

Orchestral Maneuvers for Assessment in CMSs

Putting together harmonic ensembles of tools to measure short and long term learning

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Session Outcomes

- Understand how assessment tools in CMS environments map to established theories of learning and assessment in order to select appropriate measurement tools.*
- Explore ways to diversify assessment tools to achieve assessment objectives that align with course objectives.*



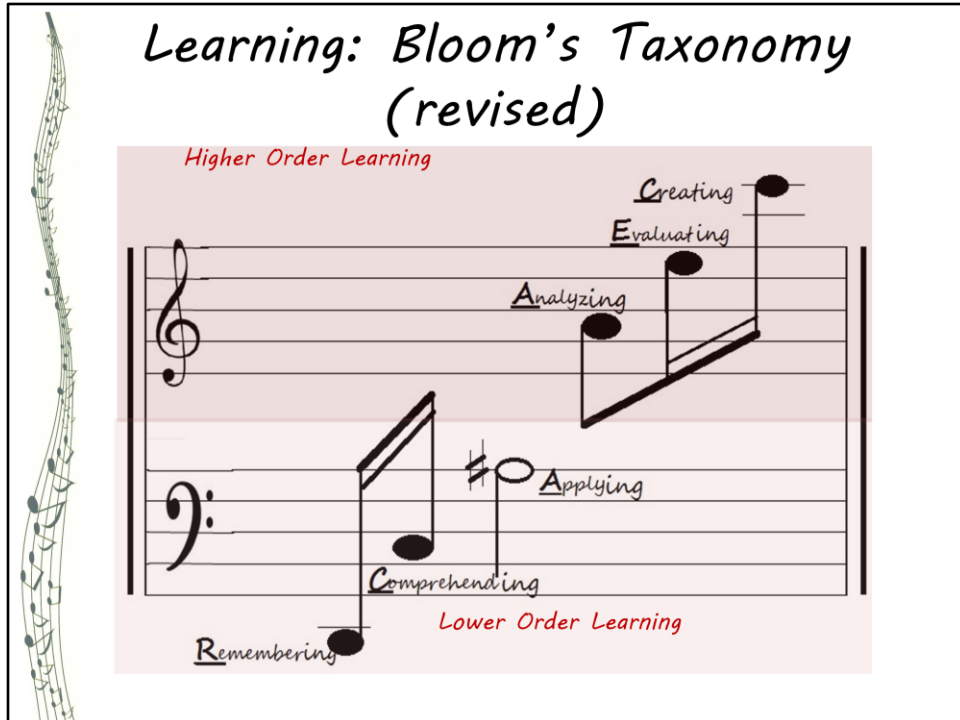
Background Research

- ♪ 2002 - *Using Course Management Systems (CMS) to extend instruction* (Cox)
- ♪ 2007-2013 - *Better integration is still needed* (Jackson). To date, most assessment targets lower learning (McNeill et al).
- ♪ 2012 - *Data on CMS (Computing Project)*
 - # *Blackboard/Angel/WebCT 45%; Moodle 20%; Desire2Learn 11%*
 - # *Colleges/Universities Using CMS ≈ 90%*
 - # *Top Institution Priority - Assisting Faculty Integrate IT into instruction 74%*

In “Becoming part of the course”, *College and Research Library News* (2002), Christopher Cox offers suggestions on using Blackboard to extend one-shot library instruction. Five years later, in “Integrating Information Literacy into Blackboard”, Pamela Jackson concluded that “better integration of library resources and services into learning management systems is needed” (*Journal of Academic Librarianship*, July 2007). A recent literature search seems to confirm this. While much has been written about the use of Blackboard and other instructional technology, most of the publications focus on its implementation, not assessment, and in context outside of information literacy. More importantly, of the few that address assessment techniques, non to date place it in the context of cognitive hierarchies identified in Bloom’s Taxonomy of Education Objectives (published in 1956 and revised in 2001). Furthermore, McNeill et al confirm that assessment using technology is primarily limited to lower order learning. Almost 16 years since the inception of Blackboard, it seems that a gap remains unfulfilled.

