GENERAL EDUCATION ASSESSMENT COMMITTEE ANNUAL REPORT, 2006

2006 General Education Assessment Committee Membership

Greg Wilber (Civil and Environmental Engineering), Chair; John Gelder (Chemistry); Frances Griffin (Business Management); Ed Walkiewicz (English), Rick Rohrs (History); Jon Comer (Geography); Pam Bowers (ex officio, University Assessment and Testing).

General Education Assessment Committee History

Assessment of OSU's general education program is required by the Higher Learning Commission of the North Central Association (HLC, OSU's accrediting body) and by the Oklahoma State Regents for Higher Education. OSU's general education assessment efforts have been motivated by these requirements. The Assessment Council and Office of University Assessment and Testing formed a faculty General Education Assessment Task Force in May 2000 for the purpose of developing and implementing a new plan to assess the effectiveness of OSU's general education program. Although general education and "mid-level" assessment methods such as standardized tests and surveys had been conducted intermittently at OSU since 1993, no sustainable approach to evaluating the general education curriculum had been established. The task force formed in 2000 was the first group of OSU faculty members who were paid to work on this university-wide assessment project and marked a renewed commitment to general education assessment at OSU.

Following the assessment standard of articulating desired student outcomes first, the Task Force started in 2000 by revising OSU's *Criteria and Goals for General Education Courses* document and identifying "assessable" outcomes for the general education program. After studying general education assessment practices at other institutions, the task group developed the following guidelines for effective and sustainable general education assessment for OSU:

- the process must not be aimed at individual faculty members or departments,
- the process should be led by faculty members, and faculty participation should be voluntary,
- the process should use student work already produced in courses, and
- the process should assess all undergraduates, including transfer students, because general education outcomes describe qualities expected for all OSU graduates.

After summer-long study and discussion, the 2000 task group agreed to initiate two assessment methods to evaluate general education that were consistent with these guidelines: institutional portfolios and a course-content database. Institutional portfolios directly assess student achievement of the expected learning outcomes for the general education program, and the course database evaluates how each general education course contributes to student achievement of those articulated outcomes. These methods were implemented in 2001.

In 2003, the Assessment Council and General Education Advisory Council approved the task force's name change to the General Education Assessment Committee. The Committee is charged with continuing to develop and implement general education assessment and reports to the Assessment Council and General Education Advisory Council; membership in these committees is intentionally overlapped. Committee members serve rotating 3-year terms, are extensively involved in undergraduate teaching at OSU, represent a range of disciplines, and are paid summer stipends for their work on general education assessment.

Institutional Portfolios. The Committee has developed institutional portfolios to assess students' written communication skills (data collection in 2001, 2002, 2003, 2004, 2005 and 2006), math problem solving skills (data collection in 2002, 2003 and 2005), science problem solving skills (data collection in 2003, 2004 and 2005), and critical thinking (data collection in 2005 and 2006). The Committee began developing a rubric for assessment of students' knowledge, skills and attitudes regarding diversity in 2006, and pilot tested the rubric with a small group of samples of student work in Summer 2006.

Separate portfolios are developed to evaluate each general education learner goal, and each portfolio includes students' work from course assignments collected throughout the undergraduate curriculum. Faculty members (including Committee members and additional faculty members involved in undergraduate teaching) work in groups to evaluate the work in each portfolio and assess student achievement relative to the learner goal that is being assessed by using standardized scoring rubrics. The results provide a measure of the extent to which students are achieving OSU's general education learning goals. The Committee plans to continue to develop institutional portfolios to assess the learner goals for general education as described in the *Criteria and Goals for General Education Courses*.

General Education Course Database. The General Education Course Database is a tool for evaluating how each general education course is aligned with the overall expected learning outcomes for the general education program as a whole. Instructors are asked to submit their course information online via a web-based form, and the General Education Advisory Council reviews the submitted information during regular course reviews. The database form requests information about what general education learning goals are associated with the course and how the course provides students with opportunities to achieve those learning goals. Instructors are also asked to describe how student achievement of those goals is assessed within the course. When completed, the database will provide a useful tool for holistically evaluating general education course offerings and the extent to which the overall general education goals are targeted across the curriculum. The updated general education database will be completed by the end of the Fall 2006 semester.

In addition to these two primary assessment tools, student surveys such as the National Survey of Student Engagement and OSU Alumni Surveys contribute to the general education assessment process and are considered in reviewing general education assessment results.

Status of Committee Goals for 2005-06

A. The Committee met in Fall 2005 to determine committee membership for work to be completed in summer 2006. One new member, Jon Comer (Geography) joined the committee. Greg Wilber agreed to continue as chair of the committee for 2005-06.

B. The Committee continued the institutional portfolio for assessing student written communication skills as in previous years, but with one significant change in the process. In addition to providing an overall score for each artifact, the reviewers assigned scores for each paper on all of the rubric components: content, organization, and style/mechanics. These results will help indicate more specific areas to focus efforts for improvement.

   Two portfolio-scoring groups each reviewed about 50 samples of randomly collected student work demonstrating written communication skills. Each group consisted of three faculty members, requiring six faculty reviewers for the 2006 written communication skills portfolio (two Committee members and four additional faculty reviewers).

C. For the second consecutive year, the Committee continued the institutional portfolio for evaluating students' critical thinking skills. Two portfolio-scoring groups, consisting of six

faculty members (two Committee members and four additional faculty reviewers), evaluated the critical thinking portfolio. This group of reviewers evaluated 111 samples of student work demonstrating critical thinking skills.

D. The Committee worked with the General Education Advisory Council to clarify criteria and goals for the general education learning outcome regarding diversity. The Committee focused on development of an assessment process to evaluate students' learning related to this learning goal as one of the committee's primary tasks over the summer of 2006. The committee took an approach similar to that used in the development of rubrics to assess writing, math problem solving, science problem-solving and critical thinking.

E. A joint meeting of the General Education Assessment Committee, the Assessment Council and the General Education Advisory Council was held to conduct a review of the General Education Assessment Process. This purpose of this meeting was to review the general education assessment process and recommend action for improvement. Minutes from the meeting are included on the following pages.

F. The Committee presented information sessions for faculty to inform them about the general education assessment process and engage them in discussions about the results of assessment of general education learning goals. In March 2006, Dr. Gary Brown, Director of the Center for Learning, Teaching and Technology at Washington State University, presented a workshop for OSU faculty about WSU's FIPSE funded project for assessing and promoting students' critical thinking. The rubric used at OSU for assessing critical thinking is based on the WSU model.

