing complexities and multiple interrelationships
Breadth:	encompassing multiple viewpoints
Logic:	the parts make sense together, no contradictions
Significance:	focusing on the important, not trivial
Fairness:	Justifiable, not self-serving or one-sided

Practical Design Considerations

Example Sent to Me 1

Question:

Both Oedipus and Othello show leadership qualities, a great sense of responsibility to their community or constituents, and an incredible sense of guilt for actions they may not ultimately have been responsible for.

Write an essay arguing which of the two was the more noble character. Use references from text to support the argument you make.

Type your essay in the space provided.
You have 4 hours to do the exam.

Which is better and why?

Comparative Examples of Essay Questions - 1

Discuss the role of women in Shakespeare's tragedies.

Explain how one woman character from *King Lear* and *Hamlet* sets the "tragic arc" of each play. -

Examples of Essay Questions
Kris Fresonke, Department of English (fresonke@adelphi.edu)

Comparative Examples of Essay Questions - 2

Evaluate three of the critical justifications of Hamlet's madness: which theory do you find most convincing and why? -

Review the critical theories that explain Hamlet's behavior in Acts I – III of *Hamlet*.

Comparative Examples of Essay Questions - 3

Discuss the importance of slavery for Melville and Stowe. How is it different for Thoreau and Douglass?

Is it more effective to present the abolitionist argument in fiction (*Uncle Tom's Cabin*, *Benito Cereno*) or in essays (*Slavery in Massachusetts*, *The Meaning of the Fourth of July for the Negro*)? -

Example Sent to Me 2

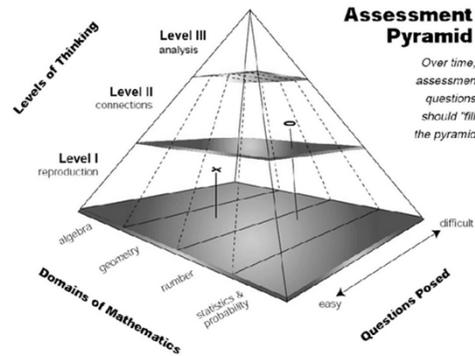
Hotel Room Rates

- ▶ The Hotel Orlando has 115 rooms, which are rarely all full during the off season. Hotel records show that at \$46 per night they average 81 occupied rooms during the off season; at \$54 per night 69 rooms are occupied, while at \$58 only 63 rooms are filled. While in a manager's meeting, the owners ask you to analyze this data to determine how many rooms would fill if they charged \$40 per night.
- ▶ Part I Instructions: Using the data given create a mathematical model, an equation that you can use to provide the owners with the information they have requested. Be sure to answer their question and to clearly indicate how you arrived at that answer. Show your work! (*Even if using a calculator, show how and why you took the steps you did, not just what buttons you pushed.)

Mathematical model:

Number of rooms filled if they charge \$40:

Discipline Specific Considerations: Mathematics



CRESST Researchers Tap into Student Thinking – Math

1997 CSE - TECH493

Proportion of Correct Responses		Solution Strategies	
Strategy	Description	Strategy	Description
Elimination of responses	Students who employed this strategy typically had some knowledge of the item, which they used to evaluate the merit of each option, rejected certain options, and subsequently chose an answer from the remaining alternatives.		This approach involved working backwards from the multiple-choice options, substituting each of the response alternatives into an equation usually specified in the item stem.
Guess	Characterized by no knowledge of the item. This strategy was used by students who did not know how to approach an item. They often justified their selection via intuition or statements such as "it just sounded right."		Involved simplifying or other manipulations on an algebraic expression or equation.
Visualization	Involved using mental representation to visualize hypothetical shapes referred to in the item.		Necessitated consideration of advanced concepts and procedures, for example conceptual understanding of a given equation and its graphical representation on the Cartesian coordinate system.
Gestures	In this strategy students used hand movements to facilitate their visualization efforts.		Involved attention to basic concepts and procedures. For example, setting up a single equation or calculating the distance between points on a line were classified in this category.
Picture / graph	Involved drawing graphical representations of information specified in the item.		Involved geometry concepts, such as the Pythagorean theorem and similar triangles.
No Answer	This category was assigned when students chose not to select a multiple-choice alternative.		Involved trigonometry concepts, such as sine and cosine expressions.
		Multiple-step formula	Characterized by abstract reasoning without assigning numerical values or using direct calculations.
			Involved a single application of a formula, such as the area of a rectangle or a linear equation.
			Characterized by the application of more than one formula. A response involved multiple operations; for example, using both volume and area formulas.

