AY 15-16 College-Wide Outcomes Assessment Results

Results of VALUE Rubric based outcomes assessment completed as part of the MSC and MnVALUE projects. Student artifacts collected during the 2015-2016 academic year.

January, 2017

INVER HILLS COMMUNITY COLLEGE
2500 80TH STREET EAST
INVER GROVE HEIGHTS, MN  55076
Project Background

- As part of participation in the HLC Assessment Academy IHCC has done the following in regard to college-wide outcomes assessment: Initially, a consultant worked with the assessment committee to guide them through the early stages of the journey, and as a result of that work, two Assessment Frameworks were completed— one that depicts alignment of outcomes through course, program and college-wide levels, accompanied by internal and external influences, and one that depicts assessment processes and the flow of assessment information.

- In 2014, IHCC joined the Multi-State Collaborative (MSC), an initiative designed to create meaningful evidence about how well students are achieving important learning outcomes. The MSC is designed to produce valid data summarizing faculty judgments of students’ own work, and also seeks to aggregate results in a way that allows for benchmarking across institutions and states. The primary goal of the initiative is to provide assessment data that will allow faculty and institution leaders to assess—and improve—the levels of student achievement on a set of cross-cutting outcomes important for all disciplines. Supported by the State Higher Education Executive Officers Association (SHEEO) and the Association of American Colleges and Universities (AAC&U), nine states agreed to collaborate in the development of a different model for learning outcomes assessment a model that is rooted in campus/system collaboration, in authentic student work, and in faculty curriculum development and teaching activity. The initiative entails uploading student artifacts into a software tool, where they are scored by faculty from participating campuses who have been trained in scoring to the rubrics (faculty receive a stipend for scoring following the training). The artifacts have been de-identified, and no faculty is given artifacts from their own campus to score, but faculty do score artifacts across all disciplines. IHCC has maintained its participation through the pilot year (AY14-15), the demonstration year (AY15-16) and the refinement year (AY16-17). IHCC has used this initiative to engage faculty across the campus in providing student artifacts for scoring against three VALUE rubrics: Written Communication, Critical Thinking, and Quantitative Analysis. Since the pilot year data was not meant as a benchmarking year, there was minimal sharing of results with the campus of aggregate results.

- IHCC joined the Minnesota VALUE Rubrics Project in fall 2015 and continues to participate in AY16-17. The collaborative is a group of ten public and private colleges and universities in Minnesota. It is similar to the MSC in that it also uses the VALUE rubrics, but it expands their use to six outcomes, adding Civic Engagement, Intercultural Knowledge and Competence, and Ethical Reasoning. It also looks at outcomes for three credit levels (25%, 50% and 75% of credits needed for Associate degree completion). Additionally, participating Faculty are asked to provide a difficulty rating for assignments used to produce their artifacts. This will be used in a parallel study by AAC&U into how the difficulty level of assignments impact results. Student artifacts can be used for both MSC and Minnesota VALUE projects, as artifacts are all uploaded to the same pool, minimizing the ask to faculty. Faculty are encouraged to think about the entire process of course outcomes, program outcomes, and college-wide outcomes to try and maximize use of their artifacts across multiple platforms.

- To demonstrate IHCC’s commitment to assessment, two faculty have been given release time to act as coaches to faculty in AY16-17, one for Program Review and one for College-Wide Outcomes Assessment. Additionally, two faculty receive release time to act as coordinators, one for Program Review and one for College-Wide Outcomes Assessment. Time is given at each Academic Development (AD) day around assessment topics, and an assessment fair is planned for January 2017.

Introduction
IHCC faculty participation in the project is presented as counts of participating faculty, subjects and courses included, and scored artifacts. Following that a comparison of the sample and the IHCC population of for credit, degree seeking
Office of Institutional Research

students is included. Finally, results from each learning outcome are presented including several comparison views of the data (the relevant VALUE rubrics are included in Appendices A through C).

Only expected criteria scores were included. Where scores varied by 10 or more percentage points between categories of a demographic variable it is noted in the summary above the table.