   A campus-wide discussion of assessment of the general education learning goal regarding diversity took place on March 6, 2006. About 30 faculty members participated in a discussion focused on stating more specifically the knowledge, skills, and attitudes related to diversity that faculty expect OSU graduates to achieve. The group also discussed some preliminary ideas for development of a rubric to assess students' achievement of the learning goal and suggested courses that might provide samples of students work (artifacts) to be the objects of the assessment. Ideas and concerns expressed at the meeting were considered by the committee members who worked on developing the rubric this summer.

Minutes of a Joint Meeting to Review General Education Assessment

University Assessment Council, General Education Advisory Council, and General Education Assessment Committee, Friday, March 3, 2006

The purpose of this joint meeting was to review the general education assessment process and recommend action for improvement. In advance of the meeting, participants received several policy documents and reports that provided some chronology and description of the development of the assessment process.

Documents that were briefly reviewed at the meeting include: Oklahoma State Regents' Policy Statement on the Assessment of Students for Purposes of Instructional Improvement and State System Accountability, Higher Learning Commission Statement on General Education, and several reports on the work of the General Education Task Force, as it was originally known, and General Education Assessment Committee, as it is currently known.

Wilber reviewed the process currently used for assessment, describing the role of assessment committee members and faculty reviewers, rubric development, artifact selection, artifact scoring, and reporting of results. An "organizational chart" of general education assessment was provided for discussion, as a way to clarify the roles of the three groups involved in this process.

It was suggested that clarification of the roles of the three groups - Assessment Council, General Education Advisory Council (GEAC), and General Education Assessment Committee – would identify the mechanism for appropriate resolution of any process concerns and for "closing the loop" of assessment.

Some participants who had been involved in the development of the process in 2000 indicated that the intentions for "closing the loop" and group responsibilities were expressed only in general terms because the group knew it would take several years to collect sufficient data to draw conclusions and implement change for improvement.

There was general agreement on the following guidelines:

- The general education assessment process originated from the work of the Assessment Council, in conjunction with GEAC. Both groups have significant responsibility for interpreting general education assessment results and developing recommendations for improvement based on assessment results.
- Although the assessment committee worked to re-state the learning goals for general education in assessable terms, the content of those goals is clearly the purview of the GEAC.
- The assessment committee is responsible for conducting the assessments and reporting the results, using the process approved by AC and GEAC.
- Although there is some disagreement about the extent to which the assessment committee should interpret the results of the assessment and develop recommendations for improvement, there is general agreement that the committee should be involved in both of those steps, since they are most familiar with the artifacts evaluated and the scoring process.
- There is general agreement that AC and GEAC share primary responsibility for developing recommendations for improvement. GEAC has more responsibility for any changes made to the general education curriculum; AC has more responsibility for recommendations that are broader in scope than general education.

- Instruction Council has a role in this process also; curriculum changes beyond general education must be approved by this group. GEAC and AC should involve this group in interpretation of results and developing recommendations for improvement.
- The Academic Standards and Policies Committee of Faculty Council may have a role also since changes in academic policies must be approved by this group. Results should be shared with this group annually.
- An annual Fall meeting of the three primary groups should be planned to consider annual and cumulative results of assessment and to begin interpretation of results and recommendations for action, which would be taken to Instruction Council and Faculty Council for additional input and development.
- There was general agreement that it would be helpful to establish clearer expectations regarding the level of achievement for each learning goal. Some felt the expectations should be clearly expressed in terms of percentages achieving each score level; some believed expectations should be stated in terms of improvement over the college experience; others stated that results should be considered within the context of data from multiple sources each year; other suggested creating benchmarks to provide indicators of the need for action.

Assessment of Written Communication Skills

2006 collection of writing samples

The Office of University Assessment and Testing supervised the collection of student writing artifacts in Spring 2006 for the Written Communication Skills Institutional Portfolio. Instructors from the following undergraduate courses contributed random samples of student work to the portfolio:

Course No.	Course Name	General Education Designation (if any)	Number of artifacts randomly collected from one assignment	Number of artifacts reviewed	Number of artifacts used in data analysis
CIED 4012	Integration of Literacy		10	0	0
ECEN 4013	Senior Design Lab I		10	0	0
CIVE 3813	Environmental Engineering Science		10	10	10
HDFS 4793	Family: A World Perspective	S	10	10	8
ENTO 2003	Insects and Society	N	19	14	14
JB 3263	Reporting		10	0	0
BCOM 3223	Organizational Communication		10	10	10
HORT 1013	Principles of Horticultural Science	N	10	0	0
PHIL 3613	Philosophy of Religion	H	10	10	9
AGLE 2303	Personal Leadership Development in Ag Sci & Natural Resources		10	9	9
JB 2003	Mass Media Style & Structure		10	0	0
CDIS 4323	Language Assessment & Intervention		10	9	9
EDUC 4443	Cultural Diversity in Professional Life		10	10	10
ARCH 3073	History & Theory of Greek & Roman Architecture	H	21	21	21
MGMT 4613	International Management	I	10	9	9
	Total Number of Writing Artifacts (samples)		**170**	**112**	**109**

*The number of artifacts reviewed in 2006 was less than the number collected because it was determined that artifacts did not meet the criteria for assessment (n=58). The number of artifacts used in data analysis is less than the number reviewed because students were determined to be graduate students (n=3).

Artifacts were collected as in previous years. Artifacts selected for the Institutional Portfolio were coded and all identifying information was removed from the samples. Demographic data were collected for each artifact using the OSU student database; these data were collected for analysis purposes only and the information cannot be used to identify an individual. The student demographic information associated with the samples was not shared with reviewers prior to the reviews.

2006 written communication skills portfolio reviews

Six faculty reviewers for the written communication skills institutional portfolio conducted this assessment in May and June 2006. The portfolio reviewers included Frances Griffin (Business Management), Rick Rohrs (History), Camille DeYong (Industrial Engineering), Lowell Caneday (Leisure Studies), Dwayne Cartmell (Agriculture Education) and Rebecca Damron (English). All portfolio reviewers met for two training sessions where they received background information on the procedure, and practiced scoring samples of student work using the written communication skills scoring rubric developed for this purpose in 2001. During these two initial sessions, reviewers discussed questions and concerns regarding use of the rubric, discussed scores given to samples of student work, and developed a common approach for evaluating student writing samples.

