2012-2013 GENERAL EDUCATION INFORMATION TECHNOLOGY ASSESSMENT: RESULTS

I. Introduction ................................................................. 2
II. Methodology ................................................................. 2
III. Results ........................................................................ 3
IV. Discussion ................................................................. 4
V. Recommendations ....................................................... 5
    References ....................................................................... 6
    Appendix 1: VALUE Rubric: Information Literacy ...... 7

June 19, 2014

Dr. Bret P. Smith, Assessment Coordinator
Dr. Tom Henderson, Director of Institutional Assessment
Dr. Tracy Pellett, Associate Provost
I. INTRODUCTION

Central Washington University’s general education program was deemed by the NWCCU in its 2009 comprehensive evaluation committee report to “conform to accreditation standards and was noted as being thoughtfully designed.” Although the scope of the CWU program was thought “attractive in the framework of liberal arts training,” general education assessment processes were believed to be “unsatisfactory” in the comprehensive evaluation committee report. Specifically, CWU general education assessment procedures were believed to have not “produced comprehensive results that could lead to meaningful improvements in the program.” In response to the NWCCU findings, the University Assessment Committee developed a general education assessment framework, initiated in 2010. As a part of the implementation of that framework, an assessment calendar was developed to assure general education goal assessment over a seven-year time frame (Division of Academic Affairs, 2010).

CWU’s general education program is organized around nine broad outcomes, and the focus of assessment for the 2012-2013 academic year was a component of outcome 3. Outcome 3(d) states: “Students will achieve fluency in… (d) Information technology.” Students fulfill this basic skills requirement through completion of one of two courses, IT 101 (offered by the Information Technology and Administrative Management department) or CS 101 (offered by the Computer Science department). These skills were assessed using two methods: a summary of MyITLab (Pearson Education, 2013) instructional unit skills test results from five sections of IT 101, and scoring of a random sample of student web research projects (labs) from five sections of CS 101 using the Association of American Colleges and Universities (AAC&U) VALUE rubric for information literacy. This report summarizes and interprets the assessment results for this element of the CWU general education assessment plan.

II. METHODOLOGY

Instruments

IT 101 uses a text/online instructional package called MyITLab published by Pearson Education (2013) that introduces and assesses student skills in creating and manipulating documents from the Microsoft Office suite of applications. Students completed concepts and skills exams for Word, Excel, Access, and PowerPoint. The ITAM department established a target performance level of at least 75% of students scoring at or above 75/100 on each exam.

The AAC&U VALUE rubric for Information Literacy was developed as part of the Valid Assessment of Learning in Undergraduate Education project (Association of American Colleges and Universities, 2013). This rubric measures student abilities in five areas: determine the extent of information needed, access the needed information, evaluate information and its sources critically, use information effectively to accomplish a specific purpose, and access and use information ethically and legally (see Appendix 1). Scores are generated on a four-point scale with 4 representing “capstone,” 3 and 2 representing “milestones,” and 1 representing “benchmark.” Scorers are allowed to assign a score of 0 if the work sample does not meet benchmark-level performance.

Procedures

Two samples of student performance were collected from IT 101 and CS 101 classes during the 2012-13 academic year. The IT 101 sample consisted of all students enrolled in two fall and three winter quarter sections with three different instructors, \( n = 477 \). Not all students
completed all four assessments (skills exams for four applications), and in some cases, a student received zero scores on all exams. The CS 101 sample consisted of all students enrolled in two summer, one fall, and one winter section \((n = 90)\). Projects were assigned random numbers and a random sample of 30 papers was selected for scoring by a faculty member familiar with the VALUE rubric. Five of these were double-scored by a member of the Office of Institutional Assessment as a check on reliability of scoring. With agreement defined as +/-1 scale point, these two raters demonstrated an 84% agreement rate. This rate is comparable with that reported by Finley (2012) in the VALUE reliability study.

