Millersville University of Pennsylvania

Assessment Brief DRAFT
Information Literacy—AAC&U Values Rubric Findings
Prepared for AOAC, Fall 2010

Part I: Executive Summary

A. **General Education Outcome**

   Students will be able to demonstrate effective information literacy appropriate to any academic discipline. The focus of this brief will be on the information literacy component of Foundations for Lifelong Learning.

B. **Background**

   The purpose is to seek information to share with faculty and administrators to enhance opportunities for student learning experiences. AOAC members found the American Association of Colleges and Universities (AAC&U) new "Values Rubrics" to be useful tools for assessing sample work.

   In Spring 2010, over 140 student artifacts were collected from 12 different courses with permission from faculty and students. Thirty of the artifacts were randomly selected from the 140 submitted artifacts. Of the artifacts randomly selected, 4 were from 100-level courses, 9 were from 200-level courses, 10 were from 300-level courses, and 5 were from 400-level courses.

C. **Major Findings**
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   - Intraclass correlation coefficient and Cronbach's Alpha levels for the rubric for information literacy were .63 and .90 respectively.

D. **Conclusions**
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   - A respectable level of interrater reliability and rater consistency were achieved, and in general, the rubric appears to be a sound method of assessment.

Part II: Assessment Brief

A. **Introduction**

   1. **Background**

   One of the Objectives for General Education at Millersville University is to create and strengthen foundations for lifelong learning. One of the components of this objective is information literacy in students, which is evidenced by "the ability to find appropriate sources of information, evaluate that information, and integrate that information into a final product."

   In Spring 2010, the Faculty Senate Academic Outcomes Assessment Committee (AOAC) designed a process to assess general education competencies (also known as University Outcomes) as they aligned with general education objectives. This new process evolved after a review of the prior general education assessment strategies resulted in the need to enhance triangulation of evidence and to utilize more direct evidence of student learning such as student work from courses. The purpose is to seek information to share with faculty and administrators to enhance opportunities for student learning experiences. AOAC members found the American Association of Colleges and Universities (AAC&U) new "Values Rubrics" to be useful tools for assessing sample work.

   2. **Problem Statement**

   AOAC members want to:
   - i. explore the feasibility of the AAC&U Values Rubrics, specifically, Information Literacy, and how it informs the respective student learning outcome; and
   - ii. develop and better understanding of how well Millersville students demonstrate information literacy in various course levels in their educational experience.

   3. **Justification**

   AOAC with support of Planning, Assessment and Analysis has access to indirect evidence of students' perceptions of their development of information literacy (NSSE) and a locally-developed rubric by Library faculty to assess actual student work. The use of direct evidence collected from purposive sampling of courses provides an opportunity to explore student learning experiences at Millersville and triangulate that information with other measures of the outcome.

B. **Information Source**

   In order to test the Information Literacy rubric, written papers were collected from sections of Biology, Business, Chemistry, Mathematics, Music, Psychology, and First Year Seminar classes in the spring semester of 2010. Papers of students who signed the consent forms were coded (n = 140).

C. **Major Findings**

   1. **Data Summary**

Intraclass Correlation Coefficient and Cronbach's Alpha levels for the rubric were tested on each of the five constructs for the written papers. The number of observed scores and the mean score are also included in the table below for each construct. The second table includes a comparison of means scores among construct and course level as identified by the course number from which the work was done. The third shows the changes of means scores for each increase of course level, examining if the constructs change over students' progression through their program.