As with past groups of reviewers, by the end of training sessions with all reviewers present, the reviewers were scoring fairly consistently with little variation among individual members. Ten artifacts were scored during the training session. The scoring committee then divided into two sub-groups, each of which undertook to review 51 artifacts. Scoring was done individually, and each sub-group then met to reach consensus scores where there was variation across individual scores. The final scores were then submitted to the office of University Assessment and Testing for compilation and interpretation.

Written communication skills scores from each review group

Review Group	Artifact Score	Number of Artifacts	Percent of Artifacts
#1 (51 artifacts scored)	1	1	2%
	2	8	15.7%
	3	24	47%
	4	17	33.3%
	5	1	2%
#2 (51 artifacts scored)	1	1	2%
	2	12	23.5%
	3	28	54.9%
	4	10	19.6%
	5	0	0%
Reviewer Training (10 artifacts scored)	1	0	0%
	2	4	40%
	3	3	30%
	4	3	30%
	5	0	0%

Rubric for evaluating student written communication skills

The General Education Assessment Committee developed the following rubric for evaluating samples of student writing in 2001. In 2006, the rubric was re-organized to reflect the three components that were scored separately in the assessment. As a result of discussion during the scoring and consensus process, the Style and Mechanics component of the rubric was modified to make more explicit the characteristics of appropriate documentation of resources.

Reviewers scored the artifacts independently and then met to develop a consensus score for each artifact; each artifact received an overall, whole-number score from 1 to 5. This year, for the first time, reviewers also assigned a sub-score to each artifact for each of the three components (content, organization and style/mechanics). Reviewers discussed sub-scores and came to agreement (within one point) on each component score.

Rubric for evaluating written communication

		Level of Achievement				
	Skill	1	2*	3	4**	5
1	Content	Topic is poorly developed; support is only vague or general; ideas are trite; wording is unclear, simplistic; reflects lack of understanding of topic and audience; minimally accomplishes goals of the assignment.		Topic is evident; some supporting detail; wording is generally clear; reflects understanding of topic and audience; generally accomplishes goals of the assignment.		Topic/thesis is clearly stated and well developed; details/wording is accurate, specific, appropriate for the topic & audience, with no digressions; evidence of effective, clear thinking; completely accomplishes the goals of the assignment.
2	Organization	Most paragraphs are rambling and unfocused; no clear beginning or ending paragraphs; inappropriate or missing sequence markers.		Most paragraphs are focused; discernible beginning and ending paragraphs; some appropriate sequence markers.		Paragraphs are clearly focused and organized around a central theme; clear beginnings and ending paragraphs; appropriate, coherent sequences and sequence markers.
3	Style and mechanics	Inappropriate or inaccurate word choice; repetitive words and sentence types; inappropriate or inconsistent point of view and tone.		Generally appropriate word choice; variety in vocabulary and sentence types; appropriate point of view and tone.		Word choice appropriate for the task; precise, vivid vocabulary; variety of sentence types; consistent and appropriate point of view and tone.
		Frequent non-standard grammar, spelling, punctuation interferes with comprehension and writer's credibility.		Some non-standard grammar, spelling, and punctuation; errors do not generally interfere with comprehension or writer's credibility.		Standard grammar, spelling, punctuation; no interference with comprehension or writer's credibility.
	(As applicable)	Intext and ending documentation are generally inconsistent and incomplete; cited information is not incorporated into the document.		Intext and ending documentation are generally clear, consistent, and complete; cited information is somewhat incorporated into the document.		Intext and ending documentation are clear, consistent, and complete; cited information is incorporated effectively into the document.

* Exhibits most characteristics of '1' and some of '3'
** Exhibits most characteristics of '3' and some of '5'

Student demographics associated with written communication artifacts, 2001- 2006

		2001-05		2006		All Years	
		no. of artifacts	pct	no. of artifacts	pct	no. of artifacts	pct
Number of Artifacts	# collected	846		170		1016	
	# scored	717		112		829	
	# used in analysis	704		109		813	
Class	Freshman	104	15%	6	5.5%	110	13.5%
	Sophomore	142	20%	38	34.9%	180	22%
	Junior	191	27%	55	55%	246	30%
	Senior	267	38%	10	9.2%	277	34%
College	CAS	223	32%	30	27.5%	253	31%
	CASNR	102	14%	9	8.3%	111	13.7%
	SSB	111	16%	24	22%	135	16.6%
	COE	77	11%	8	7.3%	85	10.5%
	CEAT	62	8.8%	31	28.4%	93	11.4%
	CHES	106	15%	4	3.7%	110	13.5%
	UAS	23	3.3%	3	2.8%	26	3.2%
Gender	Female	381	54%	47	43.1%	428	52.8%
	Male	321	46%	62	56.9%	383	47.2%
Admit Type	Regular (A, AR, L)	437	62%	64	58.7%	501	61.8%
	Alternative Admit (F)	27	3.8%	5	4.6%	32	4%
	Adult Admit (G)	11	1.6%	0	0%	11	1.4%
	"Third Door" Admit (K)	5	.7%	0	0%	5	.6%
	International (J)	3	.4%	0	0%	3	.4%
	Transfer (M, MR)	207	29%	37	33.9%	244	30%
	Other or Blank	14	2.0%	1	.9%	15	1.8%
ACT	<22	173	30%	35	40.2%	208	31.6%
	22 to 24	161	28%	18	20.7%	179	27.2%
	25 to 27	129	23%	19	21.8%	148	22.5%
	28 to 30	80	14%	7	8%	87	13.2%
	>30	29	5.0%	8	9.2%	37	5.6%
OSU GPA	<2.0	36	5.1%	3	2.7%	39	4.8%
	2.0 to 2.49	93	13%	17	15.6%	110	13.6%
	2.50 to 2.99	158	23%	29	26.6%	187	23%
	3.00 to 3.49	225	32%	39	35.8%	264	32.6%
	3.50 to 4.00	190	27%	21	19.3%	211	26%

Written communication skills scores, 2001 - 2006 (years combined)

			Score						
			1	**2**	**3**	**4**	**5**	**Avg**	**N**
Overall Scores	Overall	n	36	221	357	169	30	2.9	813
		%	4.4%	27.2%	44%	20.8%	3.7%		
By Class	Freshmen	n	10	39	45	14	2	2.63	110
		%	9.1%	35.5%	41%	12.7%	1.8%		13.5%
	Sophomores	n	10	38	70	27	7	2.89	152
		%	6.6%	25%	46.1%	17.8%	4.6%		18.7%
	Juniors	n	8	70	104	41	6	2.86	229
		%	3.5%	30.6%	45.4%	17.9%	2.6%		28.2%
	Seniors	n	8	74	138	87	15	3.08	322
		%	2.5%	23%	42.9%	27%	4.7%		39.6%

* ANOVA analysis indicates statistically significant difference between average scores of freshmen and seniors, and between juniors and seniors ($\alpha = .05$).