This is a critical point considering that more than 90% of colleges and universities use Course/Learning Management systems (C/LMS) and 74% of them state that their top priority is assisting faculty with IT integration into instruction (Green Campus Computing, Computing Project). The survey lists Blackboard, Moodle, and Desire2Learn as the major market shareholders (45%, 20%, and 11% respectively).

Learning: Bloom's Taxonomy (revised)



Bloom's taxonomy is designed as levels; each required before moving on to the next. McNeill et al argue that online assessment seems to be lacking.



Bloom and Learning

Skill	Sample Verbs	Purpose
Creating	Design, construct, plan, produce	Construct new information
Evaluating	Critique, theorize, assess, determine	Judge according to criteria
Analyzing	Compare, deconstruct, examine	Question/Examine Information
Applying	Show, use, solve	Apply knowledge to new situations
Understanding	Describe, explain, estimate, predict	Understand/Interpret meaning
Remembering	List, name, identify, retrieve	Memorize/Recall facts

Learning Objective = Bloom's Action Verb + in order to + Purpose

Assessment Objective ?

Lorin Anderson, a former student of Bloom, revisited the cognitive domain in the learning taxonomy in the mid-nineties and made some changes, with perhaps the two most prominent ones being, 1) changing the names in the six categories from noun to verb forms, and 2) slightly rearranging them [Pohl, M. (2000). [Learning to Think, Thinking to Learn: Models and Strategies to Develop a Classroom Culture of Thinking](#). Cheltenham, Vic.: Hawker Brownlow.]

Already familiar with the formula used to create learning objectives when teaching. The difficulty is mapping Bloom's Taxonomy when creating assessments. Where does this difficulty lie?

Assessment: Summative vs. Formative

The image is a composite graphic. On the left, a vertical musical staff with notes runs down the page. In the center, a map of Pittsburgh, PA, shows the Monongahela River and surrounding streets. A red box on the left contains a list of directions from Pittsburgh, PA to Grandview Ave. A blue box on the right contains text about summative assessment. A white box on the right contains text about formative assessment.

Get directions My places

Pittsburgh, PA

1. Head northeast on Grant St toward Sixth Avenue 0.1 mi
2. Turn right onto Seventh Avenue 213 ft
3. Take the Interstate 579 S ramp to Liberty Bridge/Monroeville/Interstate 376 E 0.2 mi
4. Merge onto I-579 S 430 ft
5. Take the exit on the left toward I-579 S/ Liberty Bridge 0.2 mi
6. Merge onto Crosstown Blvd 0.2 mi
7. Continue onto Liberty Bridge 0.3 mi
8. Turn right onto P J McArdle Roadway 0.8 mi
9. Slight left to stay on P J McArdle Roadway 100 ft
10. Turn left onto Grandview Ave 0.4 mi

Grandview Ave

Summative assessment evaluates knowledge at one point in time (i.e. 650 sixth Ave, Pittsburgh, PA 15106 = location)

Formative assessment changes based on needs (i.e. road blocks; detours; pit stops)

Perhaps the answer can be found in understanding assessment. Summative assessment evaluates knowledge at one point in time; for example, an address of a location. Formative assessment is an evaluative process that changes based on learning needs; for example, how to get from point A to point B.

