PERFORMANCE ACCOUNTABILITY:
1999-2000 Academic Year Review and Recommendations for 2001-03

November 2000

OVERVIEW

Accountability in higher education has been a priority for the Higher Education Coordinating Board (HECB) from its inception in the 1980s. The Board's first Master Plan for Higher Education, in 1988, called for "system-wide performance evaluation to monitor our investment in higher education."

Current accountability efforts date to 1997, when the HECB was directed by the Legislature and Governor to implement a budget-based accountability system for the public four-year college and universities. The accountability initiative has been included in the biennial budgets for 1997-1999 and 1999-2001. During this time, the HECB has been directed to provide the Legislature and Governor with progress reports and recommendations for the future. This report includes an overview of institutional performance through the 1999-2000 academic year and recommendations for the 2001-03 biennium, which begins July 1, 2001.

Recommendations for 2001-03 Biennium

- The HECB believes the state has a strong and legitimate interest in assessing the efficiency of the state's investment in higher education and should continue to monitor **graduation and retention rates, and the graduation efficiency index** for all baccalaureate institutions.

- The HECB recommends the state **continue the current practice of monitoring, but not attaching budget penalties,** to measures of institutional performance.

- The HECB supports the continued use of **institution-specific measures** to provide a student-centered focus on specific challenges and improvements at each campus.

- The HECB wishes to support both **student learning assessment initiatives** and **institution-specific strategies** by recommending the Legislature and Governor designate these efforts as priorities for funding through the state Fund for Innovation.

- The HECB recommends the re-evaluation of the **statistical performance goals** established in 1997. Comparisons of institutional performance against that of comparable universities may be more informative and useful to policy-makers.

During 1999-2000, the HECB joined with the Council of Presidents and the State Board for Community and Technical Colleges to co-sponsor two accountability forums that included participation from several members of the Legislature. In addition, HECB staff discussed accountability issues with institutional representatives during a panel presentation at the state's

most recent higher education assessment conference during spring 2000, and in a subsequent meeting during the summer. All of those activities, supplemented by ongoing, informal conversations with the institutional accountability representatives, have helped to inform this report and recommendations.

BACKGROUND: 1997-1999 BIENNIUM

In its 1997-99 biennial budget (ESSB 6108), the Washington Legislature directed the HECB to implement an accountability system in consultation with Washington's public four-year universities and college. The Legislature tied resources to completion of institutional plans early in the first fiscal year of the biennium, and, during the second year, to actual performance on five measures outlined in the budget legislation. The Legislature directed the HECB to evaluate each institution's achievement of performance targets for the 1997-98 academic year and to notify the Office of Financial Management (OFM) by November 15, 1998, what portion of the institutions' reserve funds to release.

ESSB 6108 also directed the Board by January 1999 to recommend additions, deletions, or revisions to the performance and accountability measures to OFM and appropriate legislative committees in preparation for development of the 1999-2001 state budget *(ESSB 6108, Laws of 1998, Chapter 454, Sections 601 - 610).*

Performance measures. To begin this initiative, the HECB in 1997 adopted guidelines for the institutions' accountability plans and, in September of that year, reviewed and approved the plans. Those plans described strategies the institutions would pursue to progress toward goals on the five performance measures defined in the Legislature's budget proviso. The five measures were:

1. ***Undergraduate Graduation Efficiency Index*** - a measure of how efficiently students complete their degrees, by taking into consideration the total number of credits earned, dropped, repeated and transferred, compared with the number required for graduation.

2. ***Undergraduate Student Retention*** - the proportion of undergraduate students who continue to be enrolled from one year to the next.

3. ***Five-year Graduation Rates*** - the percentage of students who begin as freshmen who graduate within five years.

Two additional measures—which differed from one institution to the next—were also stipulated:

4. ***Faculty Productivity*** - a mixture of measures related to the outcomes of faculty work, which are generally different for each institution.

5. ***Unique Accountability Measure for Each Institution*** - reflective of the mission of each four-year public institution.

The Legislature stipulated goals for the three common measures of undergraduate student retention, graduation efficiency, and five-year graduation rate.

Measures

Undergraduate Student Retention	**Goals**
Research Universities	95%
Comprehensive Universities and Colleges	90%
Graduation Efficiency	
Freshman ("native")	.95
Transfer students	.90
Graduation Rates	
Research Universities	65%
Comprehensive Universities and Colleges	55%

Funds in Reserve. The Legislature placed a portion of each institution's 1997-99 appropriation in reserve, contingent upon HECB approval of the accountability plans (for 1997-98), and the HECB's assessment of institutional performance toward accountability targets (for 1998-99). Ten point six ($10.6) million in base funding was initially withheld through the performance funding process. After approving the institutions' first-year plans in September 1997, the HECB recommended to OFM the release of all funds held in reserve for the first year of the biennium.

As part of the initial accountability process, the HECB created a timetable for the institutions to meet the legislative goals. The timetable prescribed targets that were based on annual percentage increases in performance that were the same for all institutions. The HECB submitted a report to the Legislature in December 1998 that documented each institution's performance, and recommended changes to the accountability initiative.

Ultimately, $9.2 million of the $10.6 million in funds withheld at the start of the biennium were released based on the institutions' development of performance plans and their progress toward the statewide goals.

BACKGROUND: 1999-2001 BIENNIUM

The Legislature modified the accountability initiative for the 1999-2001 biennium, incorporating several of the HECB's recommendations. Most importantly, the 1999-2001 budget proviso withheld no funds from the institutions' base budgets. For the 1999-2001 biennium, the following elements from the original accountability initiative remained the same:

- **Four performance measures**: undergraduate student retention, graduation efficiency, graduation rate, and faculty productivity.

- **Statistical goals for all performance measures** *except* faculty productivity.

- **HECB review and approval of accountability plans** that describe how institutions would make "measurable and specific" improvements toward the performance goals.

- **Annual HECB review of each institution's progress** toward the performance goals.

The Legislature directed the baccalaureate institutions to prepare new accountability plans during the summer of 1999 based on guidelines developed collaboratively with the institutions and approved by the HECB.

There was a significant change in 1999-2001 in the establishment of annual performance targets. While in 1997-99, the HECB prescribed performance targets based on annual percentage increases that were the same for all institutions, the 1999-2001 guidelines gave responsibility to the institutions for setting meaningful targets that would lead to "measurable and specific" improvement. *The Board placed the challenge of identifying meaningful, substantive targets in the hands of the institutions*.

The HECB also asked the institutions to recalculate the baseline against which future performance would be compared. The new baseline was to be an average of fiscal years 1996, 1997, and 1998. This shift from a single baseline year to an average responded to institutional concerns that no single year could be representative of typical performance.

Later in the biennium, during the 2000 legislative session, House Bill 2375 was enacted, designating information and technological literacy as a student learning outcome. The bill established a timeline for implementation and progress reports, and a regular reporting cycle.