Participation

AY 15-16 (Demonstration Year)

<table>
<thead>
<tr>
<th>Submissions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td># Faculty</td>
<td>78</td>
</tr>
<tr>
<td># Subjects</td>
<td>34</td>
</tr>
<tr>
<td># Courses</td>
<td>69</td>
</tr>
<tr>
<td># Submitted by Faculty*</td>
<td>558</td>
</tr>
<tr>
<td># Submitted for scoring</td>
<td>238</td>
</tr>
</tbody>
</table>

*Count of artifacts submitted from students who met eligibility requirements

<table>
<thead>
<tr>
<th>Scoring</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td># Faculty Scored</td>
<td>47</td>
</tr>
<tr>
<td># Subjects Scored</td>
<td>22</td>
</tr>
<tr>
<td># Courses Scored</td>
<td>36</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Artifacts Scored</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical Thinking</td>
<td>90</td>
</tr>
<tr>
<td>Quantitative Literacy</td>
<td>70</td>
</tr>
<tr>
<td>Written Communication</td>
<td>70</td>
</tr>
<tr>
<td>Total</td>
<td>230</td>
</tr>
</tbody>
</table>

Sample and Population: Demonstration Year (FY 16 collection)

Compared to the IHCC population of degree seeking student enrolled for credit, the sample was:

- Over-sampled on male students (+8.1%)
- Similar in age groups (+/- < 2.0%)
- Similar in race/ethnicity (+/- < 4.0%)
- Similar in degree level (+/- < 1.0%)
- Under-sampled in students of unknown PELL status (-37.0%)
IHCC vs. CWLO Sample: Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Sample</th>
<th>IHCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>51.6%</td>
<td>58.7%</td>
</tr>
<tr>
<td>Male</td>
<td>48.4%</td>
<td>40.3%</td>
</tr>
<tr>
<td>Unknown</td>
<td>0.0%</td>
<td>1.0%</td>
</tr>
</tbody>
</table>

IHCC vs. CWLO Sample: Age Groups

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Sample</th>
<th>IHCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 18</td>
<td>0.5%</td>
<td>0.5%</td>
</tr>
<tr>
<td>18-24</td>
<td>59.6%</td>
<td>59.0%</td>
</tr>
<tr>
<td>25-34</td>
<td>27.2%</td>
<td>25.5%</td>
</tr>
<tr>
<td>35-44</td>
<td>9.9%</td>
<td>9.9%</td>
</tr>
<tr>
<td>45-54</td>
<td>2.8%</td>
<td>4.0%</td>
</tr>
<tr>
<td>55+</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Unknown</td>
<td>0.1%</td>
<td>0.1%</td>
</tr>
</tbody>
</table>

IHCC vs. CWLO Sample: Race/Ethnicity

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Sample</th>
<th>IHCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>American-</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Asian/Asian/Pacific Islander</td>
<td>0.5%</td>
<td>5.2%</td>
</tr>
<tr>
<td>Black or African-American</td>
<td>11.7%</td>
<td>12.3%</td>
</tr>
<tr>
<td>Hispanic Latino</td>
<td>7.0%</td>
<td>10.5%</td>
</tr>
<tr>
<td>Non-resident alien</td>
<td>0.5%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Two or more races</td>
<td>3.8%</td>
<td>5.2%</td>
</tr>
<tr>
<td>Other</td>
<td>4.2%</td>
<td>1.2%</td>
</tr>
<tr>
<td>White</td>
<td>65.3%</td>
<td>63.4%</td>
</tr>
</tbody>
</table>
IHCC vs. CWLO Sample: Degree Level

- Associates: 93.0% Sample, 92.8% IHCC
- Certificate: 5.6% Sample, 6.0% IHCC
- Not Available: 1.4% Sample, 1.2% IHCC

IHCC vs. CWLO Sample: Pell Eligible

- Pell Yes: 51.2% Sample, 34.6% IHCC
- Pell No: 45.1% Sample, 24.5% IHCC
- Pell Not Available: 3.8% Sample, 40.8% IHCC
Critical Thinking Results: Demonstration Year

The Critical Thinking VALUE Rubric can be found in Appendix A.

College wide, most Critical Thinking artifacts were scored 1 or 2. The criterion Explanation of Issues had the highest percentage (14.9%) of artifacts scored 3.

Critical Thinking by Subject Group

In order to preserve the anonymity of the data results were combined into conceptually related groups to report results by subject.