Table 1: Information Literacy Mean Scores and Reliability by Construct

	Number of Scores	Mean Score	Intraclass Correlation	Cronbach's Alpha
Determine Extent of Information Needed	150	2.2	.65	.90
Access the Needed Information	150	2.0	.65	.90
Evaluate Information and its Sources Critically	149	1.8	.59	.88
Use Information Effectively to Accomplish a Specific Purpose	150	2.2	.55	.86
Access and Use Information Ethically and Legally	150	1.8	.66	.91
Overall	**749**	**2.0**	**.63**	**.90**

Table 2: Information Literacy Mean Scores by Course Level and Construct

	Course Level			
	100	**200**	**300**	**400**
Determine Extent of Information Needed	0.9	2.4	2.7	2.2
Access the Needed Information	1.1	2.0	1.9	2.7
Evaluate Information and its Sources Critically	0.8	2.0	1.9	2.0
Use Information Effectively to Accomplish a Specific Purpose	1.2	2.4	2.3	2.6
Access and Use Information Ethically and Legally	0.2	2.2	2.0	1.9
Overall	**0.8**	**2.2**	**2.2**	**2.3**

Table 3: Changes in Information Literacy Mean Scores with Increasing Course Level
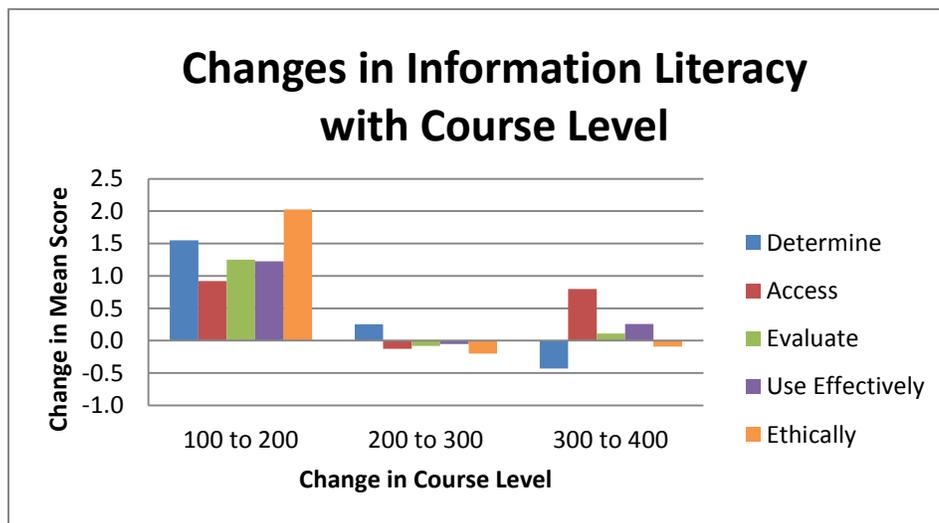
Note that only one course was classified as a 100 level course

2. Discussion

- A Cronbach's Alpha reliability coefficient of .80 or higher is considered "good" in most social science research situations; this value is "used to rate the internal consistency (homogeneity) or the correlation of the items in a test." The intraclass correlation coefficient is "used to measure inter-rater reliability for two or more raters," and a value greater than .60 is considered "acceptable" (a value just greater than .50 is sometimes considered "barely acceptable"). In using and testing this rubric, the five raters were able to achieve respectable levels of interrater reliability, and the rubric appears to be sound.

- "Evaluate Information and its Sources Critically" and "Use Information Effectively to Accomplish a Specific Purpose" were weaker items in terms of reliability and consistency of raters. It might be helpful to revise these two sections of the rubric, providing greater clarity of what is being assessed and greater distinction between the levels of scoring.

- It was not the aim of this study to examine the current levels of information literacy of students. However, if they were to be analyzed in the future, it is recommended that more than one course be used in each class level, since the largely picture-based assignment in the only 100 level course provided an unfairly low average score for that classification.

- The mean scores which quantify the level of students' information literacy skills would be most helpful if there were goals and clearer meaning to the numeric result. If the rubric will be used for actual assessment in courses, it is recommended that the numerical scores be associated with levels of competence that have relevant meaning.

3. **Conclusion**
   - If this rubric is intended for usage in the university, it is suggested that certain constructs be clarified and that stronger connections be made between numeric scores and course-specific meaning.