PERFORMANCE UPDATE: 1999-2000 ACADEMIC YEAR REPORT

This section will be developed when the institutions submit their performance data for the 1999-2000 academic year. Some of the data, particularly those that measure student retention, are not available until after the 10th day of the Fall 2000 term. These reports will be included in the document forwarded to the Legislature in November.

This document also reports on a second aspect of accountability: the progress of the public universities in assessing student learning outcomes. Three aspects of student learning are the focus of statewide assessment projects: writing, quantitative reasoning, and information and technology literacy. In the appendix of this document, we include a progress report from the leader of each project.

THE STATUS OF ACCOUNTABILITY – WHAT HAVE WE LEARNED?

Questions about the results and implications of the accountability effort that began in 1997 are addressed below from the perspectives of policy-makers, educators and students.

Overall, the HECB believes that while there is an important statewide interest in the efficiency of the educational system, there is even greater value in an accountability system that contributes useful information to higher education institutions as well as policy-makers – and which helps promote policies that improve student learning outcomes – by focusing on measures that reflect challenges and improvements at the individual campus level.

Policymakers

Have the current statewide goals and measures been useful for policy-makers? Do they reveal important information to the people who commissioned the work, that is, the Legislature and Governor?

The HECB believes the statewide performance measures reflect a legitimate state interest in the level to which the state's higher education investments are producing desirable outcomes and efficient performance by students and institutions. However, while measures of graduation, student retention, and faculty productivity contribute valuable information to discussions of higher education, they are not, by themselves, especially useful for forming judgments and making decisions about higher education policy. The HECB believes it is important for the state to understand the limitations of these measures of effectiveness and efficiency:

- ***Validity***. It is unclear whether the statewide measures actually illuminate the underlying characteristics that the state is trying to assess. For example, faculty productivity is typically measured by counting the number of student FTEs associated with each full-time faculty member. However, this approach does not reflect important aspects of what faculty members do as part of their job to "instruct students," such as mentoring, advising and career planning.

- ***Competing values***. Higher education institutions are expected to achieve many different things, not all of which are compatible. For example, universities are held accountable for ensuring that students progress efficiently to complete their degrees, and with ensuring that most complete their studies within an appropriate amount of time. Highly affluent or well-prepared students are more likely to do both of these things than students who work, who have dependents, or who bring some weaknesses in their academic preparation to college. The state's universities could boost graduation efficiency and shorten time to degree by admitting only highly affluent or well-prepared students. However, citizens and policymakers also value access, opportunity, and diversity, and we expect institutions to admit students for reasons other than exceptional preparation or high test scores. The statewide performance measures do not enable us to measure or balance these competing values.

- ***The availability of other information***. Policy-makers possess many other sources and types of information that they use to evaluate the performance of higher education institutions.

Legislators and the Governor receive a constant stream of information about the public universities – from constituents, the state's businesses and professional associations, parents and students, and the universities themselves. Telephone calls or letters from constituents, often about difficulties in gaining entry into courses or major programs, may be at least as important as the impersonal statistics yielded by an efficiency index. Praise from the business community about the quality of graduates may be a far more trusted way to learn about student achievement than by studying impersonal statewide measures.

Universities

Has performance measurement been helpful to those who administer or teach in state universities? Has it fostered improvement in management or hastened improvements in student learning and achievement? There is conflicting evidence. *Statewide measures* – i.e., five-year graduation rates, overall student retention, etc. – provide little information on which to base management decisions or academic program changes. However, measures that attempt to respond to unique challenges at each institution, *institution-specific* measures, have stimulated new, positive thinking about strategies for improvement.

There are several reasons why statewide performance measures offer modest guidance to decisions at the campus level:

- ***Lack of precision***. The broad statewide performance measures are not focused tightly enough to be very helpful in institutional management. Consider, for example, a university's overall rate of student retention as a performance measure. From the university's perspective, there is not one single retention rate, but many retention rates. There are different retention rates for different campuses or centers, for different colleges, for different programs and majors, and different kinds of students. Policies that aim to improve retention are not undertaken at a university level, but focus on the particular colleges, programs, or sites.

- ***Institutional control.*** The statewide performance measures appear to be substantially outside the control of universities. The performance of a university on these measures is influenced less by institutional policies and practices than by the underlying characteristics of the student population it serves. The most important factor in efficiency, retention, and completion is the characteristics of the students who are being educated. Affluent students who are exceptionally well prepared for university studies typically progress swiftly and efficiently toward the completion their degrees. Students from low-income families or students who lack some elements of academic preparation – including older students returning to college – generally do not progress as swiftly or efficiently.

- ***Trends are not informative.*** Because these measures are highly aggregated (i.e., overall student retention) and substantially outside the control of universities, they are extremely stable and apparently unresponsive to institutional policies and choices. Some of the state's public universities have collected 15 years of data on freshman retention rates, five-year graduation rates, and the graduation efficiency index. Common to each measure is a pattern of small and apparently random fluctuation around a highly stable, long-run score.

- ***Values in conflict.*** If administrators and faculty based their decisions on projected performance on statewide performance measures, they might be inclined to pursue policies at odds with important student-centered objectives. Ironically, institutions whose efficiency measures are lower than expected – or which actually decline – may be doing a better job of serving students and meeting the state's need for educated citizens than if they restricted admission to only those students whose performance could ensure that the institutions' statistics improved.

Students

Has performance measurement for accountability led to improvements in student learning and achievement? The original focus of the statewide performance measures was to ensure that the state's investment of resources in its public universities was being efficiently used, *not* student learning. However, institution-specific measures of performance have opened the door for improvement in learning and student achievement. This development is discussed in more detail below.

The Value of Institution-Specific Measures

Institution-specific measures, performance measures chosen by each institution to reflect their distinctive institutional mission, offer benefits to institutions and policymakers that are the opposite of statewide measures. Institution-specific measures may lack the continuity, comparability, or simplicity of statewide measures. However, they provide universities with a way of focusing on aspects of their performance than can be controlled (and, improved), and they permit universities to link performance measurement to key institutional priorities.

Central Washington University, for example, has launched a curricular initiative to involve their students in one-on-one faculty research and coop experiences. Hence, they built institution-specific accountability measures that focus on this initiative. They have chosen to report on "the percentage of students participating in cooperative education internships" and the "percentage of faculty mentoring students."

At The Evergreen State College (TESC) the general education curriculum has been a primary focus of attention in recent years. Concerned especially with their students' quantitative reasoning and computer literacy skills, TESC proposed for 1999-2001 a new performance measure: increasing quantitative skills and computer use among freshman students.

Common to all of these measures are two important features. First, they provide university administrators with a valuable source of evidence about their success in achieving a central academic initiative.

Moreover, these are measures over which the university can exercise a significant measure of control through the policies it adopts. Seen from the perspective of university administrators, faculty, and students, institution-specific performance measurement has succeeded both at focusing campus attention and at generating useful information.

THE FUTURE OF ACCOUNTABILITY: WHERE ARE WE HEADED?