Critical thinking subject groups:

- Arts & Life Skills: FS/THTR, HLTH, HUM, INTS, MUSC, STSK
- Physical Science: ACCT, CHEM, BIOL
- Social Science: ECON, PHIL, POLS, PSYC, SOC
- English: COMM, ENG

Arts & Life Skills group artifacts were most often scored 1.

Social Science group artifacts were most often scored 2 on Evidence and Explanation of Issues but most often scored 1 on other criteria.

Physical Science group artifacts were most often scored 3 on Evidence and most often scored 2 on other criteria.

English group artifacts were most often scored 2 on most criteria. However, in four of five criteria the percentage scored 1 was less than 6.0% different from the percentage scored 2.
Critical Thinking by Gender

The largest differences in female and male student scoring were in *Conclusions and Related Outcomes* (score 1 and 2), *Evidence* (score 1), *Explanation of Issues* (score 2), and *Influence of Context and Assumptions* (score 2).

Critical Thinking by Age Category

The largest differences in traditional and adult student scoring were in *Conclusions and Related Outcomes* (score 0), *Evidence* (score 1 and 2), *Influence of Context and Assumptions* (score 0, 1, 2, and 3), and *Student’s Position* (score 0, 1, 2, and 3).
Critical Thinking by Credit Level

The largest differences in low and high credit student scoring were in Conclusions and Related Outcomes (score 1), Evidence (score 3), Explanation of Issues (score 1 and 3), and Student’s Position (score 3).

Critical Thinking by Students of Color

The largest differences in student of color and white student scoring were in Evidence (score 1 and 3), Explanation of Issues (score 1 and 3), Influence of Context and Assumptions (score 2), and Student’s Position (score 0, 1, 2, and 3).
Quantitative Literacy Results: Demonstration Year
The Quantitative Literacy VALUE Rubric can be found in Appendix B.

College wide, in Quantitative Literacy artifacts, for four out of six criteria, when a criterion was displayed it was most often scored 3. The criterion *Calculation* had the highest percentage of artifacts scored 3 (55.7%); the criterion *Assumptions* was most frequently scored 0 (64.3%).

Quantitative Literacy by Subject
Quantitative literacy results included Accounting, Business, and Math courses and could not be further split by subject.

Quantitative Literacy by Gender
The largest differences in female and male student scoring was in *Application/Analysis* (score 1 and 2), *Assumptions* (score 1), *Communication* (score 0), *Interpretation* (score 3), and *Representation* (score 3).
Quantitative Literacy by Age Category

The largest differences in traditional and adult student scoring were in Application and Analysis (score 0), Assumptions (score 0 and 1), Calculation (score 2 and 3), Communication (score 0 and 3), and Representation (score 2).

Quantitative Literacy by Credit Level

The largest differences in high and low credit student scoring were in Application and Analysis (score 0, 1, and 2), Assumptions (score 0, 1, and 2), Calculation (score 2 and 3), Communication (score 0 and 3), Interpretation (score 0, 1, and 3), and Representation (score 3).
Quantitative Literacy by Students of Color

The largest differences in student of color and white student scoring were in Application/Analysis (score 1 and 3), Communication (milestone 2 and 3), Assumptions (score 1), Communications (score 0, 2, and 3), and Interpretation (score 4).

Written Communication Results: Demonstration Year

The Written Communication VALUE Rubric can be found in Appendix C.

College wide, all Written Communication artifacts were most often scored 2. The criterion Sources and Evidence had the lowest percentage (37.9%) of artifacts scored 2 and the highest percentage (25.9%) scored 0.
Written Communication by Subject
In order to preserve the anonymity of the data results were combined into conceptually related groups to report results by subject.

Written communication subject groups:

- English: COMM, ENG
- Professional: BUS, CJS, ECON, PA, PHED

English group artifacts were most likely to be scored 0 on Sources and Evidence and otherwise most likely to be scored 2.

Professional group artifacts were most likely to be scored 2 in all criteria.

Written Communication by Gender
The largest differences in female and male student scoring were in Content Development (score 1 and 2), Context of and Purpose for Writing (score 1 and 2), Control of Syntax and Mechanics (score 1 and 2), Genre and Disciplinary Conventions (score 1 and 2), and Sources and Evidence (score 0 and 3).
Written Communication by Age Category

The largest differences in traditional and adult student scoring were in Context of and Purpose for Writing (score 1, 2, and 3), Control of Syntax and Mechanics (score 1, 2, and 3), Genre and Disciplinary Conventions (score 1 and 2), and Sources and Evidence (score 0).

