

Measuring Curriculum Outcomes With Grading Rubrics

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Background

The public is increasingly demanding more accountability of universities and other educational institutions. At Iowa State University, we are constructing outcomes assessment programs in response to accountability requirements imposed by the Iowa Board of Regents and accreditation agencies.

The Agronomy Department has been a leader on campus in the development of its assessment program. Major steps taken thus far include:

- Development of specific learner outcomes and student expectations
- Organization of an assessment committee
- Completion of faculty, student, recent graduate, and employer surveys

Surveys have been excellent qualitative performance measures, but quantitative measures are needed if we are to demonstrate that students are achieving the outcomes we have established. The need for quantitative measures has led us to consider the use of grading rubrics in our assessment program.

What are rubrics?

In the context of student and curriculum assessment, three definitions of rubrics are commonly used.

- An authoritative rule of conduct or procedure
- A class or category
- Scoring rules

More specifically, rubrics are scoring guides that describe criteria for performance and differentiate among different levels of performance within those criteria. They set forth specific criteria, define precise requirements for meeting those criteria, and assign numerical scores to each level of performance. In an educational setting, rubrics provide educators with fair, objective, and justifiable methods for evaluating student work. They can also be used to reveal to students the standards of the discipline and help faculty and students make connections between course materials and professional life after graduation.

The use of rubrics for assessing students' skills is gaining momentum in all levels of education from elementary schools to graduate and professional programs. Many web resources on rubrics are currently available including hundreds of pre-made rubrics for assessing just about any educational activity.

Using Rubrics for Curriculum Assessment

Use of rubrics for curriculum assessment builds on two key ideas:

- The ultimate goal of curriculum assessment is improvement of student learning. And,
- Effective curriculum assessment requires effective classroom assessment.

Rubrics will provide standards and expectations used to evaluate student performance relative to established learner outcomes for the Agronomy curriculum, especially those related to professional skills and communications. Each student's performance will be measured and pooled data will be used for curriculum assessment and provided to oversight bodies and stakeholders.



Elements of an Assessment Rubric

Learner Outcome	Assessment rubric			
	3	2	1	0
Levels of Mastery	<p>Define the Problem</p> <p>The problem was clearly defined using the procedure prescribed for the assignment.</p> <p>The problem was partially defined. Some of the procedure prescribed for the assignment was not followed. Some parts of the problem were not clearly described in the description of the problem in the assignment.</p> <p>The problem was poorly defined. Procedures prescribed by the assignment were not followed.</p>			
Scoring Scale	<p>Identify Resources</p> <p>Identified and defined the number of resources required for the assignment. Resources required were identified using the procedure prescribed for the assignment. Resources were appropriate and sufficient for solving the problem.</p> <p>Identified and defined the number of resources required for the assignment. Resources were not identified using the procedure prescribed for the assignment. Some resources were not appropriate or the resources were not sufficient for solving the problem.</p> <p>Fewer resources were used than required by the assignment. Identification resources were not identified using the procedure prescribed for the assignment. Resources were not sufficient to address the problem.</p>			
	<p>Information Repositories</p> <p>Used all of the information repositories prescribed for the assignment.</p> <p>Used most of the information repositories prescribed for the assignment.</p> <p>Used few of the information repositories prescribed for the assignment.</p>			
Area Groupings	<p>Propose Solutions</p> <p>Proposed valid solutions based on the criteria established for the assignment.</p> <p>Proposed solutions rarely fit the criteria established for the assignment. Solutions do not completely address the problem.</p> <p>Solutions proposed rarely fit the criteria established for the assignment.</p>			
	<p>Evaluate Solutions</p> <p>Thoroughly evaluated solutions using the method prescribed for the assignment. Solutions address the problem and the quality of the information used in the information provided.</p> <p>Did not evaluate solutions or solutions evaluated were not appropriate for the assignment. Solutions were not thorough or did not follow the method prescribed for the assignment. Information used in the information provided was not appropriate or the information provided was not sufficient for solving the problem.</p> <p>Did not evaluate solutions or solutions evaluated were not appropriate for the assignment. Solutions were not thorough or did not follow the method prescribed for the assignment. Information used in the information provided was not appropriate or the information provided was not sufficient for solving the problem.</p>			
Quality Characteristics	<p>Assessment</p> <p>Plans for assessing the success of the proposed solution and criteria for assessing that effectiveness are clearly described.</p> <p>Measuring plan and assessment criteria are inadequate or lack detail.</p> <p>Plans are created measuring plan and/or assessment criteria.</p>			
	<p>Client Resources</p> <p>The client's resources were properly identified. Solutions may be beyond the resources of the client. Criteria are stated in terms of resources required to solve the problem.</p> <p>The client's resources were partially identified. Resources may be beyond the resources of the client. Criteria are stated in terms of resources required to solve the problem.</p> <p>The client's resources were not properly identified. Resources may be beyond the resources of the client. Criteria are stated in terms of resources required to solve the problem.</p>			

Obstacles to Using Rubrics for Curriculum Assessment

- Requires extensive and continuous data collection for each student in the curriculum.
- Requires submission of information to a committee for centralized analysis.
- Faculty must have a common understanding of the rubric standards.
- Successful implementation requires faculty to share explicit information with others about what they are doing in their classrooms, including their objectives for learning, their assessment instruments, and the grades assigned as a result of the assessments. Some faculty may fear sharing this information.
- Takes additional time to compile information.

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Strengths of Rubrics for Curriculum Assessment

Rubrics

- Can be incorporated into current course activities and assignments.
- Connect learning outcomes to student performance.
- Set explicit standards of student and curriculum performance for use by multiple faculty and outside observers.
- Send a strong, coherent message about the quality of work expected of students.
- Can be adapted for individual faculty use.
- Provide measurable results that can be used for curriculum and course improvement.
- Can be made available to students, faculty, administrators, and outside observers through the web.
- Allow assessment data to be managed and interpreted using a computer database.

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