By Class (regular admit only)	Freshmen	n	6	32	40	12	2	2.70	92
		%	6.5%	34.8%	43.5%	13%	2.2%		18.4%
	Sophomores	n	5	24	51	19	5	2.95	104
		%	4.8%	23.1%	49%	18.3%	4.8%		20.8%
	Juniors	n	3	32	66	21	4	2.93	126
		%	2.4%	25.4%	52.4%	16.7%	3.2%		25.1%
	Seniors	n	2	35	80	51	11	3.19	179
		%	1.1%	19.6%	44.7%	28.5%	6.1%		35.7%

* ANOVA analysis indicates statistically significant difference between average scores of freshmen and seniors, between sophomores and seniors and between juniors and seniors ($\alpha = .05$). No difference is found between freshmen and sophomores, freshmen and juniors, or sophomores and juniors.

By Transfer Status	Native Students* (domestic only)	n	27	150	254	114	24	2.93	569
		%	4.7%	26.4%	44.6%	20%	4.2%		70%
	Transfer Students	n	9	71	103	55	6	2.91	244
		%	3.7%	29.1%	42.2%	22.5%	2.5%		30%

*Native students refers to freshmen who started at OSU as first-time freshmen

* An independent sample T test analysis indicates no statistically significant difference between average scores of native students and transfer students ($\alpha = .05$).

Comparison of overall average scores by year

			Score						
			1	**2**	**3**	**4**	**5**	**Avg**	**N**
Overall Scores	Overall	n	36	221	357	169	30	2.9	813
		%	4.4%	27.2%	44%	20.8%	3.7%		
By Year	2001	n	2	28	36	15	5	2.92	86
		%							
	2002	n	11	26	53	20	1	2.77	111
		%							
	2003	n	8	64	99	48	6	2.91	225
		%							
	2004	n	6	37	53	33	11	3.04	140
		%							
	2005	n	7	41	65	23	6	2.86	142
		%							
	2006	n	2	25	51	30	1	3.03	109
		%							

***** ANOVA analysis of mean scores by year shows no statistical difference; overall scores have neither increased nor declined significantly over the six-year period ($\alpha = .05$).

Comparison of overall average scores by classification and by year

			Year						
			2001	**2002**	**2003**	**2004**	**2005**	**2006**	**N**
	Freshmen	n	15	23	31	19	16	6	110
		avg	2.47	2.65	2.58	2.74	2.67	2.67	
	Sophomores	n	20	14	48	25	35	10	152
		avg	2.9	2.57	2.79	3.32	2.83	2.90	
	Juniors	n	20	34	52	39	46	38	229
		avg	3.00	2.82	3.04	2.74	2.65	2.92	
	Seniors	n	31	40	94	57	45	55	322
		avg	3.10	2.85	3.01	3.23	3.16	3.16	

***** ANOVA analysis of mean scores by year within each classification shows no statistical difference. Average scores of seniors are not statistically different from year to year; this is true also for juniors, sophomores and freshmen ($\alpha = .05$).

Key findings

- No statistically significant difference was found among average scores for each year (average scores neither increased nor decreased significantly during the six-year period).
- No statistically significant difference was found among average scores for each classification group by year (average scores of seniors are not different from year to year; this is also true for juniors, sophomores and freshmen).
- Writing scores on samples of work from freshmen were significantly lower than scores on writing samples from seniors ($n=813$, $p<0.05$); 45% of the freshmen writing samples had scores of "1" or "2" and 55% had scores of "3" or higher. In contrast, 75% of writing samples from seniors received a score of "3" or higher. When only regularly admitted students were included in the analysis (i.e., excluding transfer, international, and alternatively admitted students), the contrast was even more pronounced. Considering only regularly admitted students, 79% of work produced by seniors received scores of "3" or higher.
- No statistically significant difference was found between the writing scores of native (students who start their career at OSU) and transfer students.

Component scores for written communication assessment

This year for the first time reviewers assigned scores to three components of each artifact, corresponding to the three components of the rubric – content, organization and style/mechanics – in addition to an overall score. The basis for this change was the belief that component scores will more precisely indicate areas for focusing efforts to improve students' written communication skills. The table below provides average component scores for the 2006 sample.

Average Component and Overall Scores for Written Communication 2006:

Component:	Content	Organization	Style/Mechanics	Overall
Average Score: (N=109)	3.25	2.92	2.84	3.03

Assessment of Critical Thinking Skills

2006 collection of critical thinking samples

The Office of University Assessment and Testing supervised the collection of student artifacts for the Critical Thinking Institutional Portfolio in Spring 2006. Instructors from the following undergraduate courses contributed random samples of student work to the portfolio:

Course No.	Course Name	General Education Designation (if any)	Number of artifacts randomly collected from one assignment	Number of artifacts reviewed	Number of artifacts used in data analysis
BADM 4513	Strategy & Integration in Organizations		29	11	10
PHIL 3613	Philosophy of Religion	H	10	10	9
MGMT 4313	Organizing for Action		20	19	19
NSCI 4643	Critical Issues in Nutrition & Healthcare		13	13	13
ART 4613	Art Since 1945		6	5	5
PHIL 3833	Biomedical Ethics	H	19	18	18
CIVE 3813	Environmental Engineering		20	20	20
ARCH 3083	History & Theory of Baroque Architecture	H	13	12	12
HDFS 4793	Family: A World Perspective	S	10	1	0
ENTO 2003	Insects & Society	N	20	1	0
PSYC 4483	Psychology of Parent Behavior	S	20	0	0
ENGR 1111	Introduction to Engineering		52	0	0
MSIS 3223	Production & Operations Management		20	0	0
	Total Number of Critical Thinking Artifacts (samples)		**252**	**110**	**106**

*The number of artifacts reviewed in 2006 was less than the number collected. More artifacts were collected than could be evaluated by the reviewers, so those artifacts were selected that reviewers found to be best suited for the assessment (n=110). The number of artifacts used in data analysis is less than the number reviewed because students were determined to be graduate students (n=1), students plagiarized (n=1), the reviewers could not arrive at a consensus (n=1), or reviewer error (n=2).