Written Communication by Credit Level

The largest differences in low and high credit student scoring were in Content Development (score 1 and 2), Genre and Disciplinary Conventions (score 1, 2, and 3), and Sources and Evidence (score 0 and 2).
Written Communication by Students of Color

The largest differences in student of color and white student scoring were in Context of and Purpose for Writing (score 4), Control of Syntax and Mechanics (score 2, and 3), Genre and Disciplinary Conventions (score 2), and Sources and Evidence (score 0 and 3).
critical thinking value rubric

for more information, please contact value@aacu.org

The VALUE rubrics were developed by teams of faculty experts representing colleges and universities across the United States through a process that examined many existing campus rubrics and related documents for each learning outcome and incorporated additional feedback from faculty. The rubrics articulate fundamental criteria for each learning outcome, with performance descriptors demonstrating progressively more sophisticated levels of attainment. The rubrics are intended for institutional-level use in evaluating and discussing student learning, not for grading. The core expectations articulated in all 15 of the VALUE rubrics can and should be translated into the language of individual campuses, disciplines, and even courses. The utility of the VALUE rubrics is to position learning at all undergraduate levels within a basic framework of expectations such that evidence of learning can be shared nationally through a common dialog and understanding of student success.

Definition

Critical thinking is a habit of mind characterized by the comprehensive exploration of issues, ideas, artifacts, and events before accepting or formulating an opinion or conclusion.

Framing Language

This rubric is designed to be transdisciplinary, reflecting the recognition that success in all disciplines requires habits of inquiry and analysis that share common attributes. Further, research suggests that successful critical thinkers from all disciplines increasingly need to be able to apply those habits in various and changing situations encountered in all walks of life.

This rubric is designed for use with many different types of assignments and the suggestions here are not an exhaustive list of possibilities. Critical thinking can be demonstrated in assignments that require students to complete analyses of text, data, or issues. Assignments that cut across presentation mode might be especially useful in some fields. If insight into the process components of critical thinking (e.g., how information sources were evaluated regardless of whether they were included in the product) is important, assignments focused on student reflection might be especially illuminating.

Glossary

The definitions that follow were developed to clarify terms and concepts used in this rubric only.

- Ambiguity: Information that may be interpreted in more than one way.
- Assumptions: Ideas, conditions, or beliefs (often implicit or unstated) that are "taken for granted or accepted as true without proof." (quoted from www.dictionary.reference.com/browse/assumptions)
- Context: The historical, ethical, political, cultural, environmental, or circumstantial settings or conditions that influence and complicate the consideration of any issues, ideas, artifacts, and events.
- Literal meaning: Interpretation of information exactly as stated. For example, "she was green with envy" would be interpreted to mean that her skin was green.
- Metaphor: Information that is (intended to be) interpreted in a non-literal way. For example, "she was green with envy" is intended to convey an intensity of emotion, not a skin color.
**CRITICAL THINKING VALUE RUBRIC**

*for more information, please contact value@aacu.org*

**Definition**
Critical thinking is a habit of mind characterized by the comprehensive exploration of issues, ideas, artifacts, and events before accepting or formulating an opinion or conclusion.

*Evaluators are encouraged to assign a zero to any work sample or collection of work that does not meet benchmark (cell one) level performance.*

<table>
<thead>
<tr>
<th>Capstone</th>
<th>Milestones</th>
<th>Benchmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

**Explanation of issues**
- **Issue/problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.**
- **Issue/problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.**
- **Issue/problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/or backgrounds unknown.**
- **Issue/problem to be considered critically is stated without clarification or description.**

**Evidence**
*Selecting and using information to investigate a point of view or conclusion*
- **Information is taken from source(s) with enough interpretation/evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.**
- **Information is taken from source(s) with enough interpretation/evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.**
- **Information is taken from source(s) with some interpretation/evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.**
- **Information is taken from source(s) without any interpretation/evaluation. Viewpoints of experts are taken as fact, without question.**

**Influence of context and assumptions**
- **Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.**
- **Identifies own and others' assumptions and several relevant contexts when presenting a position.**
- **Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).**
- **Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.**
<table>
<thead>
<tr>
<th>Capstone</th>
<th>Milestones</th>
<th>Benchmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

**Student's position (perspective, thesis/hypothesis)**

Specific position (perspective, thesis/hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/hypothesis).

Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/hypothesis).

Specific position (perspective, thesis/hypothesis) acknowledges different sides of an issue.

Specific position (perspective, thesis/hypothesis) is stated, but is simplistic and obvious.

**Conclusions and related outcomes (implications and consequences)**

Conclusions and related outcomes (consequences and implications) are logical and reflect student’s informed evaluation and ability to place evidence and perspectives discussed in priority order.

Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.

Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.

Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.
The VALUE rubrics were developed by teams of faculty experts representing colleges and universities across the United States through a process that examined many existing campus rubrics and related documents for each learning outcome and incorporated additional feedback from faculty. The rubrics articulate fundamental criteria for each learning outcome, with performance descriptors demonstrating progressively more sophisticated levels of attainment. The rubrics are intended for institutional-level use in evaluating and discussing student learning, not for grading. The core expectations articulated in all 15 of the VALUE rubrics can and should be translated into the language of individual campuses, disciplines, and even courses. The utility of the VALUE rubrics is to position learning at all undergraduate levels within a basic framework of expectations such that evidence of learning can by shared nationally through a common dialog and understanding of student success.

**Definition**

Quantitative Literacy (QL) – also known as Numeracy or Quantitative Reasoning (QR) – is a "habit of mind," competency, and comfort in working with numerical data. Individuals with strong QL skills possess the ability to reason and solve quantitative problems from a wide array of authentic contexts and everyday life situations. They understand and can create sophisticated arguments supported by quantitative evidence and they can clearly communicate those arguments in a variety of formats (using words, tables, graphs, mathematical equations, etc., as appropriate).

**Quantitative Literacy Across the Disciplines**

Current trends in general education reform demonstrate that faculty are recognizing the steadily growing importance of Quantitative Literacy (QL) in an increasingly quantitative and data-dense world. AAC&U’s recent survey showed that concerns about QL skills are shared by employers, who recognize that many of today’s students will need a wide range of high level quantitative skills to complete their work responsibilities. Virtually all of today’s students, regardless of career choice, will need basic QL skills such as the ability to draw information from charts, graphs, and geometric figures, and the ability to accurately complete straightforward estimations and calculations.

Preliminary efforts to find student work products which demonstrate QL skills proved a challenge in this rubric creation process. It’s possible to find pages of mathematical problems, but what those problem sets don’t demonstrate is whether the student was able to think about and understand the meaning of her work. It’s possible to find research papers that include quantitative information, but those papers often don’t provide evidence that allows the evaluator to see how much of the thinking was done by the original source (often carefully cited in the paper) and how much was done by the student herself, or whether conclusions drawn from analysis of the source material are even accurate.

Given widespread agreement about the importance of QL, it becomes incumbent on faculty to develop new kinds of assignments which give students substantive, contextualized experience in using such skills as analyzing quantitative information, representing quantitative information in appropriate forms, completing calculations to answer meaningful questions, making judgments based on quantitative data and communicating the results of that work for various purposes and audiences. As students gain experience with those skills, faculty must develop assignments that require students to create work products which reveal their thought processes and demonstrate the range of their QL skills.

This rubric provides for faculty a definition for QL and a rubric describing four levels of QL achievement which might be observed in work products within work samples or collections of work. Members of AAC&U’s rubric development team for QL hope that these materials will aid in the assessment of QL –
but, equally important, we hope that they will help institutions and individuals in the effort to more thoroughly embed QL across the curriculum of colleges and universities.

**Framing Language**

This rubric has been designed for the evaluation of work that addresses quantitative literacy (QL) in a substantive way. QL is not just computation, not just the citing of someone else’s data. QL is a habit of mind, a way of thinking about the world that relies on data and on the mathematical analysis of data to make connections and draw conclusions. Teaching QL requires us to design assignments that address authentic, data-based problems. Such assignments may call for the traditional written paper, but we can imagine other alternatives: a video of a PowerPoint presentation, perhaps, or a well designed series of web pages. In any case, a successful demonstration of QL will place the mathematical work in the context of a full and robust discussion of the underlying issues addressed by the assignment.