   - Once the final version of this rubric is complete, it should be available to interested faculty to be used for information literacy assessment beyond the courses examined here, and faculty should be trained how to use the rubric.
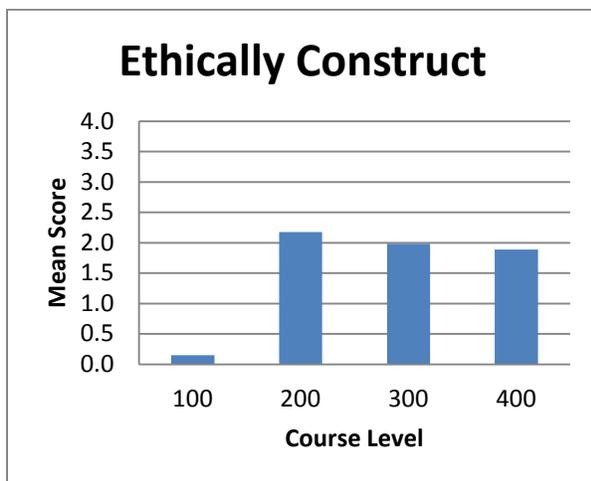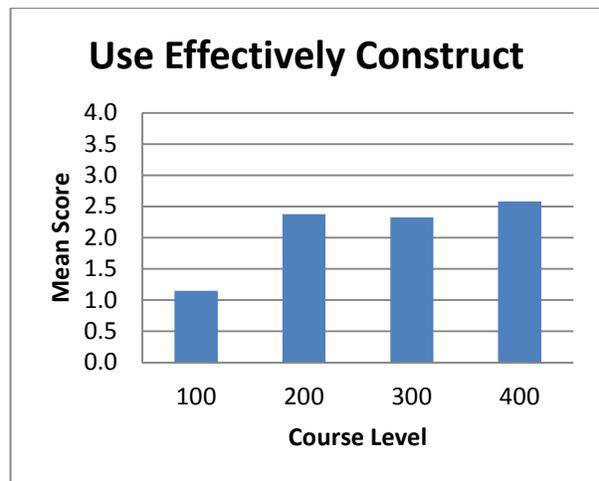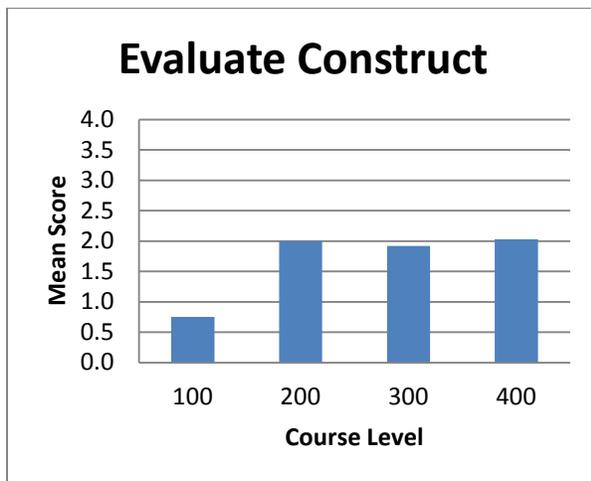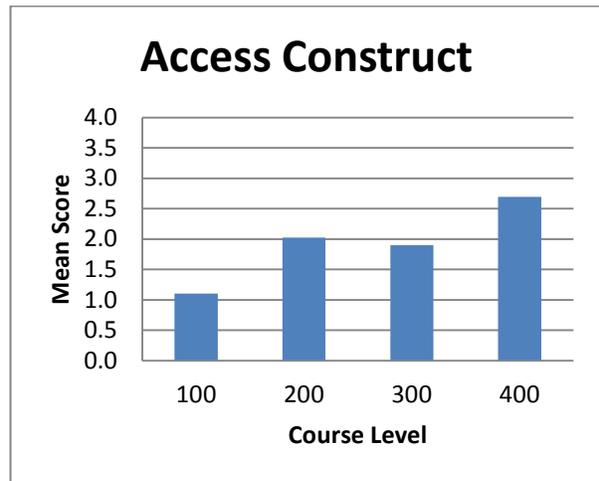
Part III: Appendices

INFORMATION LITERACY RUBRIC FOR ASSESSMENT OF STUDENT WORK (AAC&U VALUES RUBRIC)