For IT 101, descriptive statistics were generated for each of four skills exams associated with the Microsoft Office applications, and the percentage of students scoring above 75 (out of 100 possible points) was calculated. This standard is consistent with the data and analysis provided by the ITAM department in their 2012 student learning outcomes assessment report. The CS 101 final project asked students to conduct web-based research and produce a final document integrating aspects of the Office applications. In their 2010 student learning outcomes assessment report, the Computer Science department applied the AAC&U VALUE rubric for Information Literacy to these projects; they considered a rating greater than or equal to milestone 2 (in the terms of the VALUE categories ranging from “benchmark” at 1 and “capstone” at 4) to indicate mastery of the area at an introductory level.

### III. RESULTS

Table 1 presents overall mean scores, median scores, and standard deviation for each exam, as well as the percentage of students scoring higher than 75/100 in the 2012-13 sample as well as in the department assessment sample from 2012.

*Table 1. 2012-2013 CWU IT 101 Results: MyITLab Skills Exams \((n = 478)\)*

<table>
<thead>
<tr>
<th>MyITLab Exam</th>
<th>2012-13 Descriptive Statistics</th>
<th>2012-13 Percent Over Benchmark (75/100)</th>
<th>Spring 2012 Percent Over Benchmark (75/100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word</td>
<td>(M = 77.1) (Mdn = 88) (SD = 30.0)</td>
<td>72%</td>
<td>78%</td>
</tr>
<tr>
<td>Excel</td>
<td>(M = 75.1) (Mdn = 92) (SD = 33.7)</td>
<td>71%</td>
<td>79%</td>
</tr>
<tr>
<td>Access</td>
<td>(M = 75.8) (Mdn = 92) (SD = 34.7)</td>
<td>73%</td>
<td>79%</td>
</tr>
<tr>
<td>Powerpoint</td>
<td>(M = 82.5) (Mdn = 97) (SD = 33.8)</td>
<td>84%</td>
<td>82%</td>
</tr>
</tbody>
</table>
Table 2 presents criterion mean scores and mode for the 2012-13 sample, as well as mean scores from the 2010 departmental assessment. Sample size was not reported in 2010.

Table 2. 2012-2013 CWU CS 101 Project Evaluation

<table>
<thead>
<tr>
<th>VALUE Rubric Dimension</th>
<th>2012-13 Sample (N = 90, n = 30)</th>
<th>2010 Sample (N not available)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determine the Extent of Information Needed</td>
<td>$M = 2.7$</td>
<td>$M = 2.8$</td>
</tr>
<tr>
<td></td>
<td>Mode = 2</td>
<td></td>
</tr>
<tr>
<td>Access the Needed Information</td>
<td>$M = 2.5$</td>
<td>$M = 2.2$</td>
</tr>
<tr>
<td></td>
<td>Mode = 2</td>
<td></td>
</tr>
<tr>
<td>Evaluate Information and its Sources Critically</td>
<td>$M = 2.4$</td>
<td>$M = 2.1$</td>
</tr>
<tr>
<td></td>
<td>Mode = 2</td>
<td></td>
</tr>
<tr>
<td>Use Information Effectively to Accomplish a Specific Purpose</td>
<td>$M = 2.4$</td>
<td>$M = 2.2$</td>
</tr>
<tr>
<td></td>
<td>Mode = 2</td>
<td></td>
</tr>
<tr>
<td>Access and Use Information Ethically and Legally</td>
<td>$M = 2.9$</td>
<td>$M = 2.9$</td>
</tr>
<tr>
<td></td>
<td>Mode = 3</td>
<td></td>
</tr>
</tbody>
</table>

IV. DISCUSSION

CWU’s General Education goal 3 states: “Students will achieve fluency in a) reading, b) writing, c) oral communication, d) information technology” (Division of Academic Affairs, 2011). As part of the cyclic assessment of these outcomes, we assessed information technology and information literacy in the 2012-13 academic year.