Artifacts selected for the Institutional Portfolio were coded and all identifying information was removed from the samples. Demographic data were collected for each artifact using the OSU student database; these data were collected for analysis purposes only and the information cannot be used to identify an individual. The student demographic information associated with the samples was not shared with reviewers prior to the reviews.

2006 critical thinking portfolio reviews

Six faculty reviewers for the critical thinking skills institutional portfolio conducted this assessment in June and July 2006. Portfolio reviewers included Greg Wilber (Civil and Environmental Engineering), Ed Walkiewicz (English), Joanna Ledford (Biochemistry and Molecular Biology), Doren Recker (Philosophy), Karen High (Chemical Engineering) and Jeff Hattey (Plant and Soil Sciences). Initially, the reviewers met for two training sessions where they received background information on the procedure and practiced scoring artifacts using the critical thinking rubric developed for this purpose in 2004. Then, reviewers independently evaluated a set of training artifacts using the critical thinking rubric. During these two initial sessions, reviewers discussed questions and concerns regarding the use of the rubric, discussed scores given to samples of student work, and developed a common approach for evaluating student critical thinking samples.

As with past groups of reviewers, by the end of the training sessions with all reviewers present, the reviewers were scoring fairly consistently with little variation among individual members. In addition to scoring several artifacts from the previous year, four artifacts from the 2006 sample were scored during the training session. The scoring committee then divided into two sub-groups, each of which undertook to score 53 artifacts. Scoring was done individually, and each sub-group then met to reach consensus scores in cases where there was variation across individual scores (for the same artifact). The final scores were then submitted to the office of University Assessment and Testing for initial interpretation.

Critical thinking skills scores from each review group

Review Group	Artifact Score	Number of Artifacts	Percent of Artifacts
#1 (artifacts scored)	1	1	2%
	2	13	26%
	3	27	54%
	4	9	18%
	5	0	0%
#2 (artifacts scored)	1	3	5.8%
	2	15	28.8%
	3	26	50%
	4	8	15.4%
	5	0	0%
Reviewer Training (artifacts scored)	1	0	0%
	2	1	25%
	3	1	25%
	4	2	50%
	5	0	0%

Except for those artifacts scored during the training sessions, reviewers scored each artifact independently and then met to develop a consensus overall score for each artifact. Each artifact received an overall, whole-number score from 1 to 5, as well as a sub-score for each rubric component that was determined to be appropriate for the assignment. All artifacts were scored on rubric components 1-4, other components were only scored if the group agreed they were relevant for the assignment. Reviewers discussed sub-scores and came to agreement (within one point) on each component score.

Rubric for assessing Critical Thinking *

Characteristics 1 -4: Essential Characteristics		Level of Achievement				
		1	2*	3	4**	5
1	**Identification** and/or summary of the **problem/question** at issue.	No identification and/or summary of the problem.		The main question is identified and clearly stated.		The main question and subsidiary, embedded, or implicit aspects of a question are identified and clearly stated.
2	Presentation of the **STUDENT'S OWN perspective and position** as it is important to the analysis of the issue.	The student's own position relative to the question is not provided.		The student's own position on the question is stated. Some support for the position is provided.		The student's own position on the issue is stated and support has been drawn from experience or information not available from assigned sources.
3	Assessment and appropriate use of **supporting data/evidence.**	No supporting data or evidence is utilized.		Evidence is used but not carefully examined. Source(s) of evidence are not questioned for accuracy, precision, relevance, and completeness. Inferences of cause and effect are stated, but not completely or entirely accurately. Facts and opinions are stated although not clearly distinguished from value judgments.		Evidence is identified and carefully examined. Source(s) of the evidence are questioned for accuracy, precision, relevance, and completeness. Accurately observes cause and effect. Facts and opinions are stated and clearly distinguished, and value judgments are acknowledged.
4	Discussion of **conclusions**, implications and consequences.	Conclusions are not provided.		Conclusions are provided without discussion of implications or consequences. Some reflective thought is provided with regards to the assertions.		Conclusions are clearly stated and discussed. Implications and consequences of the conclusion are considered in context, relative to assumptions, and supporting evidence. The student provides reflective thought with regards to the assertions.
5 – 7: Optional Characteristics (evaluated where appropriate)						
5	Consideration of **OTHER salient perspectives and positions** that are important to the analysis of the issue.	Does not acknowledge other possible perspectives.		Acknowledges other possible perspectives although they are not clearly stated.		Uses other perspectives noted previously, and additional diverse perspectives drawn from outside information.
6	Assessment of the key **assumptions and the validity of the supporting/ background information**.	Does not identify the key assumptions and/or evaluate the given information that underlies the issue.		The key assumption(s) that underlies the issue is clearly stated. Necessary data or other background data is identified but not evaluated for validity, relevance or completeness.		The key assumption that underlies the issue is clearly stated and the validity of the assumption that underlies the issue is assessed. Key data and background information is evaluated for validity and used in a way consistent with this evaluation.
7	Consideration of the influence of the **context** on the issue (including, where appropriate, cultural, social, economic, technological, ethical, political, or personal context).	The problem is not connected to other issues or placed in context.		The context of the question is provided although it is not clearly analyzed. Limited consideration of the audience is provided. Little consideration of other contexts is provided.		The issue is clearly analyzed within the scope and context of the question. An assessment of the audience is provided. Consideration of other pertinent contexts is provided.

