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### Using Electronic Rubrics to Produce Actionable Assessment Data in a Skills-Based Course

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### Learning Objectives

- Discuss features of electronic rubric software that can be used to produce actionable assessment data;
- Map an existing rubric or develop a new rubric to assess programmatic outcomes;
- Evaluate assessment data from electronic rubric software to close the assessment loop and modify courses or curricula.

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### Using Rubrics in Skills Assessment

- Skills evaluation not amenable to an examination format.
- Rubrics allow for evaluation of skills by rating performance on a criterion scale.
- Criteria should be specific and descriptive.
  - Helps to increase consistency across large classes or multiple graders.
  - Instructors can look at class performance on specific items to see where additional emphasis is necessary.

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## E-rubrics at the School of Pharmacy

**Why we wanted it:**

- More robust assessment data
- Individualized student feedback

**Why we were concerned:**

- Access and use by multiple graders
- Technical needs
- Impact on time and flow
- Workload to implement

**Why we needed it**

- Accreditation requirements for generating student learning outcomes (SLOs) attainment data across curriculum on the individual student level and aggregate cohort level

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## Desirable features for e-rubrics

- Students can use:
  - Feedback and comments within a rubric
  - Scores on particular items to see strengths and weaknesses
- Courses can use:
  - Dimension performance psychometric data
  - Aggregate across multiple assignments to examine learning outcome data
- Programs can use:
  - Aggregate student performance as an indicator of the group's competency in a given area.

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## Aren't Grades Good Enough

Using a Rubric to Produce Both Grades and Assessment Data

The screenshot shows a software interface for an e-rubric. It includes a table for 'Students' with columns for 'Midterm', 'Paper', and 'Final exam', and a 'Grades' column. Below this is an 'Assessment Data' table with columns for 'Average Score', 'Highly competent', 'Competent', and 'Weakness'. The interface also features a 'Learning Outcomes' section and an 'Output' section with bullet points: 'Grade for each student on assignment' and 'Assessment data by learning outcome' (with sub-points for 'Strength (logical organization)' and 'Weakness (posing research questions)').

Available at <http://avillage.web.virginia.edu/laas/assess/tools/rubrics.shtml>

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### Examsoft Features: Rubrics

- Ability to map rows (dimensions) to outcomes
- Options
  - Multiple graders
  - Self assessment
  - Peer assessment
  - Assigned graders
  - Blinded grading
- Feedback on performance and competency achievement




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### ExamSoft Features: Analytic Reports

- Performance Summary
- Rubric analysis by dimension
  - Item analysis
  - Psychometric data (PBS, difficulty)
- Strengths and Opportunities Reports for Students
  - Shows specific areas to remediate
  - Focus study time
  - Target specific faculty for further questions/dialogue

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-	-	-	-	% Selected	89.43	7.44	4.13
-	-	-	-	Disc. Index	0.33	-0.21	-0.12
-	-	-	-	Upper 27%	1.00	0.00	0.00
-	-	-	-	Lower 27%	0.67	0.21	0.12
2: Asks if patient uses tobacco and EOTH							
1: Asks if patient uses either tobacco or EOTH							
0: Does not ask if patient uses tobacco or EOTH							
		Upper 27%	Lower 27%	PBS	2	1	0
Med Reconciliation - must confirm drug name, dose/strength and schedule. Each is a separate item.	0.96	100.00%	90.91%	0.32	114	5	2
-	-	-	-	% Selected	94.21	4.13	1.68
-	-	-	-	Disc. Index	0.12	-0.06	-0.06
-	-	-	-	Upper 27%	1.00	0.00	0.00
-	-	-	-	Lower 27%	0.88	0.06	0.06
2: Student confirms all but 1 item in the medication list							
1: Student confirms all but 2 or 3 items in the medication list							
0: Student does not confirm more than 3 items in the medication list							
Medication Adherence Screening	0.84	100.00%	65.15%	0.41	91	22	8
-	-	-	-	% Selected	75.21	18.18	6.61
-	-	-	-	Disc. Index	0.48	-0.27	-0.21
-	-	-	-	Upper 27%	1.00	0.00	0.00
-	-	-	-	Lower 27%	0.52	0.27	0.21
2: Uses 2 or more methods to confirm adherence to medications							
1: Asks only 1 way or time about medication adherence							
0: Does not ask about medication adherence.							
Identified patient specific barriers to adherence	0.78	100.00%	48.48%	0.57	85	19	17