The HECB believes that continuity in the collection of performance data in higher education will pay valuable long-term dividends to the state – particularly at the level of statewide policy development. However, a number of efforts are under way that offer some promise for improvement of the accountability system in the coming years.

For example, coordinated, statewide efforts to assess student learning outcomes have been initiated through partnerships among the baccalaureate institutions. These efforts focus on devising ways to assess our students' skills of information and technology literacy, quantitative reasoning, and writing. In addition, the HECB is supporting efforts to assess students' critical thinking skills through a grant to Washington State University from the Fund for Innovation and Quality in Higher Education.

The HECB finds considerable value in these efforts and supports their continuation. We recommend that the Legislature place a priority in the state Fund for Innovation for projects that would advance these four initiatives. This approach would provide a clear incentive for institutions to step up their efforts along these lines – and would provide clear priorities for the HECB to use in evaluating the proposals for competitive Fund for Innovation Grants.

Such an approach would help the state answer the question of whether these assessment initiatives are likely to improve the state's accountability system. The HECB believes it is very likely that these efforts will enable colleges and universities to help students. While the Board is hopeful about the connection between assessment and accountability, it is unclear whether these targeted assessment initiatives can be translated and enlarged into a statewide system of performance measurement.

A number of issues will come into play as the state examines the possible linkage between the assessment of student learning outcomes and the need for a statewide performance accountability system that indicates the effectiveness and efficiency of the state's investments.

Policy-makers interested in accountability typically seek information about student learning that is concise, that represents or includes all students, and that can be replicated over time. They want to know whether test scores are up or down compared to last year; whether students are performing better or graduating more quickly at some schools than others; or whether some kinds of students are faring better than others.

Teachers and academic administrators have a very different focus: they want to know whether a particular assignment, teaching strategy, course, or major is successful at promoting learning. Seen from their perspective, standardized assessment instruments are unhelpful: they provide no information about what students have learned in their own classroom, department, or program. Assessment for the purpose of improving instruction may not generate information that is continuous, representative (or, comprehensive), or clear and concise.

In short, there is a gap between assessment for the improvement of classroom instruction and assessment for accountability. It will take a sustained effort to bridge this gap and produce an assessment system that meets the needs of both policymakers and administrators and faculty.

RECOMMENDATIONS FOR 2001-03

We recommend that the 2001-2003 Legislature continue much of the accountability policy of the preceding two biennia, making some refinements and improvements to the existing policy to reflect the discussion from preceding sections of this report. The HECB recommends:

1. **Continuation of the current statewide performance measures**, such as the graduation efficiency index, five-year graduation rate and overall student retention from year to year. The Legislature and Governor have a legitimate and enduring interest in ensuring that state appropriations are efficiently used. The current statewide performance measures provide them with evidence of this, and therefore they should be continued. These measures also reflect the longstanding priority of the HECB that performance accountability remains an important state objective that addresses the reasonable expectations of both taxpayers and our state's leaders.

2. Because statewide measures of institutional performance are not clearly linked to the efforts and choices of universities, the HECB continues to believe that the state should not attach budget penalties to measures that are not directly within the control of the institutions. Therefore, the HECB recommends the state **continue the current practice of monitoring, but not attaching budget penalties,** to measures of institutional performance.

3. The HECB strongly recommends the **continuation and refinement of institution-specific goals**. It is essential that each institution address its own unique challenges and problems with an eye toward better outcomes for students, in light of its distinctive mission. The HECB pledges to continue to work collaboratively with the institutions to improve the usefulness of each institution's chosen indicators to state policymakers.

4. The HECB recommends the Legislature and Governor **establish a priority for 2001-2003 in the Fund for Innovation** for projects that either (a) improve the quality and usefulness of institution-specific measures; or (b) support the statewide student learning initiatives now under way. The HECB believes this kind of incentive is very consistent with the goals of the 2000 Master Plan for Higher Education, which promotes both a student-centered approach and greater institutional flexibility to meet the challenges ahead in education. These goals have been endorsed by the Legislature, and this recommendation offers a cost-effective means of strengthening this state priority. Because the Fund for Innovation statute must be amended each biennium to reflect the state's evolving priorities, it offers an effective vehicle for the support of these institutional efforts.

5. The HECB recommends the Legislature **re-evaluate the performance goals that it originally established for statewide performance measures**. Four years of experience and many years of national data point to one conclusion: no public university in the nation is likely to achieve the performance goals established by SB 6108.

   Harvard University, for example, has a freshman retention rate that meets the 95% (undergraduate) retention rate stipulated in ESSB 6108. However, public universities, who educate a far broader range of learners, have rates of retention and graduation that are far lower. In neighboring Oregon, for example, the average freshman retention rate at its seven

public universities is 76.5%, and about one-half of first-time freshmen graduate within six years. Both rates are far below the goals set for Washington's universities.

It is important to evaluate continuously the performance of the state's colleges and universities, and to evaluate them against meaningful standards of achievement. Policymakers may find it more useful and informative to ask, "Are you doing better than before?" or "Are you doing as well as peers around the nation?" rather than "Are you at 90 percent or 95 percent?"

In addition, the HECB's 2000 Master Plan contains goals for specific actions – the expansion of e-learning opportunities for students and the more efficient use of the state' capital resources – which may offer the opportunity for the state to develop different, but highly useful, goals for institutional performance. The HECB remains committed to work with institutional leaders, legislators and representatives of the Governor and the public to refine the accountability system in ways that reflect the needs and desires of the citizens of the state.

APPENDICES

Appendix I: Institutional Reports on Performance

Appendix II: Senior Writing Study Progress Report

Appendix III: Information/Technological Literacy Progress Report

Appendix IV: Quantitative Reasoning Progress Report

Appendix I: Institutional Reports on Performance

- **Central Washington University**
- **Eastern Washington University**
- **The Evergreen State College**
- **University of Washington**
- **Washington State University**
- **Western Washington University**

Central Washington University

Common Measures	1995-1998 Baseline Performance	1997-1998 Performance	1998-1999 Performance	1999-2000 Performance	1999-2000 Target
Graduation Efficiency Index					
a. Freshmen	89.7%	87.9%	86.9%	86.7%	91.0%
b. Transfers	84.5%	83.2%	82.4%	82.5%	85.0%
Undergraduate Retention (Overall)	80.8%	80.3%	80.7%	82.0%*	82.0%
5-Year Freshman Graduation Rate	39.8%	38.9%	39.3%	44.6%	40.5%
Institution-Specific Measures					
Faculty Productivity					
a. Student Learning Outcomes	32.9%	32.9%	71.2%	92.6%	50.0%
b. % Faculty Mentoring Students	19.4%	26.3%	24.1%	17.1%	22.0%
c. Ratio of Student FTE to Faculty FTE (IPEDS Faculty)	22.6	*	*	21.6*	22.7
Transfer Students With Declared Majors	65.4%	79.5%	76.9%	79.8	70.0%
Minority Graduation Rate	20.9%	21.6%	22.6%	26.6	22.0%
Internship Participation	6.6%	6.8%	7.3%	7.6%	7.0%

***** See comments below.

Summary: CWU met or exceeded performance targets on six of ten measures.