Finally, QL skills can be applied to a wide array of problems of varying difficulty, confounding the use of this rubric. For example, the same student might demonstrate high levels of QL achievement when working on a simplistic problem and low levels of QL achievement when working on a very complex problem. Thus, to accurately assess a students QL achievement it may be necessary to measure QL achievement within the context of problem complexity, much as is done in diving competitions where two scores are given, one for the difficulty of the dive, and the other for the skill in accomplishing the dive. In this context, that would mean giving one score for the complexity of the problem and another score for the QL achievement in solving the problem.

**QUANTITATIVE LITERACY VALUE RUBRIC**

*for more information, please contact value@aacu.org*

**Definition**

Quantitative Literacy (QL) – also known as Numeracy or Quantitative Reasoning (QR) – is a "habit of mind," competency, and comfort in working with numerical data. Individuals with strong QL skills possess the ability to reason and solve quantitative problems from a wide array of authentic contexts and everyday life situations. They understand and can create sophisticated arguments supported by quantitative evidence and they can clearly communicate those arguments in a variety of formats (using words, tables, graphs, mathematical equations, etc., as appropriate).

_Evaluators are encouraged to assign a zero to any work sample or collection of work that does not meet benchmark (cell one) level performance._
### Interpretation
**Ability to explain information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words)**

- **Capstone:** Provides accurate explanations of information presented in mathematical forms. Makes appropriate inferences based on that information. *For instance, accurately explains the trend data shown in a graph and makes reasonable predictions regarding what the data suggest about future events.*
- **Milestones:** Provides accurate explanations of information presented in mathematical forms. *For instance, accurately explains the trend data shown in a graph.*
- **1:** Attempts to explain information presented in mathematical forms, but draws incorrect conclusions about what the information means. *For example, attempts to explain the trend data shown in a graph, but will frequently misinterpret the nature of that trend, perhaps by confusing positive and negative trends.*

### Representation
**Ability to convert relevant information into various mathematical forms (e.g., equations, graphs, diagrams, tables, words)**

- **Capstone:** Skillfully converts relevant information into an insightful mathematical portrayal in a way that contributes to a further or deeper understanding.
- **Milestones:** Competently converts relevant information into an appropriate and desired mathematical portrayal.
- **1:** Completes conversion of information but resulting mathematical portrayal is inappropriate or inaccurate.

### Calculation

- **Capstone:** Calculations attempted are essentially all successful and sufficiently comprehensive to solve the problem. Calculations are also presented elegantly (clearly, concisely, etc.)
- **Milestones:** Calculations attempted are either unsuccessful or represent only a portion of the calculations required to comprehensively solve the problem.
- **1:** Calculations are attempted but are both unsuccessful and are not comprehensive.

### Application / Analysis
**Ability to make judgments and draw appropriate conclusions based on the quantitative analysis of data, while recognizing the limits of this analysis**

- **Capstone:** Uses the quantitative analysis of data as the basis for deep and thoughtful judgments, drawing insightful, carefully qualified conclusions from this work.
- **Milestones:** Uses the quantitative analysis of data as the basis for competent judgments, drawing reasonable and appropriately qualified conclusions from this work.
- **1:** Uses the quantitative analysis of data as the basis for tentative, basic judgments, although is hesitant or uncertain about drawing conclusions from this work.
<table>
<thead>
<tr>
<th>Assumptions</th>
<th>Capstone</th>
<th>Milestones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to make and evaluate important assumptions in estimation, modeling, and data analysis</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Explicited describes assumptions and provides compelling rationale for why each assumption is appropriate. Shows awareness that confidence in final conclusions is limited by the accuracy of the assumptions.</td>
<td>Explicitly describes assumptions and provides compelling rationale for why assumptions are appropriate.</td>
<td>Explicitly describes assumptions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Communication</th>
<th>Capstone</th>
<th>Milestones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expressing quantitative evidence in support of the argument or purpose of the work (in terms of what evidence is used and how it is formatted, presented, and contextualized)</td>
<td>Uses quantitative information in connection with the argument or purpose of the work, presents it in an effective format, and explicates it with consistently high quality.</td>
<td>Uses quantitative information in connection with the argument or purpose of the work, though data may be presented in a less than completely effective format or some parts of the explication may be uneven.</td>
</tr>
<tr>
<td>Uses quantitative information, but does not effectively connect it to the argument or purpose of the work.</td>
<td>Presents an argument for which quantitative evidence is pertinent, but does not provide adequate explicit numerical support. (May use quasi-quantitative words such as &quot;many,&quot; &quot;few,&quot; &quot;increasing,&quot; &quot;small,&quot; and the like in place of actual quantities.)</td>
<td>Attempts to describe assumptions.</td>
</tr>
</tbody>
</table>
The VALUE rubrics were developed by teams of faculty experts representing colleges and universities across the United States through a process that examined many existing campus rubrics and related documents for each learning outcome and incorporated additional feedback from faculty. The rubrics articulate fundamental criteria for each learning outcome, with performance descriptors demonstrating progressively more sophisticated levels of attainment. The rubrics are intended for institutional-level use in evaluating and discussing student learning, not for grading. The core expectations articulated in all 15 of the VALUE rubrics can and should be translated into the language of individual campuses, disciplines, and even courses. The utility of the VALUE rubrics is to position learning at all undergraduate levels within a basic framework of expectations such that evidence of learning can be shared nationally through a common dialog and understanding of student success.