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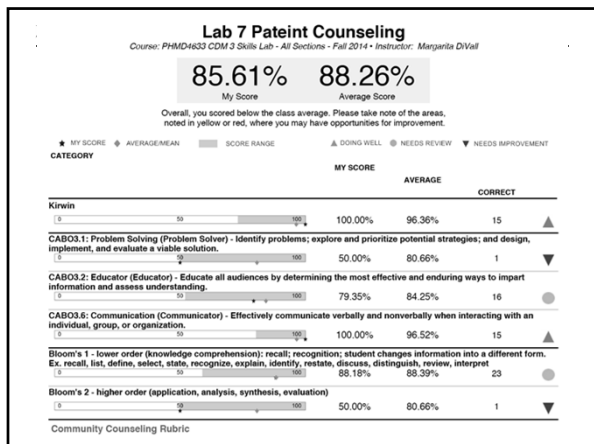
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## Mapping Rubrics to Outcomes

- Rubric items can be mapped to:
  - Course learning outcomes
  - Programmatic Outcomes
  - Blooms Taxonomy
  - Topic / Content Areas
- Mapping should be validated
- Reports of aggregate performance can help direct improvement efforts

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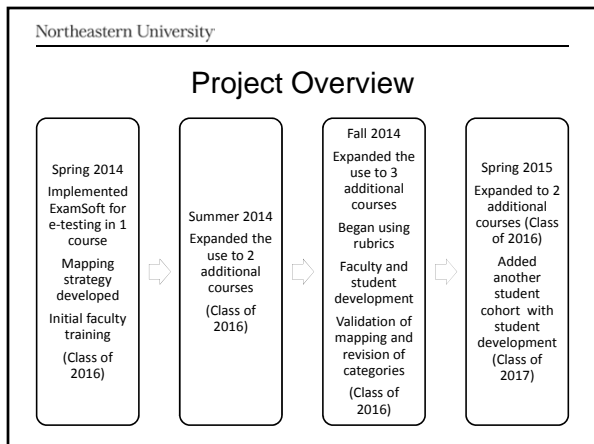
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Achievement of Our Communications Competency

## USING DATA TO IMPROVE INSTRUCTION

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## Comprehensive Disease Management Skills Lab

- Pharmacist skills course where students apply knowledge to pharmacy practice activities
- Typical Skills Evaluated:
  - Prescription filling
  - Patient education
  - Responding to questions
- Course Expectations:
  - Overall grade  $\geq 73\%$
  - $\geq 73\%$  on targeted activities (e.g., Communication or Order Processing and Verification) depending on student's level.

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ExamSoft Questions Rubrics Assessments Categories Reports Exam Tables Admin

Home > Rubrics > Outpatient community counseling rubric > Community Counseling Rubric 2015 update

### Community Counseling Rubric 2015 update

© 2012 Nov 1, Creator: KRWL, Jennifer  
 for: Community Counseling Rubric 2015 update  
 Folder: Outpatient community counseling rubric  
 Change Folder

Introduction:

		COLUMNS (Performance Levels)		
		Proficient	Needs Improvement	
ROWS (Dimensions)	Categories	Point Value: 2	Point Value: 1	
1	Introduces Self and role title Categories: <a href="#">Bloom's 1: Know</a> , <a href="#">Exam</a> , <a href="#">CANDOR Comment...</a>	Complete and professionally appropriate	Could be more effective	Did not pass
2	Explains purpose and importance of counseling Categories: <a href="#">Bloom's 1: Know</a> , <a href="#">Exam</a> , <a href="#">CANDOR Comment...</a>	Complete and professionally appropriate	Could be more effective	Did not pass
3	Verify Patient Name Categories: <a href="#">Bloom's 1: Know</a> , <a href="#">Exam</a> , <a href="#">CANDOR Comment...</a>	Complete and professionally appropriate using open ended question	complete, but used a closed or "yes/no" question	Did not pass
4	Verify Patient Address Categories: <a href="#">Bloom's 1: Know</a> , <a href="#">Exam</a> , <a href="#">CANDOR Comment...</a>	Complete and professionally appropriate using open ended question	complete, but used a closed or "yes/no" question	Did not pass
5	Verify Patient Age or DOB Categories: <a href="#">Bloom's 1: Know</a> , <a href="#">Exam</a> , <a href="#">CANDOR Comment...</a>	Complete and professionally appropriate using open ended question	complete, but used a closed or "yes/no" question	Did not pass