Central Washington University

What the Measures Mean

Student Learning Outcomes: Measures the percentage of degree programs with specifically stated, publicized learning outcomes.

% Faculty Mentoring Students: Measures the percentage of full-time faculty mentoring students in established programs that incorporate a faculty student mentoring relationship (e.g., CWU research symposium, McNair Scholars Program).

Ratio of Student FTE to Faculty FTE: The ratio of FTE students to the FTE faculty for IPEDS faculty.

Transfer Students with Declared Majors: The percentage of undergraduate transfer students who have declared majors by the end of their third quarter at CWU.

Minority Graduation Rate: Ratio of the number of minority students graduating to all enrolled minority students fall quarter (averaged over three years).

Internship Participation: Percentage of students participating in cooperative education internships (averaged over three years).

Comments On Performance

CWU increased undergraduate retention by approximately one full percentage point. The remainder of the increase in the retention measure is due to improved data tracking.

CWU has substituted the FTES/FTEF ratio for the SCH/FTEF ratio because the former is used in internal management information reports. The decline in performance in 1999-2000 was due mainly to enrollment shortfalls.

Eastern Washington University

Common Measures	1995-1998 Baseline Performance	1997-1998 Performance	1998-1999 Performance	1999-2000 Performance	1999-2000 Target
Graduation Efficiency Index					
a. Freshmen	88.1%	87.7%	87.5%	87.4%	90.1%
b. Transfers	78.3%	79.1%	77.1%	77.7%	81.5%
Undergraduate Retention	88.5%	89.3%	86.4%	90.2%	87.5%
5-Year Freshman Graduate Rate	42.1%	47.9%	37.3%	44.7%	42.9%
Institution-Specific Measures					
Faculty Productivity					
a. Student Credit Hours/FTE Faculty	285.6	295.5	334.6	332.7	281.0
b. Use of Enrollment Resources	n/a	49.6%	48.8%	52.7%	57.3%
Internship/Service Learning Experience	n/a	2,653	2,877	2,930	2,407
Courses Using Distance Learning Technology	1.4		10.0	35	10.8

Summary: EWU met two of its four common targets (undergraduate retention and 5-year graduation rate), and fell short of two others. It met three of its four institutions-specific measures for 1999-2000.

Eastern Washington University

What the Measures Mean

Student Credit Hours/FTE Faculty: A ratio of student credit hours to the number of IPEDS-defined faculty for fall quarter.

Use of Enrollment Resources: Total Number of Class Spaces filled divided by the total number of class spaces offered.

Internship/Service Learning Experience: Total number of students taking internship or cooperative education and service learning credits.

Courses Using Distance Learning Technology: The annual number of courses offered by faculty who use compressed video and/or the worldwide web.

The Evergreen State College

Common Measures	1995-1998 Baseline Performance	1997-1998 Performance	1998-1999 Performance	1999-2000 Performance	1999-2000 Target
Graduation Efficiency Index					
a. Freshmen	92.4%	92.2%	93.7%	92.5%	92.5%
b. Transfers	89.8%	90.3%	91%	91.7%	90%
Undergraduate Retention (Overall)	74.6%	77.1%	76.9%	76.1%	--
Freshman Retention	66.1%	71.1%	65%	70%	73%
5-Year Freshman Graduate Rate	46.9%	49.1%	48.2%	52.4%	45%
Institution-Specific Measures					
Freshman – "Familiarity w/Computers"	2.28	2.20	2.16	2.15	2.38
Freshman – "Quantitative Thinking	1.88	1.72	1.87	1.79	1.98
Diversity					
a. Retention, Students of Color (Olympia)	75.1%	79.7%	79.2%	77%	79%
b. Faculty Development	34.0%	42.3%	45.2%	52%	50%
c. Student Diversity Learning	3.2	3.3	3.2	3.3	3.3

Summary: Evergreen met or exceeded targets on five of its nine measures (freshman and transfer GEI, Five-Year Graduation Rate, Faculty Development, and Student Diversity). The College showed improvement on Freshman Retention, increasing by 5% from the prior year but fell short of the 2000 target by 3%. Declines were measured for Retention of Students of Color on the Olympia campus and for both measures of student learning among freshmen students.

The Evergreen State College

What the Measures Mean

Life-Long Learning Index: TESC has used the "Life-long Learning Index" from the College Student Experience Questionnaire (CSEQ) as its faculty productivity measure. This index is a composite measure of students' estimated gains in learning in 11 areas, including gains in quantitative thinking skills, understanding developments in science and technology, and familiarity with the use of computers. For the current biennium, Evergreen is focusing on two specific items within this index and on the improvement reported by freshman students. The items are learning gains in "familiarity with computers" and "quantitative thinking." This focus is consistent with institutional initiatives related to General Education at Evergreen.

Retention: While reporting overall fall-to-fall retention, Evergreen elected to focus on retention of freshmen students in the current biennium. Again, this is consistent with an internal focus on improvement. Evergreen also selected retention of students of color on the Olympia campus as one of its three diversity measures.

Faculty Development: The proportion of faculty participating in development work designed to enhance their capacity to understand and work with diverse groups.

Student Diversity Learning: Students' reported gains in "understanding other people and the ability to get along with different kinds of people" (from the CSEQ).

Comments on Performance

Graduation Efficiency Index: While meeting or exceeding targets for 2000 for both freshmen and transfer students, movement of these measures has been slight. TESC believes it is approaching the upper bounds of these measures and anticipates small variation in future measures, either up or down, of no practical significance.

Freshman Retention: Freshman retention has been erratic at Evergreen. It improved by 5% in 1999-2000, and the 2000 target is even more ambitious. TESC will continue efforts to improve freshman retention.

Five-Year Freshman Graduation Rate: Evergreen's freshman graduation rate is highly correlated with freshman retention to the sophomore year. The current year's improvement in this measure was anticipated because of a slight upturn in retention to the sophomore year for this cohort of entering freshmen. Next year's measure is very likely to decline for the same reason: retention to the sophomore year declined for the cohort of freshmen whose five-year graduation rate will be reported next year.

Freshman Learning Gains in "Familiarity with Computers" and "Quantitative Reasoning": Neither of these measures met 2000 targets. Evergreen began a systematic effort to increase the prevalence of quantitative reasoning across the curriculum this summer, and it expects improvements in student learning over the next few years as a result of this effort.

Retention of Students of Color on the Olympia Campus: This measure dropped 2% in 1999-2000. TESC does not view a one-year decline of this size as reason to suspect a problem warranting a great deal of additional attention. It will continue with current strategies for improving student retention and use next year's measure as an indication of whether additional study and strategies are necessary.

Faculty Development: Evergreen exceeded its goal on this measure. The College will continue to support a variety of faculty development opportunities directed at teaching and learning in a diverse environment.