In the IT 101 sample, mean exam performance was slightly below the goal of 75% of students scoring above 75/100 points on three of the four skills exams, which represents a decline from the reported class means from Spring 2012. Fluctuations of +/- 4% around the target are likely not a reason for concern, however it would be useful to continue to monitor these exam scores periodically to verify that a stable and acceptable level of achievement is occurring. Within the ITAM department, it may be useful to discuss course design and delivery within the context of a target of 75% of students at or above 75 points—would it be possible and desirable to seek a higher score target for more students, and if so, what resources and support would be necessary to “raise the bar” in this way?

Another interesting aspect of these scores was the distribution of scores on the Powerpoint exam. The median score was 96.7, with 403/478 scoring 80 or above, and 66 students with missing or 0 scores. It may be that students enter the class with acceptable
Powerpoint skills, or the units of instruction and time spent in MyITLab are particularly effective, or this exam is relatively easy. Regardless of the reason, it may be useful to discuss whether class time on this application is wisely used, as students appear to be mastering the content comparatively easily.

For the CS 101 sample, students appear to be consistently scoring above the initial milestone level of 2. This particular project did not require some of the more refined, complex, or higher-order elements defined in levels 3 and 4 of the VALUE rubric (see Appendix A); for example, students were provided with some guidelines for their website searches rather than being asked to generate their own search parameters. It is perhaps not surprising, then, that students did not provide evidence of those skill levels defined in the second criterion by “[accessing] information with variety or search strategies” as milestone level 3.

V. RECOMMENDATIONS

A distinction is often made between information technology skills, as in the ability to work within particular computer applications, and information literacy, which more broadly encompasses students’ ability to access and evaluate information. The different outcomes assessed in IT 101 and CS 101 classes at CWU reflect this difference. The broadly worded CWU general education goal 3 does not define “fluency in…information technology,” nor do the revised CWU General Education outcomes of 2013. The revised outcomes require review and revision of existing courses, and we recommend that departments offering classes that fulfill this basic skills area engage in discussion in order to collaborate on a consistent approach (or array of approaches) that will permit consistent expectations and quality across campus.

To further this process, it may be valuable to examine the standards established by the International Society for Technology in Education (ISTE) available at www.iste.org. These standards are intended to guide K-12 educators, and are broken into six areas: 1) creativity and innovation, 2) communication and collaboration, 3) research and information fluency, 4) critical thinking, problem solving, and decision making, 5) digital citizenship, and 6) technology operations and concepts. In the current assessment, the IT 101 data reflect operations and concepts, while CS 101 data reflect elements of research and information fluency. In the context of a broader discussion of information literacy and technology skills within the general education program, a multi-step, comprehensive research and presentation project like that used in CS 101 could be a model for teaching and eliciting evidence of mastery of higher levels of information literacy skills.

Another consideration from the university level is program-wide alignment between general education and major degree programs. If the ISTE standards indicate what entering students should know and be able to do upon graduation from high school, ideally the required basic skills class at CWU would extend and refine those skills for application in a college major. Many majors, for example degrees leading to teacher certification, require technology-related coursework. A deeper look at a needs assessment in the area of information technology skills and information literacy may illustrate whether the current general education courses and their outcomes (in terms of student learning) are relevant and adequate.
REFERENCES


Association of American Colleges and Universities
VALUE Rubric: Information Literacy

INFORMATION LITERACY 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 by shared nationally through a common dialog and understanding of student success. In July 2013, there was a correction to Dimension 3: Evaluate Information and its Sources Critically.

Definition

The ability to know when there is a need for information, to be able to identify, locate, evaluate, and effectively and responsibly use and share that information for the problem at hand. - Adopted from the National Forum on Information Literacy
**Framing Language**

This rubric is recommended for use evaluating a collection of work, rather than a single work sample in order to fully gauge students’ information skills. Ideally, a collection of work would contain a wide variety of different types of work and might include: research papers, editorials, speeches, grant proposals, marketing or business plans, PowerPoint presentations, posters, literature reviews, position papers, and argument critiques to name a few. In addition, a description of the assignments with the instructions that initiated the student work would be vital in providing the complete context for the work. Although a student’s final work must stand on its own, evidence of a student’s research and information gathering processes, such as a research journal/diary, could provide further demonstration of a student’s information proficiency and for some criteria on this rubric would be required.