Bloom and Assessment



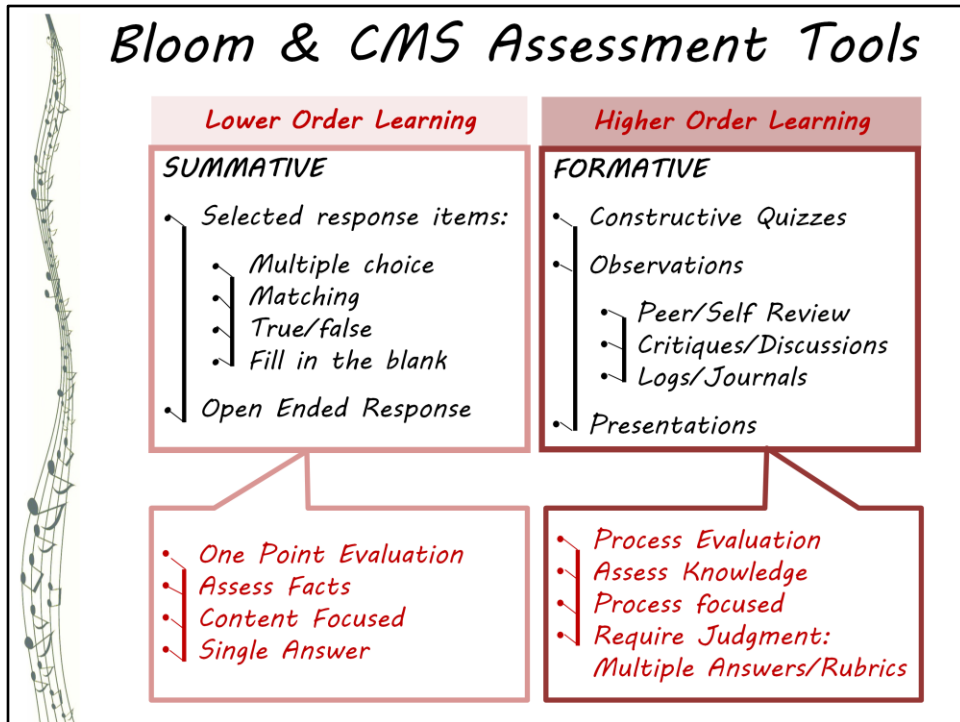
	Skill	Sample Verbs	Purpose
Formative	Creating	Design, construct, plan, produce	Construct new information
	Evaluating	critique, assess, determine	Judge according to criteria
	Analyzing	Compare, deconstruct	
Summative	Applying	Show, use, solve	Apply knowledge to new situations
	Understanding	explain, estimate	Understand/Interpret meaning
	Remembering	List, name, identify, retrieve	Memorize/Recall facts

Annotations:

- "Enduring"** (with arrow pointing to Evaluating)
- Important to Know and Do** (with arrow pointing to Analyzing)
- Worth Being Familiar With** (with arrow pointing to Understanding)

Both lower and higher orders of learning require different forms of assessment, but both are important for a holistic approach of learning and assessment. While online instruction employs higher and lower order aspects of learning, online assessment seems to be limited to lower order (McNeill) or summative approaches.

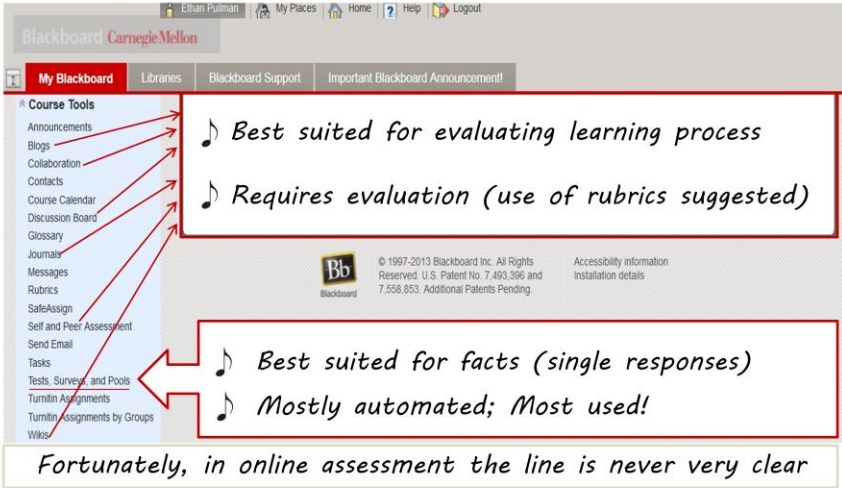
Bloom & CMS Assessment Tools



How do assessment tools in a CMS environment map to Bloom's taxonomy?

Summative assessment is content focused. It is easier to grade because it evaluates single answers, based on facts. On the other hand, formative assessment evaluates a process, which changes, and requires judgment. It makes sense then that technology features that make assessment easier (i.e. automated) would be more popular. Thus, tools requiring selected responses map to lower order learning; whereas tools that use open-ended prompts are formative in nature.

CMS Assessment Tools in BB



The screenshot shows the Blackboard Course Tools menu. Red arrows point from specific tools to two red-bordered boxes containing handwritten notes. The first box points to 'Announcements', 'Blogs', 'Collaboration', and 'Contacts'. The second box points to 'Tests, Surveys, and Pools'.