CRESST/UCLA

Linguistic Modification (continued)

- Voice of verb phrase:** passive verb forms changed to active
The weights of 3 objects were compared >
Sandra compared the weights of 3 rabbits
- Conditional clauses:** conditionals either replaced with separate sentences or order of conditional and main clause changed
If Lee delivers x newspapers > Lee delivers x newspapers
- Relative clauses:** relative clauses either removed or re-cast
A report that contains 64 sheets of paper >
He needs 64 sheets of paper for each report

- ▶ For more information see...
- ▶ CRESST Report Mc Neil Math Questions TECH449

Differential Effects of Question Formats
in Math Assessment on Metacognition and Affect
CSE Technical Report 449
Harold F. O'Neil, Jr.
CRESST/University of Southern California

Discipline Specific Considerations: The Health Sciences

- ▶ Modified essay question (MEQ) is a useful "paper and pencil" instrument designed to assess students' clinical reasoning skill, abilities in problem solving, decision making and understanding of problem-related content from the basic and clinical sciences. Problems presented are based on an actual case or professional interaction situation.

- ▶ Lekhakula, A. and Pinaikul, S. (ND)
- ▶ <http://med-ed.psu.ac.th/web/meu/research/pdf/MEQ.pdf>

Don't be driven by the question – begin with the competencies first...

Table of Specification of MEQs

Competency	Proposed Weight (%)	No. of items	Scenario				
			#1	#2	#3	#4	#5
Problem identification	5	2				1	1
Data gathering	10	4	1	1	1	1	
Data interpretation & hypothesis generation	15	7	1	1	2	1	2
Patient management	Like other essay exam, MEQs are less efficient in sampling extent of knowledge. The validity of assessment by MEQs was based on model of medical problem-solving and another of cognitive skills taxonomies. In term of content validity, development of table of specification may helpful in determining what and level of essential skills be assessed. In this way, the test will reflect the students' achievement and weaknesses in various cognitive skills. <u>According to our study, it showed students' weaknesses in patient education, ethical analysis and evidence-based medicine.</u>						
Clinical reasoning							
Patient education							
Ethical analysis							
Evidence-based medicine							
Basic medical knowledge							
Total	This would help the faculty to improve quality of teaching and learning activities and to overcome students' weak points.						

What is a "table of specifications?"

"A TOS, sometimes called a test blueprint, is a table that helps teachers align objectives, instruction, and assessment (e.g., Notar, Zuelke, Wilson, & Yunker, 2004). This strategy can be used for a variety of assessment methods but is most commonly associated with constructing traditional summative tests."

Fives, Helenrose & DiDonato-Barnes, Nicole (2013). Classroom Test Construction: The Power of a Table of Specifications. Practical Assessment, Research & Evaluation, 18(3). Available online: <http://pareonline.net/getvn.asp?v=18&n=3>

TOPICS	LEVELS/SKILLS						TOTAL	
	Remembering (Knowledge)		Understanding (Comprehension/Application)		Thinking (Analysis/Synthesis/Evaluation)		#	%
	#	%	#	%	#	%		
	Item #		Item #		Item #			
Authentic Assessment: Basic Concepts	20	33.3%	1-4,7-15,20-26				20	33.3%
Authentic Assessment: Advance Application			10	16.7%	5,6,16-19,27-30		10	16.7%
Discussion of Behavioral Objectives					10	16.7%	10	16.7%
Portfolio on TIA					20	33.3%	20	33.3%
TOTAL	20	33%		10	17%		30	50%
							60	100.0%

* Take "Analyzing Problems" and apply it as a model for writing an essay question in your discipline or field (*The Blue Book*, p. 26)

For example on that page take "... some important assumptions" and adapt the phrase to ask your student "What are some of the assumptions that you..."

* Teaching your students to “question an issue or a central problem” p. 44

1. How could this page be used to teach students strategies for answering essay questions?
2. Provide one example of an activity or assignment you might develop for your students.

Research: Students Benefit from Practice Writing Questions....

The Effects of Student-Written Questions on Student Test Performance

Paul W. Foos Florida International University (1989)

The effects of student-written test questions on student test performance were examined in an Introductory Psychology class. Before each of three tests, randomly assigned students wrote essay questions, multiple choice questions, or no questions. All tests contained essay and multiple-choice items but no questions written by students.

Question writers performed significantly better than non-writers on the first two tests; the difference on the third test was marginally significant. No differences were found between students who wrote essay and those who wrote multiple-choice questions.

Question writing appears to be an effective study technique.