**Definition**

Written communication is the development and expression of ideas in writing. Written communication involves learning to work in many genres and styles. It can involve working with many different writing technologies, and mixing texts, data, and images. Written communication abilities develop through iterative experiences across the curriculum.

**Framing Language**

This writing rubric is designed for use in a wide variety of educational institutions. The most clear finding to emerge from decades of research on writing assessment is that the best writing assessments are locally determined and sensitive to local context and mission. Users of this rubric should, in the end, consider making adaptations and additions that clearly link the language of the rubric to individual campus contexts.

This rubric focuses assessment on how specific written work samples or collections of work respond to specific contexts. The central question guiding the rubric is "How well does writing respond to the needs of audience(s) for the work?" In focusing on this question the rubric does not attend to other aspects of writing that are equally important: issues of writing process, writing strategies, writers' fluency with different modes of textual production or publication, or writer's growing engagement with writing and disciplinarity through the process of writing.

Evaluators using this rubric must have information about the assignments or purposes for writing guiding writers' work. Also recommended is including reflective work samples of collections of work that address such questions as: What decisions did the writer make about audience, purpose, and genre as s/he compiled the work in the portfolio? How are those choices evident in the writing -- in the content, organization and structure, reasoning, evidence, mechanical and surface conventions, and citational systems used in the writing? This will enable evaluators to have a clear sense of how writers understand the assignments and take it into consideration as they evaluate.

The first section of this rubric addresses the context and purpose for writing. A work sample or collections of work can convey the context and purpose for the writing tasks it showcases by including the writing assignments associated with work samples. But writers may also convey the context and purpose for their writing within the texts. It is important for faculty and institutions to include directions for students about how they should represent their writing contexts and purposes.
Faculty interested in the research on writing assessment that has guided our work here can consult the National Council of Teachers of English/Council of Writing Program Administrators' White Paper on Writing Assessment (2008; www.wpacouncil.org/whitepaper) and the Conference on College Composition and Communication's Writing Assessment: A Position Statement (2008; www.ncte.org/cccc/resources/positions/123784.htm)

Glossary

The definitions that follow were developed to clarify terms and concepts used in this rubric only.

- Content Development: The ways in which the text explores and represents its topic in relation to its audience and purpose.
- Context of and purpose for writing: The context of writing is the situation surrounding a text: who is reading it? who is writing it? Under what circumstances will the text be shared or circulated? What social or political factors might affect how the text is composed or interpreted? The purpose for writing is the writer's intended effect on an audience. Writers might want to persuade or inform; they might want to report or summarize information; they might want to work through complexity or confusion; they might want to argue with other writers, or connect with other writers; they might want to convey urgency or amuse; they might write for themselves or for an assignment or to remember.
- Disciplinary conventions: Formal and informal rules that constitute what is seen generally as appropriate within different academic fields, e.g. introductory strategies, use of passive voice or first person point of view, expectations for thesis or hypothesis, expectations for kinds of evidence and support that are appropriate to the task at hand, use of primary and secondary sources to provide evidence and support arguments and to document critical perspectives on the topic. Writers will incorporate sources according to disciplinary and genre conventions, according to the writer's purpose for the text. Through increasingly sophisticated use of sources, writers develop an ability to differentiate between their own ideas and the ideas of others, credit and build upon work already accomplished in the field or issue they are addressing, and provide meaningful examples to readers.
- Evidence: Source material that is used to extend, in purposeful ways, writers’ ideas in a text.
- Genre conventions: Formal and informal rules for particular kinds of texts and/or media that guide formatting, organization, and stylistic choices, e.g. lab reports, academic papers, poetry, webpages, or personal essays.
- Sources: Texts (written, oral, behavioral, visual, or other) that writers draw on as they work for a variety of purposes -- to extend, argue with, develop, define, or shape their ideas, for example.