Student Diversity Learning Outcome: This student learning target was exceeded. The College will continue efforts to promote students' abilities to work and live in a diverse society through explicit curriculum planning, support services and faculty development.

University of Washington

Common Measures	1995-1998 Baseline Performance	1997-1998 Performance	1998-1999 Performance	1999-2000 Performance	1999-2000 Target
Graduation Efficiency Index					
a. Freshmen	89.3	89.4	90.3	90.5	90.7
b. Transfers	81.3	81.4	83.3	83.1	83.0
Undergraduate Retention (Overall)	87.1%	87.4%	87.4%	87.0%	88.9%
5-Year Freshman Graduate Rate	62.9%	63.9%	65.8%	63.5%	64.3%
Institution-Specific Measures					
Faculty Productivity					
a. Enrollment Demand Satisfied	84.6%	86.0%	84.8%	85.8%	85.8%
b. Quality of Instruction	n/a	93.7%	92.9%	93.0%	95.5%
c. Research Funding/Faculty Member	n/a	$213,530	$238,845	$256,036	$215,000
d. Student Credits Hours/Faculty FTE	n/a	202.8	203.5	200.54	205.2
Instruction					
a. # undergrads with intense research involvement	450	653	2,412	2,838	725
b. Individualized Instruction	3.9%	4.0%	4.2%	4.6%	4.12%
c. Public Service Internships	550	696	1,330	3,137	905
d. % undergrads in faculty research	21.5%	22.4%	24.0%	24.1%	23.0%

Summary: The University of Washington met all four of its targets for undergraduate instruction, and two of its four targets for faculty productivity. It met its 1999-2000 target for transfer graduation efficiency, but narrowly missed its corresponding target for freshmen. Its retention and 5-year graduation targets were not met.

University of Washington

What the Measures Mean

Enrollment Demand Satisfied: The proportion of enrollment demand satisfied by offered enrollment space (course openings).

Quality of Instruction: Percent of students evaluating "amount your learned in the course" as "good or better" (3.0 or above on 5 point scale) on standardized course evaluations.

Funding for Research per Faculty FTE: Grants and contracts per faculty FTE (in nominal dollars).

Student Credit Hours Instructed Per Faculty FTE: (Hours at graduate level are multiplied by 1.5 hours, then added to undergraduate hours to create total student credit hours).

Undergraduate Credits Taken as Individualized Instruction: Numbers of hours taken as individualized instruction/all undergraduate hours.

Number of Undergraduates Involved in Research: Number of students who receive research grants, data provided by Office of Undergraduate Education.

Percent Undergraduate Credits Taken as Individualized Instruction: This measures one-on-one mentoring opportunities for undergraduates offered by University faculty.

Number of Undergraduates Involved with Public Service Internships: Data provided by Carlson Center For Public Service.

Percent of Undergraduates Reporting a Research Experience with Faculty: Derived from an annual survey of graduating senior students, provides a measure of the cumulative experience over all undergraduate years.

Comments on Performance

With respect to the common measures, the UW is essentially holding steady, with a slight increase in one instance, and slight decreases in others. Student progress improvements implemented during the past five years have, in most cases, reached their level of maximum effect. Important exceptions are, however, the Degree Audit Requirement System (DARS) and the Course Applicability System (CAS). Each of these systems has been put into effect only this year, and so their impact -- especially on the graduation efficiency of transfer students -- is expected in years to come.

As expected, the five-year graduation rate declined to 97-98 levels. This was an expected change based on the weaker academic characteristics of the cohort that entered in 1994. Improvements are expected in future years consistent with those seen previously.

Faculty productivity also demonstrated stability, with slight positive change in three of four submeasures. The University's improvement in enrollment demand satisfied is especially significant. This increase is the result of a three-year effort to take a fresh, unit-based approach to aligning faculty teaching with student enrollment demands, and to improve efficiencies in departmental curricular offerings wherever possible. Further improvements are expected in the future.

Washington State University

Common Measures	1995-1998 Baseline Performance	1997-1998 Performance	1998-1999 Performance	1999-2000 Performance	1999-2000 Target
Graduation Efficiency Index					
a. Freshmen	90.2%	90.5%	89.5%	88.6%	91.5%
b. Transfers	81.3%	81.8%	80.9%	82.3%	83.6%
Undergraduate Retention (Overall)	84.6%	84.2%	83.5%	84.5%	--
Freshman Retention	83.9%	83.0%	83.2%	84.1%	84.7% [1]
5-Year Freshman Graduate Rate	54.4%	53.2%	52.0%	53.6%	55.9%
Institution-Specific Measures					
Faculty Productivity					
a. Student Credit Hours/Faculty FTE	198.1	198.9	199.4	197.9	207.7
b. Individualized Enrollment/Faculty	2.8	3.7	3.5	3.4	3.4 [2]
c. Research and Scholarship	79.9%	80.5%	81.0%	87.9%	80.8%
Technology for Learning					
a. Distance Student Credit Hours	21,680	24,935	31,774	44,099	26,677
b. Degree Programs via Distance	4	6	9	11	9
c. Reengineered Courses	60	137	344	659	200 [3]
d. Classrooms with Technology	48.0%	60%	61.0%	68%	65%

Summary: WSU met or exceeded its targets for all but one institution-specific measure of performance (student credit hours/faculty FTE). It fell short of its targets for the three common performance measures.

Washington State University

What the Measures Mean

Freshman Retention: In order to better manage its efforts, WSU has set a target for Freshman Retention rather than for Overall Retention, while continuing to report Overall Retention, as well.

Student Credit Hours per Faculty FTE: Individualized Enrollment/Faculty: Measures the amount of work faculty do with students in the form of supervising undergraduate research, internships, senior theses, private lessons, and independent studies. Because juniors and seniors typically take these courses, the number has declined along with the size of these classes; when the currently larger freshman and sophomore classes reach this level, the number will grow again.

Research and Scholarship: Measures percent of faculty completing scholarly work. Each college defines what constitutes scholarly work in that field and provides a count of the number of members who have completed the expected amount and type of scholarship during the past year.

Distance Student Credit Hours: Credit hours earned through interactive video courses, videotape courses, online courses and multiple mode courses.

Degree Programs via Distance: Number of different degree programs offered entirely at a distance, through electronic media such as interactive video, on-line courses, etc.

Reengineered Courses: Number of courses reengineered to substantively include technology in ways that integrate learning-centered, computer-mediated communications to extend and enrich students' experience of the course beyond the temporal constraints of the course's scheduled meeting times. Because so many courses now include technology in one way or another, this definition has become obsolete and will be revised before the next report.

Classrooms with Technology: Percent of University classrooms equipped to support technology-intensive teaching.

Comments on Performance

Two measures that have received intensive institutional focus – Transfer GEI and Freshman Retention -- appear to be gradually responding to these efforts. The trend is too small and too short term, however, to lead to any conclusions at this time. Use of Technology for Learning is expanding rapidly throughout the WSU system.