* 2 - Exhibits most characteristics of '1' and some characteristics of '3'
** 4 - Exhibits most characteristics of '3' and some characteristics of '5'

***** adapted from Washington State University

Student demographics associated with critical thinking skills artifacts, 2006

		2006 no. of artifacts	pct
Number of Artifacts	# collected	111	
	# scored	107	
	# used in analysis	106	
Class	Freshman	0	0%
	Sophomore	8	7.5%
	Junior	36	34%
	Senior	62	58.5%
College	CAS	23	21.7%
	CASNR	2	1.9%
	SSB	27	25.5%
	COE	3	2.8%
	CEAT	33	31.1%
	CHES	18	17%
	UAS	0	0%
Gender	Female	46	43.4%
	Male	60	56.6%
Admit Type	Regular (A, AR, L)	72	67.9%
	Alternative Admit (F)	2	1.9%
	Adult Admit (G)	1	1%
	"Third Door" Admit (K)	0	0%
	International (J)	3	2.8%
	Transfer (M, MR)	28	26.4%
	Other or Blank	0	0%
ACT	<22	17	19.3%
	22 to 24	24	27.3%
	25 to 27	26	29.5%
	28 to 30	9	10.2%
	>30	12	13.6%
OSU GPA	<2.0	4	3.9%
	2.0 to 2.49	17	16.7%
	2.50 to 2.99	22	22%
	3.00 to 3.49	32	31.4%
	3.50 to 4.00	27	26.5%

Critical thinking skills scores, 2005-2006 (years combined)

			Score						
			1	**2**	**3**	**4**	**5**	**Avg**	**N**
Overall Scores	Overall	n	6	69	126	45	1	2.86	247
		%	2.4%	27.9%	51%	18.2%	.4%		
By Class	Freshmen	n	0	0	1	0	0	3.00	1
		%			100%				.4%
	Sophomores	n	1	8	15	2	0	2.69	26
		%	3.8%	30.8%	57.7%	7.7%	0%		10.5%
	Juniors	n	2	29	41	21	0	2.87	93
		%	2.2%	31.2%	44.1%	22.6%	0%		37.7%
	Seniors	n	3	32	69	22	1	2.89	127
		%	2.4%	25.2%	54.3%	17.3%	.8%		51.4 %
By Class (regular admit only)	Freshmen	n	0	0	1	0	0	3.00	1
		%			100%				.6%
	Sophomores	n	0	4	12	1	0	2.82	17
		%	0%	23.5%	70.6%	5.9%	0%		10.8%
	Juniors	n	2	16	33	18	0	2.97	69
		%	2.9%	23.2%	47.8%	26.1%	0%		43.9%
	Seniors	n	1	17	40	12	0	2.90	70
		%	1.4%	24.3%	57.1%	17.1%	0%		44.6%
By Transfer Status	Native Students*	n	3	43	90	34	0	2.91	170
		%	1.8%	25.3%	52.9%	20%	0%		68.8%
	Transfer Students	n	3	26	36	11	1	2.75	77
		%	3.9%	33.8%	46.8%	14.3%	1.3%		31.2%

*Native students refers to freshmen who started at OSU as first-time freshmen.

Component scores for critical thinking skills assessment

In addition to providing an overall score for each artifact, reviewers assigned scores to four components of each artifact and to three additional components where it was appropriate to do so - corresponding to the components of the rubric. When a larger number of artifacts have been evaluated, the component scores will more precisely indicate areas for focusing efforts to improve students' critical thinking skills. The table below provides average component scores for the 2005-06 sample.

Average Component and Overall Scores for Sub-areas of Critical Thinking for 2005-2006:

Component:	Problem	Perspective	Support	Conclusion	Others	Assumptions	Context
Average Score:	2.84 (N=247)	2.92 (N=247)	2.95 (N=247)	2.79 (N=247)	2.74 (N=26)	2.32 (N=45)	2.72 (N=48)

Key findings

- In only the second year of full-scale implementation of the critical thinking assessment, few conclusions can be drawn about the results, but the overall scores are disappointingly low. Of the artifacts selected for assessment, few (22%) received overall scores of 4 or 5, including those produced by seniors (25%). The average score for assignments written by seniors was 2.89.
- The committee experienced some difficulty in identifying appropriate artifacts for assessment from lower-division courses.

Campus-wide discussion of critical thinking assessment

The committee worked to continue the campus-wide discussion on the development and assessment of students' critical thinking skills, and encouraged faculty to share their experiences in teaching and assessing critical thinking. In March 2006, Dr. Gary Brown, Director, Center for Learning, Teaching and Technology, Washington State University, presented a workshop for OSU faculty about WSU's FIPSE funded project for assessing and promoting students' critical thinking. This discussion was helpful in assisting faculty with creating assignments to help students develop critical thinking skills, as well as helping the committee identify course assignments for assessment.

Assessment of Diversity Learning Goal

Background information regarding assessment of learning about diversity

The criteria and goals for General Education state that the curriculum is intended to "assist students in understanding and respecting diversity in people, beliefs and societies." There is currently not a specific general education designation for courses with this focus, although one is being considered. It is expected that many courses provide experiences to help students achieve this goal, and that students' activities outside of class, such as interacting with others in student organizations, living environments, and participating in other extra-curricular activities also contribute to their achievement.

The General Education Assessment Committee focused on assessment of student learning about diversity as one of the committee's primary tasks over the summer of 2006. The committee took an approach similar to that used in the development of rubrics to assess writing, math problem solving, science problem-solving and critical thinking.

Development of diversity assessment process

The goal of general education assessment is to determine the extent to which the General Education program is achieving stated goals, in this case regarding development of students' knowledge, skills and attitudes about diversity. The sub-committee of the General Education Assessment Committee that worked to develop an assessment tool for this purpose included Jon Comer, Associate Professor of Geography; John Gelder, Professor of Chemistry; Patricia Bell, Professor of Sociology; and Laura Belmonte, Associate Professor of History.

The development process involved the following steps:

1. Faculty discussion at a workshop to clarify expectations for student learning about diversity and a mechanism for assessment,
2. Review of published information from peer institutions and researchers on assessment of diversity in an academic setting,
3. Development of draft rubric,
4. Application of draft rubric to artifacts collected for this purpose,
5. Revision of rubric, and
6. Development of a summary report of these activities.

Campus-wide discussion of diversity assessment

One of the first steps in starting a campus-wide discussion of assessment of learning related to diversity took place on March 6, 2006. An open invitation was extended to faculty to participate in a discussion facilitated by members of the General Education Assessment Committee. The purpose was to begin development of a process to assess student achievement of the general education learning goal regarding diversity.

Discussion focused on stating more specifically the knowledge, skills, and attitudes related to diversity that faculty expect OSU graduates to achieve. The group also discussed some preliminary ideas for development of a rubric to assess students' achievement of the learning goal and suggested courses that might provide samples of students work (artifacts) to be the objects of the assessment.