Written Communication VALUE Rubric

for more information, please contact value@aacu.org

Definition

Written communication is the development and expression of ideas in writing. Written communication involves learning to work in many genres and styles. It can involve working with many different writing technologies, and mixing texts, data, and images. Written communication abilities develop through iterative experiences across the curriculum.

Evaluators are encouraged to assign a zero to any work sample or collection of work that does not meet benchmark (cell one) level performance.
<table>
<thead>
<tr>
<th></th>
<th>Capstone (4)</th>
<th>Milestones (3)</th>
<th>Benchmark (2)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Context of and Purpose for</strong></td>
<td>Demonstrates a thorough understanding of context, audience, and purpose that is responsive to the assigned task(s) and focuses all elements of the work.</td>
<td>Demonstrates adequate consideration of context, audience, and purpose and a clear focus on the assigned task(s) (e.g., the task aligns with audience, purpose, and context).</td>
<td>Demonstrates awareness of context, audience, purpose, and to the assigned task(s) (e.g., begins to show awareness of audience's perceptions and assumptions).</td>
<td>Demonstrates minimal attention to context, audience, purpose, and to the assigned task(s) (e.g., expectation of instructor or self as audience).</td>
</tr>
<tr>
<td>Writing</td>
<td><strong>Includes considerations of audience, purpose, and the circumstances surrounding the writing task(s).</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Content Development</strong></td>
<td>Uses appropriate, relevant, and compelling content to illustrate mastery of the subject, conveying the writer's understanding, and shaping the whole work.</td>
<td>Uses appropriate, relevant, and compelling content to explore ideas within the context of the discipline and shape the whole work.</td>
<td>Uses appropriate and relevant content to develop and explore ideas through most of the work.</td>
<td>Uses appropriate and relevant content to develop simple ideas in some parts of the work.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Genre and Disciplinary</strong></td>
<td>Demonstrates detailed attention to and successful execution of a wide range of conventions particular to a specific discipline and/or writing task(s) including organization, content, presentation, formatting, and stylistic choices</td>
<td>Demonstrates consistent use of important conventions particular to a specific discipline and/or writing task(s), including organization, content, presentation, and stylistic choices</td>
<td>Follows expectations appropriate to a specific discipline and/or writing task(s) for basic organization, content, and presentation</td>
<td>Attempts to use a consistent system for basic organization and presentation.</td>
</tr>
<tr>
<td>Conventions</td>
<td><strong>Formal and informal rules inherent in the expectations for writing in particular forms and/or academic fields (please see glossary).</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sources and Evidence</strong></td>
<td>Demonstrates skillful use of high-quality, credible, relevant sources to develop ideas that are appropriate for the discipline and genre of the writing</td>
<td>Demonstrates consistent use of credible, relevant sources to support ideas that are situated within the discipline and genre of the writing.</td>
<td>Demonstrates an attempt to use credible and/or relevant sources to support ideas that are appropriate for the discipline and genre of the writing.</td>
<td>Demonstrates an attempt to use sources to support ideas in the writing.</td>
</tr>
<tr>
<td>Control of Syntax and Mechanics</td>
<td>Capstone</td>
<td>Milestones</td>
<td>Benchmark</td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------</td>
<td>------------</td>
<td>-----------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Uses graceful language that skillfully communicates meaning to readers with clarity and fluency, and is virtually error-free.</td>
<td>Uses straightforward language that generally conveys meaning to readers. The language in the portfolio has few errors.</td>
<td>Uses language that generally conveys meaning to readers with clarity, although writing may include some errors.</td>
<td>Uses language that sometimes impedes meaning because of errors in usage.</td>
<td></td>
</tr>
</tbody>
</table>