Course Tools

- Announcements
- Blogs
- Collaboration
- Contacts
- Course Calendar
- Discussion Board
- Glossary
- Journals
- Messages
- Rubrics
- SafeAssign
- Self and Peer Assessment
- Send Email
- Tasks
- Tests, Surveys, and Pools
- Turnitin Assignments
- Turnitin Assignments by Groups
- Wikis

Best suited for evaluating learning process

Requires evaluation (use of rubrics suggested)

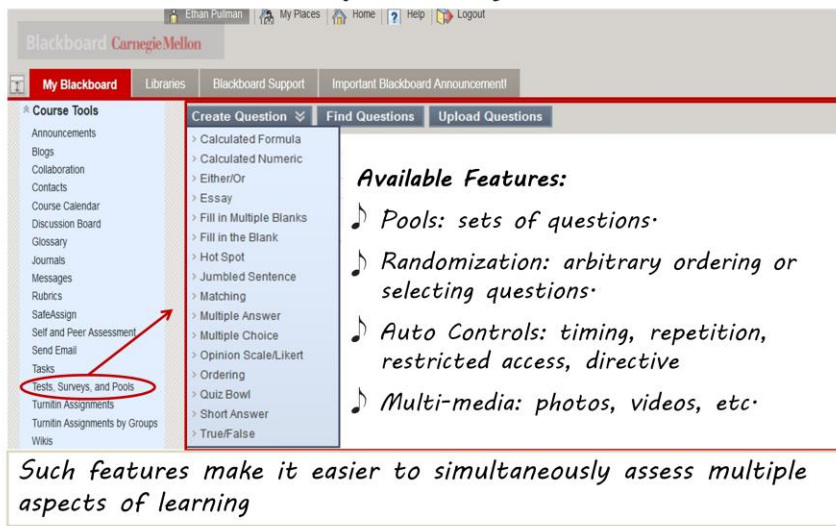
Best suited for facts (single responses)

Mostly automated; Most used!

Fortunately, in online assessment the line is never very clear

Let's take a look at examples of online assessment in Blackboard.

Auto-Assessment Question Types (in BB)



The screenshot shows the Blackboard interface with the 'Create Question' dropdown menu open. The 'Course Tools' sidebar on the left has 'Tests, Surveys, and Pools' circled in red, with a red arrow pointing to the 'Create Question' menu. The 'Create Question' menu lists various question types: Calculated Formula, Calculated Numeric, Either/Or, Essay, Fill in Multiple Blanks, Fill in the Blank, Hot Spot, Jumbled Sentence, Matching, Multiple Answer, Multiple Choice, Opinion Scale/Likert, Ordering, Quiz Bowl, Short Answer, and True/False. To the right of the menu, a box titled 'Available Features:' lists: Pools: sets of questions, Randomization: arbitrary ordering or selecting questions, Auto Controls: timing, repetition, restricted access, directive, and Multi-media: photos, videos, etc.

Available Features:

- ♪ *Pools: sets of questions*
- ♪ *Randomization: arbitrary ordering or selecting questions*
- ♪ *Auto Controls: timing, repetition, restricted access, directive*
- ♪ *Multi-media: photos, videos, etc.*

Such features make it easier to simultaneously assess multiple aspects of learning

Let's take a look at examples of online assessment in Blackboard.

Examples: multiple-choice

Traditional (single response):

Question 1 0 points (Extra Credit) Save Answer

You need to find what Hunt Library has on your topic. What is the BEST strategy to help you accomplish this?

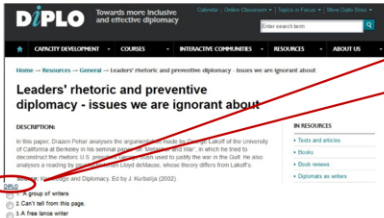
- ☐ 1. Go to the library website and search for your topic in the search box provided.
- ☐ 2. Go to the library website and select the library catalog, then search for your topic.
- ☐ 3. Go to the library website and use "Advance Search" to search for your topic.
- ☐ 4. Go to the second floor and browse the shelves.