Western Washington University

Common Measures	1995-1998 Baseline Performance	1997-1998 Performance	1998-1999 Performance	1999-2000 Performance	1999-2000 Target
Graduation Efficiency Index					
a. Freshmen	86.6%	86.4%	87.0%	87.2%	86.7%
b. Transfers	80.0%	80.6%	81.5%	82.1%	80.2%
c. Transfers graduating with the B. S. in science	n/a	n/a	71.1%*	74.6%	71.3%
Undergraduate Retention (Overall)	86.3%	85.8%	84.8%	84.4%	86.5%
Undergraduate Retention (freshman to soph.)	n/a	n/a	81.3%*	78.4%	82.5%
5-Year Freshman Graduation Rate	54.2%	54.7%	55.3%	52.8%	54.0%
5-Year Frosh Grad. Rate among Minorities	n/a	n/a	40.7%*	36.7%	41.0%
Institution-Specific Measures					
Faculty Productivity					
a. Individualized Credit/FTE Student	n/a	n/a	1.37	1.70	1.45
b. SCH/Undergrad FTE in Writing Courses	n/a	n/a	2.20	2.21	2.05
Hours Scheduled in Computer Labs	n/a	n/a	24.9	25.7	24.0
Departments Adopting Advising Model	n/a	n/a	0.0%*	24.0%	25.0%

* For this measure, the baseline was established as the mean of three-years' scores: 1996-97, 1997-98 and 1998-99.

Summary: Performance outpaced targets for all three GEI measures and for three of the four institution-specific measures. For a fourth institution-specific measure, performance was within rounding error of the target. For measures of retention and graduation rate, however, Western was consistently below its targets.

Western Washington University

What the Measures Mean

Individualized Credit/FTE Student: Measures number of individual instructional activities per FTE student. These activities include internships, work on faculty research projects, and other one-on-one activities.

SCH/Undergrad FTE in Writing Courses: Reports student credit hours per undergraduate FTE in courses designated as principally or specifically writing-based.

Hours Scheduled in Computer Labs: Measures the number of student instructional hours scheduled in university or departmental computer labs per FTE undergraduate.

Proportion of Departments Adopting Advising Model: Measures the proportion of Western's academic departments that have fully implemented all elements of Western's new Departmental Advising Model. Components: a) A clearly defined departmental advising program, with advisor, location, hours, etc. easily accessible and known, b) a departmental advising web page fully operational, based on the established template and criteria, c) provision of an individualized, written plan of study to each student upon declaration of the major, d) sponsorship of at least one event annually to help pre-majors decide on a major, and e) sponsorship of at least one event annually to help advanced majors in the department explore career and graduate school options.

Comments on Performance

After at least fifteen years of extremely stable GEI scores, Western has experienced a slight increase in GEI this year among native freshmen and a remarkably large increase among transfers. These changes are the product of intensive efforts to increase course access and transfer coordination, and policy changes in students' ability to drop courses.

Western has gone through a five year period of steadily declining retention and is therefore entering what will be a lengthy period of steadily declining graduation rates. (Graduation rates will inevitably decline because the lower retention rates among the freshman, sophomore and junior classes during earlier years mean fewer students remain to graduate.) Western believes the primary cause of these declines is the decline in student selectivity during the past five years. In addition, Western has grown rapidly, taxing its

facilities and diminishing its traditional “small school” feel. WWU is in the midst of making changes in hopes that the decline can be reversed soon. Finally, Western’s retention and graduation rates were exceptionally high during the baseline years—among the top 5-10 percent of self-identified peers.

Western has performed well on all institution-specific measures. Focused institutional efforts that began three years ago, when the accountability plans were first put in place now appear to be taking effect. WWU’s new advising measure is particularly noteworthy. No departments had advising web pages one year ago and most lacked several other elements of the model as well. Today, one-fourth have all elements and another quarter are very close.

Appendix II

The Washington State Senior Writing Study Progress Report

August 25, 2000

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The Washington State Senior Writing Study
Progress Report

August 25, 2000

Gerald M. Gillmore, University of Washington

Impetus

During the Spring of 1998, the Intercollegiate Academic Officers (ICAO) asked that a meeting be convened to determine how the institutions' responses to the accountability mandate could be expanded to include student learning outcomes. The public, four–year institutions' assessment coordinators and a few accountability committee members met in an all-day session to bring assessment considerations to bear on designing accountability measures that addressed student learning. There was substantial agreement that the common accountability measures of that time were efficiency-oriented and fell short of indexing our primary goal of truly educating students and all that this goal entails.

In preparation for that meeting, we investigated the assessment and accountability plans and activities of other states, and we also explored ideas that might come from the K-12 world and the wider world of educational research. Our investigation showed us that no other state has solved the problem of developing accountability measures relating to student learning outcomes, nor did we find any help elsewhere. No one seems to have a practical and valid measure of significant student learning outcomes that could be used in an accountability context.

Two ideas surfaced in this meeting. The first was using student self-reported outcomes. All institutions have survey data from current students and alumni. The second idea was to evaluate the best writing of seniors. The latter spawned the statewide activities discussed here.

The Plan

Assessing writing is very difficult. However, it has two immediate advantages. First, there is universal agreement that writing is an important skill. Second, writing perhaps offers us the best window into student reasoning ability. For accountability, the difficulty of separating thinking and writing skills can be an advantage because assessing student writing, while important in and of itself, can also help us think deeply about students' critical thinking abilities.

The Senior Writing Study assumes that one way in which programs can be judged by the best writing that students within these programs can do when they graduate. (This affirmation should not be confused with the writing of our best students, which is not consistent with our purposes.) By best writing we mean the following:

- writing that students are motivated to do well
- writing about a subject that students should know and care about
- writing done in response to a challenging and well-formulated assignment.

"Best" writing is done in the context of fields of study. There is considerable agreement that the characteristics of good writing differ from discipline to discipline and that the writing students do in their majors, particularly in capstone courses in their senior year, is what best characterizes our learning goals for students. Furthermore, writing at this level clearly differentiates college-level writing from high school-level writing. The accountability question we faced was, can the quality of an important component of an institution's educational program be validly judged by reading a sample of senior-level papers? We attempted to address this question with careful pilot testing and have continued to refine the methodology from 1998 to the present.

The three annual studies we completed required two basic steps: collecting student papers and scoring these papers. For the former, we decided that the best way to proceed would be to identify courses in a limited but representative set of majors that required students to write "good" papers and take a random sample of the papers produced. For scoring the papers, we decided that we needed faculty from the corresponding disciplines, writing specialists, and *members of the community who were working in those fields in which papers were collected.* The latter were invited because they provide the important perspective of employers and of the writing that will be expected on the job. Readers evaluated papers blindly: names, faculty comments, grades, and the institution of origin were removed from all papers.