The meeting was attended by 31 faculty members and included a thoughtful discussion about diversity on the OSU campus. Some participating faculty offered to provide artifacts for the committee to consider in development of the assessment rubric. Ideas and concerns from this meeting were considered by the committee who worked on developing the rubric this summer.

Developing a rubric to assess knowledge, skills and attitudes regarding diversity

The committee could find very few examples of assessment of this type. Resource materials found on websites at the University of Michigan-Flint and the University of Arkansas-Ft. Smith provided some assistance and were considered during initial discussions. Most references to assessment related to diversity on college campuses referred to assessing the campus culture rather than focusing on student learning.

One of the six stated Core Values of OSU is Diversity. An important consideration for the development of the rubric was the statement from institutional documents describing this core value: "We respect others and value diversity of opinion, freedom of expression, and other ethnic and cultural backgrounds." To operationalize this core value in the assessment criteria of the rubric, the committee provided the following interpretation of that statement:

- Respecting others includes demonstrating an interest in increasing one's knowledge of others as well as applying that knowledge in interaction.
- To value diversity of opinion is to consider all opinions in decision-making and problem-solving.
- Freedom of expression occurs in a social and cultural environment that is supportive of the same. One should be aware of factors that lead to the suppression of ideas of inclusion (such as "hate speech") as well as factors that encourage positive contributions to public discourse.
- To value other ethnic and cultural backgrounds, one must appreciate the complexities of the same and understand that our interactions with, and perceptions of, others are informed by our conceptions of a wide variety of differences (such as notions of race, gender, ethnicity, religion, veteran status, nationality, religion, age, ability status, sexual orientation, etc.)

Although the work of this group focused on assessment of student learning at the university or institution level, the institutional portfolio assessment method used by OSU requires collecting samples of student work at the course and assignment level. In anticipation of the development of an assessment tool, samples of student work were collected during the Spring semester. Faculty were asked to participate in the assessment if they had a course assignment that required students to demonstrate knowledge, skills and/or attitudes about diversity. Six faculty members agreed to provide samples of student work.

As faculty reviewers began to read the artifacts from these six courses, it became clear to them that most of the samples collected would not be appropriate for assessment using the rubric as it was drafted. Most of the assignments were not designed to require students to demonstrate the criteria represented on the rubric: conceptual understanding of diversity, ability to consider diverse points of view, knowledge of historical context, and basis of understanding of diversity (facts, observation, personal experience).

A trial run was performed with the rubric using 21 artifacts that best "fit" the rubric. Four faculty evaluators read and evaluated the artifacts using the diversity rubric, scoring each artifact on each of the four criteria listed, on a 1 to 5 scale. Each reviewer provided a score for each component of the rubric, as well as an overall score. The group discussed the ratings and agreed on an overall score for each artifact. Following the last scoring session evaluators agreed on a few revisions to the rubric, intended to clarify the rating criteria.

The revised rubric is provided on the following page. It is expected the rubric may be revised further as the results of this initial assessment are discussed with additional faculty members. The instrument is intended for use in institution-level assessment, as part of the institutional portfolio, but it is hoped that it will also gain acceptance as a tool for faculty to assess diversity-related achievement at the course- and assignment-level as well.

Faculty who developed the rubric and conducted the assessment noted the following observations:

- It was difficult to apply the rubric to the assignments sampled; the committee will ask faculty to consider developing assignments that will ask students to demonstrate the knowledge, skills, and attitudes represented in the learning outcome being assessed.
- In the small sample evaluated, component results were strongly influenced by the format of the assignment.
- The assignment used for the assessment asked students to write about a diversity experience; students tended to focus more on process and less on self-reflection. Students' work often indicated very limited experiences with diversity.

The sample of student work collected in 2006 is too small to provide any meaningful results and is not a representative sample of the student population. The following tables are provided only to demonstrate how assessment results may be reported in the future.

Table 1: Average component and overall scores on 21 artifacts (see rubric next page).

Learning Component:	Conceptual understanding	Values diversity	Knowledge of context	Sources of Understanding	Overall
Average score: (N=21)	2.15	2.28	1.80	2.17	2.18

Table 2: Average overall scores reported by student classification.

	Freshmen	Sophomores	Juniors	Seniors	All
Average overall score:	N=0	2.4 N=5	2.0 N=9	2.29 N=7	2.18 N=21

Additional analysis routinely reported for general education portfolio assessment:

- Correlation of consensus overall scores with ACT composite scores
- Correlation of consensus overall scores with cumulative GPA

Statement of Learning Outcome: "Graduates will understand and respect diversity in people, beliefs and societies."

Outcome Components:		Level of Achievement 1	2*	3	4**	5
A	**Conceptual Understanding** Understands concept of diversity as a multidimensional concept involving knowledge, understanding, and application, and the social and cultural environment	Understands diversity to mean differences in people. The lowest level of achievement is one that recognizes difference in a superficial and one-dimensional manner (catalogues differences). Can only evaluate others in comparison to oneself and in an implied hierarchical manner (exhibits ethnocentrism).		Understands diversity as knowledge of differences in cultural practices, attitudes and beliefs. Moderate appreciation for the value of any of this understanding in application or in navigating the social and cultural environment. Goes beyond "cataloguing" differences		Understands diversity as multidimensional in nature involving knowledge, understanding, and how the same are essential in application and in navigating the social and cultural environment.
B	**Values diversity** Is able to take under consideration several points of view in making decisions. The differing points of view must be significant and culturally and/or socially based. Knows and understands what those points of view offer.	Indicates minimal tendency to try to understand and to value multiple perspectives. Is unable to draw on diverse opinion in decision-making.		Indicates moderate tendency to try to understand and to value multiple perspectives. Demonstrates ability to examine more than one opinion with cultural relevant differences in decision-making.		Perspective of inclusion dominates writing. Indicates strong tendency to try to understand and to value multiple perspectives as a lifelong process.
C	**Knowledge of historical context** that influences current issues related to diversity	Student's work indicates minimal knowledge of history and background of racial, ethnic or other relevant groups. Lacks perspective on the issue.		Student's work indicates moderate knowledge of historical context and how that historical context is important to the issue.		Student's work indicates substantial knowledge of historical context and how that history applies to present day situations relating to inter-group relations.
D	**Sources** of understanding, value, and knowledge. Should include academic, observation, and personal experience outside of one's own background.	Student's understanding and values regarding diversity are based primarily on limited factual knowledge and personal observation; little apparent influence of personal experience outside own background (family and friends).		Student's understanding and values regarding diversity are based primarily on moderate factual knowledge and personal observation; some apparent influence of personal experience outside own background (family and friends).		Students' understanding and values regarding diversity are based on reflection and integration of substantial factual knowledge and personal observation; strong apparent influence of personal experience outside own background (family and friends).