Alternative Approach (single response, but requires investigation, rather than memorization):

Question 7 0 points (Extra Credit) Save Answer

Your search on the web led you to the following website. Look at the image below (or click to go to site) and answer the following **7500** question:

Who authored this website?



Students click on the website to evaluate it before providing an answer.

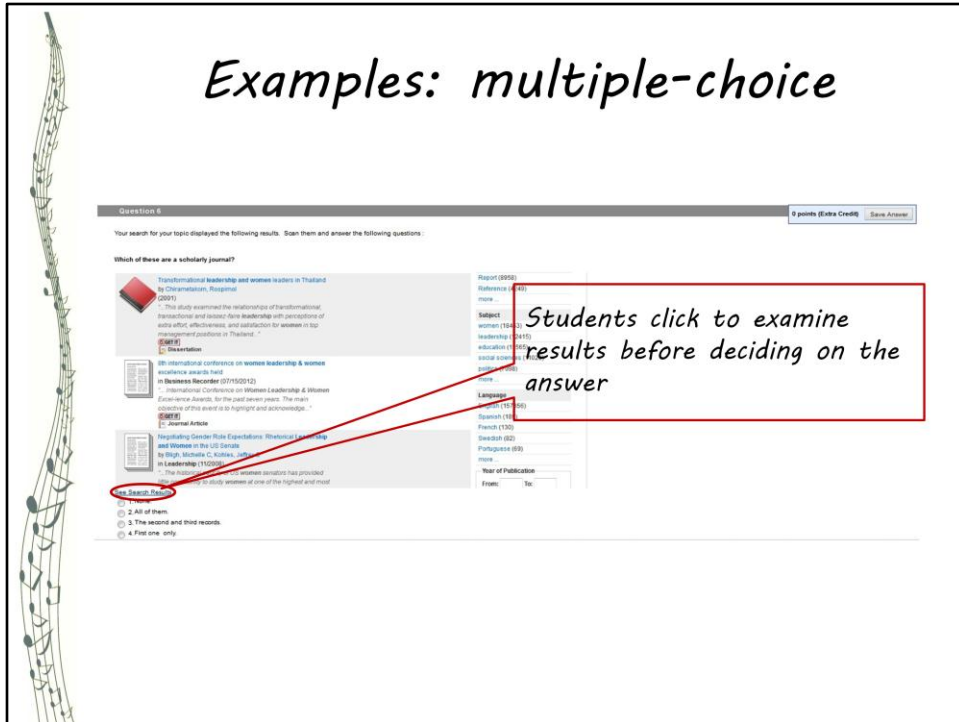
Question 8 0 points (Extra Credit) Save Answer

After clicking on the link provided, and reviewing the site, it should be concluded that the article is written by an expert author.

☐ True ☐ False

Let's take a look at examples of online assessment in Blackboard.

Examples: multiple-choice



The screenshot shows a search results page for the topic "Transformational leadership and women leaders in Thailand". The page displays three search results. A red box highlights the first result, "Transformational leadership and women leaders in Thailand by Chansriwan, Rungsri (2007)". A red arrow points from this box to a text box that says "Students click to examine results before deciding on the answer". Below the text box, a red circle highlights the "View Search Results" link. The multiple-choice question asks: "Which of these are a scholarly journal?" with four options: 1. None, 2. All of them, 3. The second and third records, and 4. First one only.

Question 6

Your search for your topic displayed the following results. Scan them and answer the following questions.

0 points (Extra Credit) Save Answer

Which of these are a scholarly journal?

Transformational leadership and women leaders in Thailand by Chansriwan, Rungsri (2007)
This study examined the relationship of transformational, transactional and laissez-faire leadership with perceptions of anti-racket effectiveness, and satisfaction for women in top management positions in Thailand.
REPORT
C: Dissertation

8th international conference on women leadership & women in Business Recorder (07/10/2012)
International Conference on Women Leadership & Women Excellence Awards for the past seven years. The main objective of this event is to highlight and acknowledge.
REPORT
C: Journal Article

Regulating Gender Role Expectations: Philosophical Leadership and Women in the US Senate by High, Michelle C. Krollen, 1999
In Leadership 17(2009)
The leadership and women scholars has provided...
REPORT
C: Journal Article

Report (08/02)
Reference (08/02)
more...