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### Assessment of the Communications Competency – Fall Semester

<p><b>Rubrics Only – no mapping</b></p> <ul style="list-style-type: none"> <li>• 6 “Oral Communication” Assessments</li> <li>• Average grade = 89.33%</li> <li>• N below 73% = 1</li> </ul>	<p><b>E-Rubrics with competency mapping</b></p> <ul style="list-style-type: none"> <li>• 6 Assessments</li> <li>• 16 Items tagged with “communication” competency</li> <li>• Average “communication” competency score 95%</li> <li>• N below 73% = 0</li> </ul>
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CABO3.1: Problem Solving (Problem Solver) - Identify problems; explore and prioritize potential strategies; and design, implement, and evaluate a viable solution. % Points	CABO3.2: Educator (Educator) - Educate all audiences by determining the most effective and enduring ways to impart information and assess understanding. % Points	CABO3.6: Communication (Communicator) - Effectively communicate verbally and nonverbally when interacting with an individual, group, or organization. % Points
# assessments <sup>4</sup>	6	6
# items	22	18
Average %	82.13 %	85.04 %
43.75%	63.39%	89.02%
50%	65.11%	85.39%
50%	66.33%	91.98%
50%	67.85%	87.84%
58.25%	68.76%	84.88%
58.25%	68.86%	94.09%
58.25%	71.30%	94.93%
58.25%	71.55%	93.75%

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### Interprofessional Curbside Consult (ICC) Assignment

- Added to the course to:
  - Apply drug information skills to practical questions
  - Increase interprofessional interactions
  - Increase opportunities to assess programmatic learning outcomes:
    - Communicator
    - Collaborator (IPE)
    - Educator
    - Problem Solver

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### Overall Performance

	ICC 1	ICC 2	ICC 3	ICC 4
Average score (%)	88.4	90.1	90.2	91.1
Range (%)	57.4-100	72-100	63-100	67.8-100
Failures (<73%)	13 students	3 students	6 students	4 students

All students passed at least 1 ICC assessment

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### Educator and Communication Competencies

Spring Semester 2015 N=130 students		
4 ICC assignments		
	Educator	Communicator
# rubric items	3	13
Average	78.5	88.8
N (%) of students <73%	40 (30.1)	1 (0.8)
Score range (%)	30.3-100	63.8-97.3

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### Educator and Communication Competencies

Spring Semester 2015 N=130 students		Fall Semester 2014 N=129 students	
4 ICC assignments		6 patient counseling assignments	
	Educator	Communicator	Educator
# rubric items	3	13	22
Average	78.5	88.8	82.13
N (%) of students <73%	40 (30.1)	1 (0.8)	13 (10.1)
Score range (%)	30.3-100	63.8-97.3	63.4-97.3

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**Performance on Targeted Competencies**

	Problem solver		Collaborator	
	End of Fall 2014	End of Spring 2015 (aggregate)	End of Fall 2014	End of Spring 2015 (aggregate)
# assessments	4	8	0	4
# items	2	5	0	6
Average	78.9	87.7	N/A	86.8
N (%) of students <73%	39 (30.2)	2 (1.6)	N/A	4 (3.1)
Score range (%)	43.8-100	71.4-100	N/A	48.7-99.1

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**Conclusions and next steps**

- Learning outcomes evaluation revealed more useful information compared to grades
- Educator competency, particularly education of health providers vs. patients, needs to be further developed – opportunity for curricular modification
- Thresholds/conditions for course passing may need to be revised

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**Aknowledgements**

- Michael Gonyeau, PharmD, MEd, Clinical Professor, Director of Undergraduate Programs
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