**Definition**

The ability to know when there is a need for information, to be able to identify, locate, evaluate, and effectively and responsibly use and share that information for the problem at hand. - The National Forum on Information Literacy

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

**Capstone (4) Milestones (3), (2) Benchmark (1)**

**Determine the Extent of Information Needed**

4-Effectively defines the scope of the research question or thesis. Effectively determines key concepts. Types of information (sources) selected directly relate to concepts or answer research question.

3-Defines the scope of the research question or thesis completely. Can determine key concepts. Types of information (sources) selected relate to concepts or answer research question.

2-Defines the scope of the research question or thesis incompletely (parts are missing, remains too broad or too narrow, etc.). Can determine key concepts. Types of information (sources) selected partially relate to concepts or answer research question.

1-Has difficulty defining the scope of the research question or thesis. Has difficulty determining key concepts. Types of information (sources) selected do not relate to concepts or answer research question.

**Access the Needed Information**

4-Accesses information using effective, well-designed search strategies and most appropriate information sources.

3-Accesses information using variety of search strategies and some relevant information sources. Demonstrates ability to refine search.
2-Accesses information using simple search strategies, retrieves information from limited and similar sources.

1-Accesses information randomly, retrieves information that lacks relevance and quality.

Evaluate Information and its Sources Critically*

4-Chooses a variety of information sources appropriate to the scope and discipline of the research question. Selects sources after considering the importance (to the researched topic) of the multiple criteria used (such as relevance to the research question, currency, authority, audience, and bias or point of view).

3-Chooses a variety of information sources appropriate to the scope and discipline of the research question. Selects sources using multiple criteria (such as relevance to the research question, currency, and authority).

2-Chooses a variety of information sources. Selects sources using basic criteria (such as relevance to the research question and currency).

1-Chooses a few information sources. Selects sources using limited criteria (such as relevance to the research question).

Use Information Effectively to Accomplish a Specific Purpose

4-Communicates, organizes and synthesizes information from sources to fully achieve a specific purpose, with clarity and depth

3-Communicates, organizes and synthesizes information from sources. Intended purpose is achieved.

2-Communicates and organizes information from sources. The information is not yet synthesized, so the intended purpose is not fully achieved.

1-Communicates information from sources. The information is fragmented and/or used inappropriately (misquoted, taken out of context, or incorrectly paraphrased, etc.), so the intended purpose is not achieved.

Access and Use Information Ethically and Legally

4-Students use correctly all of the following information use strategies (use of citations and references; choice of paraphrasing, summary, or quoting; using information in ways that are true to original context; distinguishing between common knowledge and ideas requiring attribution) and demonstrate full understanding of the ethical and legal restrictions on the use of published, confidential, and/or proprietary information.

Students use correctly three of the following information use strategies (use of citations and references; choice of paraphrasing, summary, or quoting; using information in ways that are true to original context; distinguishing between common knowledge and ideas requiring attribution) and demonstrate full understanding of the ethical and legal restrictions on the use of published,
confidential, and/or proprietary information.

Students use correctly two of the following information use strategies (use of citations and references; choice of paraphrasing, summary, or quoting; using information in ways that are true to original context; distinguishing between common knowledge and ideas requiring attribution) and demonstrate full understanding of the ethical and legal restrictions on the use of published, confidential, and/or proprietary information.

Students use correctly one of the following information use strategies (use of citations and references; choice of paraphrasing, summary, or quoting; using information in ways that are true to original context; distinguishing between common knowledge and ideas requiring attribution) and demonstrate full understanding of the ethical and legal restrictions on the use of published, confidential, and/or proprietary information.

*Corrected* Dimension 3: Evaluate Information and its Sources Critically in July 2013