Summer 1988. We collected papers from spring quarter (semester) classes from the following disciplines

Sociology
Biology
English
Engineering/Technology
Business

One instructor from each discipline in each institution was asked to provide a random sample of about ten student papers, along with the assignment. WSU was already out of session and, thus, was unable to provide any papers. Two – 2-day workshops were held in the summer at the University of Washington. The first did not include representatives from business and industry and was mainly used to develop scoring criteria. This development was done in the context of a sample of papers. One interesting result was that while all disciplines were satisfied with the same criteria, many elements were interpreted differently across disciplines. Even so, the set of scoring criteria was a major benefit of the study in and of itself. The second session of 1998 was spent training raters (ourselves), revising the rubrics a little, and scoring papers. In all, 83 papers were read and rated during these two days.

Summer 1999. The second study session was held in one 3-day summer session at Western Washington University. The same five disciplines were studied, but new papers were selected, mostly from Spring 1999 classes. In advance, the scoring rubric was modified slightly. Raters included faculty of each discipline, writing specialists, assessment specialists, a community college representative, and representatives of the community. In each disciplinary group, several papers were read and discussed and then each paper was read independently by two raters. A third rater was used only when consensus could not be reached, which seldom happened. In the second pilot study, 169 papers were read and rated.

Summer 2000. The third study was held in one 3-day summer session at the University of Washington. The disciplines studied were as follows:

Education
Biology
History
Psychology
Business

Two major improvements for this session were that each campus supplied one faculty reader for each discipline and fewer papers were collected from more classes. As before, writing and assessment specialists, community representatives, and a community college representative shared in the paper-reading process. The same basic process was followed as in previous sessions. During this three day session, 225 papers were evaluated.

Some Conclusions

There are three levels at which the potential value of this project can be considered. First there is *faculty development*. In this regard, the sessions were an unqualified success for those who attended, especially the first year. All found participation to be a remarkable experience, and there was much discussion on the margins about how the participant's teaching would change. Two participants of the first session illustrate this positive reaction.

Carmen Werder (Assoc. Director, University Writing Center Programs, Western Washington University): *This project has already proven itself in terms of faculty development. The conversations around those stacks of papers were some of the most valuable ones I have experienced anywhere. Everyone I talked to agreed. Any activity that gets faculty across disciplines and from many schools in the same room reading and discussing real student writing deserves support*.

Janet Ott (Professor of Biology, The Evergreen State College): *This has been the most useful four days that I have ever spent on education in general and on writing in particular*.

A second potential benefit is where assessment's interest is greatest: *feeding information back to the departments* about the writing of their students. It is important to remember that the purpose of this project is to evaluate writing programs and not individual students. One powerful message to be delivered to departments is that poor assignments can lead to poor writing. A sub-group of participants has formed a statewide committee to study the issue of assignments and how good practices can be expanded. Another pertinent result was that papers were rated lowest, on average, on the reasoning dimension, suggesting that students need more instruction and practice with reasoning in their disciplines. How specific results can be communicated to particular departments is still problematic due to the limit sample and the statewide nature of the study.

The third potential benefit lies in *accountability*. Perhaps, it can be said that our sense of accountability to the state is nowhere better demonstrated than by the very conduct of this project. Yet, often accountability is indexed by single numerical values whose function is to represent an entire institution's performance on a given dimension. The thought of reducing all of the rich information that derives from the Senior Writing Project down to a single number or a few numbers by which the quality of education in writing is judged is understandably worrisome.

The Future

We have done three years of research, and each year has shown improvement in the process. We plan to continue to perform annual reviews of student papers and incrementally improve the quality of the process and, in turn, the quality of the product. Even in the best of cases, there will be many places in which random and systematic errors will be introduced. However, we can improve the validity of the results by applying lessons learned each year to the subsequent year. By continuing the study, especially with reviewers representing the professional community, we will demonstrate our commitment to excellence and, more particularly, demonstrate that we are accountable with regard to students' writing ability.

In planning for the Summer 2000 session, we will have the following goals:

Papers. For each of five disciplines, we will aim for two papers, randomly chosen from each of five classes from each campus. This goal if satisfied will net 300 papers from 150 classes to be rated. We will make strong attempts to get assignments with each paper, and we will try to further improve our choice of courses such that all use quality assignments that will lead students to perform up to their ability.

Participants. To read the papers, we will continue to solicit one faculty member from each discipline at each campus, and one writing specialist at each campus, and one community professional from each discipline. Assessment specialists and the community colleges will also be represented.

Disciplines. The nature of this project requires sampling of disciplines and of students within disciplines. A statewide study of all seniors in all disciplines would be prohibitively expensive and time consuming. However, since our goal is programmatic evaluation, as opposed to the evaluation of individual students, careful random sampling can be acceptable. We expect to again read papers from five disciplines**.** We will continue to rotate through disciplines, with some overlap from year to year. We will work on assuring that similar standards are used across disciplines.

Appendix III

Information/Technological Literacy Progress Report

August 25, 2000

Appendix III

Information/Technological Literacy Progress Report

August 25, 2000

Steve Hunter, The Evergreen State College

A Brief History

Assessment Colloquy

In late October 1999, 60 faculty and staff attended a 2-1/2 day discussion of Assessing Student Learning in Information/Technological Literacy. Campus teams included librarians, instructional technologists, faculty knowledgeable and interested in this topic representing various disciplines, and assessment experts.

Participants endorsed, with some revisions, the American College Research Libraries Information Literacy Standards and began the harder work of moving toward measurable learning outcomes. Institutional teams committed to a statewide project to further work on this topic patterned after the Statewide Writing Project including:

- (1) an inter-institutional planning group – probably three people from each campus including a librarian/instructional technologist, a faculty member and an assessment person;
- (2) collection of examples of classroom assignments intended to incorporate "information literacy";
- (3) at least ideally, collection of a second piece of writing by the student describing the processes used to collect, evaluate and employ information/technology in the assignment;
- (4) An inter-institutional summer workshop patterned after the Writing Workshops of the past two summers where faculty, assessment types and community members evaluate examples of student work and develop a rating rubric for "information/technological literacy".

Institutional Commitments to Student Learning Outcomes

In November 1999, resulting from a series of discussions about the future of accountability measures in the state of Washington, Provosts from the baccalaureate institutions, HECB staff, members of the legislature and legislative staff agreed to add measures of "student learning outcomes" to the accountability efforts. Four areas were endorsed: Writing, Information/Technological Literacy, Quantitative Reasoning, and Critical Thinking.

House Bill 2375

During the 2000 legislative session, House Bill 2375 was enacted naming Information/ Technological Literacy as a Student Learning Outcome. The bill sets forth a timeline including summer workshops in 2000, 2001, 2002, a Full Scale pilot
in 2002-03 academic year, and a Full Scale Study in 2003-04. Progress reports are due to legislature each year beginning in 2001. A regular reporting cycle is scheduled to begin with the January 2005 legislative session.

Inter-institutional Planning Efforts

During the 1999-2000 academic year an inter-institutional planning group including representatives from the HECB and Council of Presidents worked to:

- identify criteria for selecting examples of student work on the topic of Information/Technological Literacy;
- design a "reflective essay" intended to illuminate the processes students employed to produce relevant work on the topic;
- collect examples of student work and reflective essays from each campus and secure participants for the Summer 2000 Information/Technological Literacy workshop; and
- design the first summer workshop.