	Capstone 4	Milestones		Benchmark 1
		3	2	
Determine the Extent of Information Needed	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.	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.	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.	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	Accesses information using effective, well-designed search strategies and most appropriate information sources.	Accesses information using variety of search strategies and some relevant information sources. Demonstrates ability to refine search.	Accesses information using simple search strategies, retrieves information from limited and similar sources.	Accesses information randomly, retrieves information that lacks relevance and quality.
Evaluate Information and its Sources Critically	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.
Use Information Effectively to Accomplish a Specific Purpose	Communicates, organizes and synthesizes information from sources to fully achieve a specific purpose, with clarity and depth	Communicates, organizes and synthesizes information from sources. Intended purpose is achieved.	Communicates and organizes information from sources. The information is not yet synthesized, so the intended purpose is not fully achieved.	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	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 a 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 demonstrates a 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 demonstrates a 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 demonstrates a full understanding of the ethical and legal restrictions on the use of published, confidential, and/or proprietary information.

Figures 1-5: Scores for Information Literacy Constructs by Course Level

Determine Construct

Access Construct

Evaluate Construct

Use Effectively Construct

Ethically Construct

Note that only one course was classified as a 100 level course

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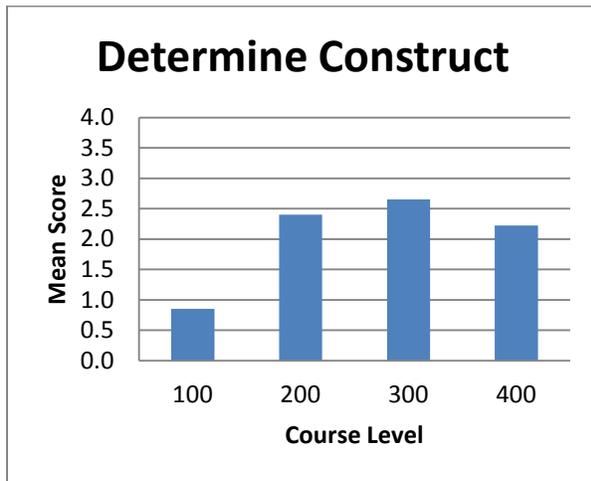
Table 4: Information Literacy Score Statistics by Construct

	Determine Extent of Information	Access Needed Information	Evaluate Information	Use Information Effectively	Use Information Ethically	Overall
Number of Scores	150	150	149	150	150	**749**
Mean Score	2.2	2.0	1.8	2.2	1.8	**2.0**
Standard Error of Mean	0.07	0.06	0.06	0.07	0.08	**0.03**
Standard Deviation	0.81	0.72	0.73	0.84	1.02	**0.85**
Intra-Class Correlation	0.65	0.65	0.59	0.55	0.66	**0.63**
Cronbach's Alpha	0.90	0.90	0.88	0.86	0.91	**0.90**

Glossary of Statistical Terms

Mean – the average score

Variance – a measurement of how much (far) the scores vary around the mean score

Standard Deviation – the square root of the variance

    - Measures the same thing as variance: how far scores are from the mean score

Standard Error of the Mean – a measurement of how much the group mean scores vary around the total mean score (the standard deviation of the group means)

Interrater Reliability/Agreement

- A measure of consistency and usefulness of the rubric
- The extent to which independent raters agree on a rubric score and to which rubric scores are consistent across raters
- In this assessment, measured by Intraclass Correlation Coefficient and Cronbach's Alpha

Intraclass Correlation Coefficient (ICC)

- A measure of interrater reliability that describes how strongly scores from the same rater resemble each other. It is a value from 0 (no rater reliability) to 1 (complete rater reliability).
- Mathematically, it's the proportion of the total variance that's due to variability between raters
- Can also be interpreted as a measure of between group differences or within group similarity

Cronbach's Alpha

- A specific type of ICC that is test of internal consistency (ranges on same scale as ICC)
- Measures how well a set of raters measure a single, latent (covert) construct
- Estimates how strongly the score obtained from the actual panel of the raters correlates with the score that would have been obtained from another random sample of raters