Subject
women (2007)
leadership (2007)
education (2007)
social sciences (2007)
more...

Languages
English (10/08/07)
French (13/02)
Swedish (02/02)
Portuguese (02/02)
more...

Year of Publication
From: To:

View Search Results

☐ 1. None

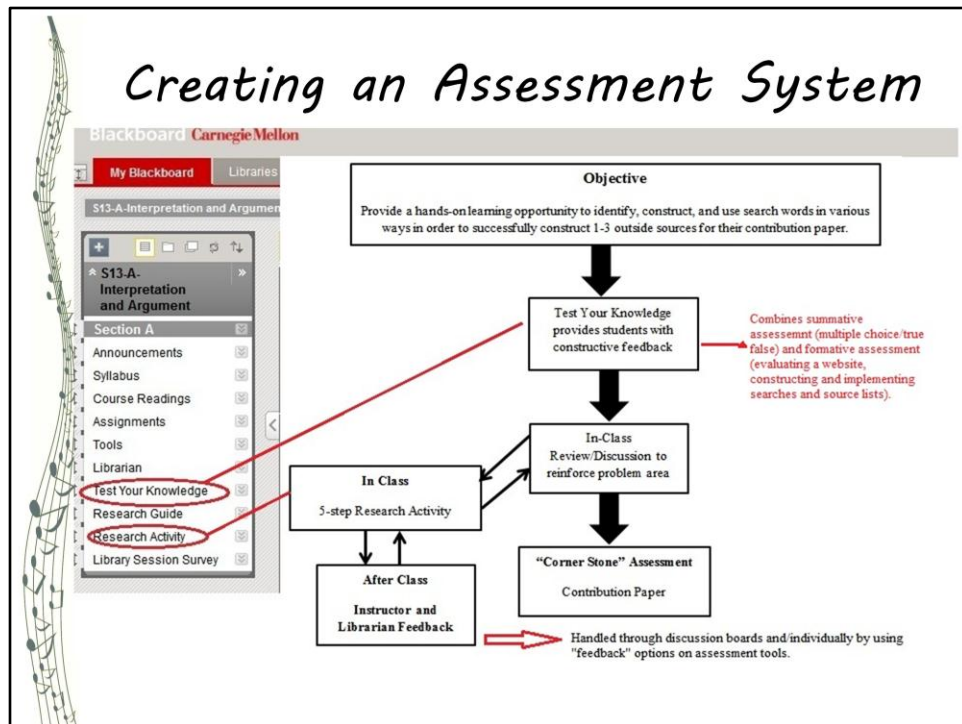
☐ 2. All of them

☐ 3. The second and third records

☐ 4. First one only

Students click to examine results before deciding on the answer

Here's another example.



An assessment system provides a holistic way of evaluating student learning; one that can be better aligned with overall course objectives. Ultimately, the key to assessment is variety. Of course, this process is complex and there are issues to consider.



Some Considerations for Librarians

- ♪ *Is the class credit-bearing or one-shot?*
 - ♪ *Credit → flexible*
 - ♪ *One-Shot → limited*
- ♪ *What is my role: Observer, Guest, TA, Co-instructor, other?*
Determines level of participation & ability to create assessment.
- ♪ *2 grade or not 2 grade, is that a question?*
- ♪ *Is participation feasible/realistic? Time, workload, etc.*
- ♪ *How do I get faculty/instructor buy-in?*
 - ♪ *Spend time investigating: SW&H applies to us as well*
 - ♪ *Tie it with their own (and department's) outcomes*
 - ♪ *Invite them to be a part of the process: Share observations/results; offer training; ·*
 - ♪ *Create ready-to-use materials and explain integration*



Summary

- *Assessment in CMS environment has been largely limited to lower learning order.*
- *Bloom's Taxonomy should be considered when deciding on assessment tools.*
- *Creating an assessment system that targets both lower and higher order learning requires the use of various tools.*
- *The choice of assessment tools must be considered within the context of instructional roles.*



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DISCUSSION/QUESTIONS

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