……..……Discriminators……..……..……

* Includes most characteristics of "1" and some of "3."

** Includes most characteristics of "3" and some of "5."

Committee plans for diversity assessment

The committee concluded that additional campus-wide discussion(s) about faculty expectations for students' knowledge, skills and attitudes about diversity and methods to assess students' achievement of those expectations are needed to develop an effective assessment process. One or more workshops will be held during the next academic year to present the initial findings of the committee, discuss the development of the diversity assessment rubric, and involve more faculty members in the continued development of this assessment process.

During the 2006-2007 academic year, the diversity assessment sub-committee's activities will be focused on two goals: continuing development of the campus-wide conversation on learning about diversity, and gathering of artifacts to be evaluated next summer using the rubric developed for this purpose. Accumulating enough artifacts and enough data to be statistically meaningful will take time. These efforts will be critical in ensuring that data is available and can be used in improving development of learning about diversity and assessment in the general education program and throughout the institution.

References

University of Michigan-Flint, College of Arts and Sciences, Amendment 3 to the General Education Program: Student Outcomes Assessment, Assessment of Understanding Diversity Statement. http://assessment.umflint.edu/GeneralEducation/documents/diversity.pdf

University of Arkansas-Ft. Smith, General Education Competencies and Rubrics, Global and Cultural Perspectives.
http://www.uafortsmith.edu/Learning/GlobalAndCulturalPerspectives

General Education Institutional Portfolios Overview

The numbers of samples scored and used in analysis for each institutional portfolio developed in 2001-2006 are shown below. Institutional Portfolios for written communication skills assessment were developed in 2001 (pilot test year), 2002, 2003, 2004, 2005 and 2006; portfolios for math problem-solving skills were developed in 2002 (pilot test year), 2003 and 2005; and portfolios for science problem-solving skills were developed in 2003 (pilot test year), 2004 and 2005. An Institutional Portfolio for assessment of critical thinking was pilot tested in 2004 and fully developed in 2005. Samples sizes have been increased in each year of portfolio development to work toward sufficient samples sizes for data analysis. An Institutional Portfolio for assessment of students' achievement of the diversity learning goal was pilot tested in 2006 (not reported below), and will be more fully developed in 2006-07.

Number of samples in each portfolio, 2001 – 2006

	Portfolio Type				Total number of samples - all portfolios
Year	Written Communication Skills	Math Problem-Solving Skills	Science Problem-Solving Skills	Critical Thinking Skills	
2001	86	-	-	-	86
2002	111	76	-	-	187
2003	225	268	68	-	561
2004	140	-	141	-	281
2005	142	189	129	141	601
2006	109			106	
All Years	**813**	**533**	**338**	**247**	**1716**

Overall portfolio scores for subject-area portfolios, years combined

		Score				
	Artifacts	1	2	3	4	5
Written Communication Skills (2001-2006)	N	36	221	357	169	30
	%	4.4%	27.2%	44%	20.8%	3.7%
Science Problem-Solving Skills (2003, 2004, 2005)	N	20	127	121	63	7
	%	5.9%	38%	36%	19%	2.1%
Math Problem-Solving Skills (2002, 2003, 2005)	N	60	155	159	118	41
	%	11%	29%	30%	22%	7.7%
Critical Thinking Skills (2005, 2006)	N	6	69	126	45	1
	%	2.4%	27.9%	51%	18.2%	.4%

The written communication skills institutional portfolio is developing into an effective assessment tool. The increased sample size in this portfolio has allowed more confidence in the analysis and implications of the results. The addition of component scoring implemented this year should result in more useful information for improving students' written communication skills. Although no significant improvement in writing skills is indicated over the six year period, the impact of curricular changes implemented in 2005 should become apparent over the next 2-3 years.

The process of development of the critical thinking skills institutional portfolio has provided opportunities for useful discussion among faculty about ways to develop and assess students' critical thinking skills in the classroom. Although the sample size is not yet sufficient for in-depth analysis, within 2-3 years this assessment should provide useful information for improving students' critical thinking skills. The component scores should result in especially useful information for focusing efforts to improve students' critical thinking skills.

The portfolios for math and science also have the potential to provide useful information for assessing student achievement of general education learner goals. However, these portfolios are different from the writing and critical thinking portfolios in some important ways. Unlike student writing and critical thinking samples, which are collected from courses across the undergraduate curriculum, math and science artifacts can only be obtained from a limited number of lower division courses. Students in some majors that are not related to math or science may choose to take as few as two math courses and two science courses to meet general education requirements, and would generally not be expected to demonstrate math or science problem-solving skills in other courses. Also, the variation in the level of difficulty of the problems presented to students in courses from which artifacts can be obtained adds to the difficulty in holistically evaluating these skills using work produced in a range of courses. In contrast, courses in both upper and lower division and across all majors require students to demonstrate written communication skills and critical thinking skills. The General Education Assessment Committee will further consider these unique characteristics in the continued development of these and other institutional portfolios.

Proposed General Education Assessment Activity for 2006-07

A. The Committee plans to continue the institutional portfolio for assessing student critical thinking skills. The committee recommends that two portfolio-scoring groups each review about 60 samples of randomly collected student work demonstrating critical thinking skills. Because each group consists of three faculty members, this will require six faculty reviewers for the 2007 critical thinking portfolio (two Committee members and four additional faculty reviewers).

B. The Committee plans to expand the institutional portfolio to evaluate students' science problem-solving skills. The Committee recommends that 1 portfolio-scoring groups, consisting of 3 faculty members, evaluate the science problem solving portfolio (two Committee members and one additional faculty reviewers).

C. The Committee plans to develop the institutional portfolio to evaluate students' learning about diversity. The Committee recommends that 2 portfolio-scoring groups, each consisting of 3 faculty members, evaluate the diversity portfolio (two Committee members and four additional faculty reviewers).

D. The Committee plans to evaluate the math problem-solving assessment process, in consultation with representatives from the Math Department.

E. The Committee plans to present information sessions for faculty to describe the process and results of assessment of students' achievement of general education learning goals since the committee began its work in 2000.