Research: More Deep Learning When Students Integrate Texts in Essay Writing

The Effects of Tasks on Integrating Information From Multiple Documents (2008)

Raquel Cerda¹ and Eduardo Vidal-Abarca, Catholic University of Valencia

The authors examine 2 issues: (a) how students integrate information from multiple scientific documents to describe and explain a physical phenomenon that represents a subset of the information in the documents; and (b) the role of 2 sorts of tasks to achieve this type of integration, either writing an essay on a question requiring integration across texts or answering shorter intra-text questions that require students to integrate information within a single text, while superficial and deep comprehension measurements are obtained.

Results showed that the integration question increased integration and decreased the processing of isolated units of information, which enhanced deep learning, whereas no differences between the 2 sorts of tasks on memory recall were apparent.

Overall Essay Writing Shown to Have an Impact

An Investigation of the Effects of Exam Essay Questions on Student Learning in United States History Survey Classes

Sara Brooks Sundberg University of Central Missouri

Three hundred sixty-five students, who both the pre-test and post-test. The total number of students enrolled in the course during the course of the study was five hundred and two students. The thirteen sections of the course that took both the pretest and the post-test ranged in overall size from thirty-three students to forty-nine students in a section with an average of thirty-nine students per section.'

Essay writing on exams made a difference in students' scores, and potentially their understanding, as reflected in the greater net gain of the post-test over pre-test scores for the nine sections in the first three semesters when essay questions were part of the exams. During these semesters average scores increased between twenty and thirty percent. These results support the assertion that essay writing improves history learning; the gain was statistically significant.

How can we improve our question development and implementation?

* Write the Book

Pooling our collective wisdom....

... if we were to write a book to help others grade essay exams what are five key points or tips you would want to include.

Guidelines for Grading Essay Questions More Reliably – Before You Begin

- ▶ Before grading, list the main points you expect a good answer to cover.
- ▶ Decide in advance how you will handle factors such as spelling and grammar, and apply the rules consistently.
- ▶ Before grading, read through a few sample student answers to get a general idea of the quality level.

Steps to Take....

- ▶ To counteract the “halo” effect, try to grade answers without knowing the student’s identity.
- ▶ Grade one question for all students before going on to the next question.
- ▶ If possible, read each answer twice, shuffling the order the second time through.
- ▶ Reshuffle the papers after completing each item.

Added Steps to Take....

- ▶ Sort papers into "high," "medium," and "low" stacks before assigning final grades.
- ▶ Write comments so that students understand why answers were good or poor.
- ▶ More detailed reading about the use of rubrics and scoring related to reliability and validity are available outside of the scope of this workshop See: Examining Design and Inter-Rater Reliability of a Rubric Measuring Research Quality across Multiple Disciplines: <http://pareonline.net/pdf/v14n12.pdf> .)

The screenshot shows the RubiStar website interface. At the top, there is a navigation bar with links for Home, Find Rubric, Create Rubric, Login, Sign Up, and Tutorial. A 'RubiStar en Español' link is also visible. The main content area is divided into several sections: a 'Welcome' section with a 'Featured Projects' tab, a 'Log In' form with fields for First Initial, Last Name, Zip Code, Password, and a Register link, and a 'Go To a Saved Rubric' section with buttons for View, Edit, and Analyze. The website's tagline is 'Create Rubrics for your Project-Based Learning Activities'.

Current Issues and Points of Controversy

- ▶ Computerized grading
- ▶ New possibilities within video games
- ▶ BlackBoard tools provide more options

"According to professor of theory of knowledge Leon Trotsky, privacy is the most fundamental report of humankind. Radiation on advocates to an orator transmits gamma rays of parsimony to implode."

Flink the robo-graders. Les Perelman
April 30, 2014, *The Boston Globe*

Considerations

- ▶ Is the Essay Question the best option for you?
- ▶ What considerations are important in your field?
- ▶ What do you need to consider about your students?
- ▶ What will they learn from you as they take your test?
- ▶ What steps can you take to strengthen validity and reliability?

Final Reflection

- ▶ One Take-Away
- ▶ One Surprise
- ▶ One Area to Explore Further....

Handout 1 - A Quick Guide to Better Tests from BEST 1-6-2011.pdf (107 KB)

Handout 2 -Thesaurus of Verbs and MLO Criteria.pdf (199 KB)

Handout 3 - Constructing Essay Exams - Study Guides Overview.pdf (909 KB)

Handout 4 - Quiz - Choosing between Objective and Subjective Test Items.pdf (86 KB)