Summer 2000 Information/Technological Literacy Workshop

On July 19-21 30 faculty and staff from The Evergreen State College, Western Washington University, Central Washington University, Eastern Washington University, The University of Washington, Washington State University, a representative from the Higher Education Coordinating Board and the Council of Presidents met in Ellensburg for the first Information/ Technological Literacy workshop. The objectives for this meeting included:

- gaining a collective sense of what information literacy looks like on the various campuses;
- beginning to develop criteria colleges could use to evaluate student work; and
- confirming whether or not some or all of the ACRL standards could be used as part of the evaluation criteria.

Defining Information/Technological Literacy

A conversation about the nature of information literacy and its relationship to technology indicated that faculty across campuses agreed that information literacy is both a process and a state, i.e., if one is literate, one can DO something. What this "something" is involves the ability to engage texts in order to find ideas of others against which one's own ideas can be tested. Being literate means to be able to test one's own knowledge continually, to challenge one's own knowledge base. The "texts" used in this endeavor could be written text, music, various art forms, images, dance, etc. To demonstrate that they were information literate, students would need to be able to:

- identify a problem or initiatory experience worth exploring,
- gather information and evaluate the feasibility of the question or experience,
- reformulate the question if necessary,

- gather data from a variety of sources,
- interpret the data accurately, and,
- present the results clearly, honestly, ethically, and appropriately with a particular audience in mind.

The Role of Technology

Participants expressed differing opinions about whether all students needed to be skilled in the use of technology. Opinions ranged from "no," to "yes, maybe," to "yes, absolutely." Some group members raised the question of whether a person actually has to be able to DO something with technology in order to be information literate. Most participants agreed that everyone needs to be able to:

- examine the ethical and social implications of using technology,
- access information and thus be critical users of technology,
- select the most appropriate technology to support communication.

Most participants seemed to feel that the types of technology students need to be familiar with are content area specific. That is, science majors might need to learn how to use particular programs for data analysis while dance majors might need other types of technological knowledge. All participants agreed that having technical skill in the use of computer technology is insufficient if knowledge of the subject matter is absent. There was also widespread agreement that "technology" extends beyond the ability to use computers and computer programs.

Assessing Information/Technological Literacy

The second and third objectives were explored through reading and evaluating existing student products, exploring the construction and use of rubrics, and re-examining the ACRL standards. Participants concluded that:

- a single product is insufficient evidence of student achievement; a reflective essay needs to accompany products,
- accurate assessment requires an integrative reflective process (not one imposed at the end),and/or a portfolio of multiple products,
- the assessment should take place in a meaningful context, not as an isolated test,
- the ACRL standards capture much of information literacy and should be used as part of the assessment instrument we develop,
- rubrics should be developed for each ACRL standard and used to assess student achievement,
- standards and rubrics should be developed to capture the technological aspect of information literacy.

Participants were interested in developing an assessment process that would capture the following:

- In the process of exploring a question, what did the student find, choose, and reject?
- How was a well-formed question developed?
- To what extent, and how, was the process recursive?

- How did the analysis occur? What options were and were not explored? Was the analysis accurate?
- To what extent did the student engage, tolerate, and account for other perspectives and engage with diverse voices?
- Could the individual student sit at a terminal, do a search, evaluate the information, and print out information to demonstrate ability?
- Did the student have the ability to select the right tool for the job? After the best tool was selected, could the student make it work? Could the student evaluate what she/he did?

Some unanswered questions included:

- Is it reasonable to look for information and/or technology literacy across all curricula or should it be restricted to suitable subject areas?
- When should information/technology literacy be assessed? After the first two years? In the graduation year?
- What existing evaluation tools could be examined?
- What kinds of assignments could be used to assess information literacy? How can a deliberate development of appropriate assignments be developed?

Conclusions and Commitments for 2000-01

1. We will employ ACRL standards in assessment with the following caveats:
   --the Standards are not comprehensive of technology so supplemental categories addressing technology are needed;
   --the Standards may not be sufficient for the task of assessment by themselves but serve as a useful starting point; and
   --the Standards may need some refinement for our purposes;
2. This work is worth pursuing on and across campuses.

3. We will develop rubrics for selected ACRL Performance Indicators.

4. Representatives from each campus will secure more and better products

   - Representatives will try to increase the number of faculty involved
   - We will develop the assessment using reflective essays and/or portfolios.
   - We will use student work as the basis for assessment, supplemented with additional evidence (e.g. reflective pieces, portfolios).
   - We will develop draft guidelines for assignments.
   - We will maintain subgroups to continue the work on rubric construction, assignment guidelines, and the reflective essay.

Information/Technological Literacy Timeline per House Bill 2375

AY 99-00	September-99	January-00 Bill 2375 introduced	Summer-00 Workshop
AY 00-01	September-00	January-01 Progress. Report to Leg.	Summer-01 Workshop
AY 01-02	September-01	January-02 Feasibility Report to Leg.	Summer-02 Final Refinement Workshop
AY 02-03	September-02 ←	January-03 Full Scale Pilot	Summer-03 →
AY 03-04	September-03 ←	January-04 Report on Full Pilot Full Scale Study	Summer-04 →
AY 04-05	September-03	January-05 Reporting Cycle Begins	Summer-05 Annual (Biennial?) Studies Begin

Appendix IV

Progress Report of the Quantitative Reasoning Student Learning Outcome Taskforce

November 11, 1999

Appendix IV

Progress Report of the Quantitative Reasoning Student Learning Outcome Taskforce

November 11, 1999

Carl Simpson, Western Washington University

Background

As per agreement among the four-year institutions, HECB and legislature, development of student learning outcomes measures have been sequenced, with Quantitative Reasoning (QR) the third area to be developed. At this point, preliminary conversations have been held among assessment directors, with formal development scheduled to begin this Fall.

The Quantitative Reasoning Student Learning Outcome Taskforce will be convened following the fall 2000 colloquy in Leavenworth. At the two-day colloquy, representatives from the six public institutions will begin the process of incorporating the goals, proposed measures, and scoring criteria explained in the attached Quantitative Reasoning Progress Report (Simpson, 1999). The inter-institutional task force will then review the recommendations developed at the colloquy and begin the process of developing the assessment of quantitative reasoning.

The greatest strength of the approach being taken by Washington State to the measurement of student learning is its approach of scoring student work submitted to instructors as part of students course work. That is, the assessment is embedded in the curriculum. While a QR learning standard is broadly supported, there are currently no common student products across campuses, which means that both products and performance standards will need to be considered in the development of an assessment framework.

Currently, the timeline for the development of a reasonable assessment of quantitative reasoning is estimated to be three years. During year 1 (2000-01), the QR taskforce will continue to conceptualize the learning goals and criteria and will examine existing courses and syllabi and how QR is addressed in general undergraduate requirements. Year 2 should yield an instrument or process that can be initially piloted on some available sample of students. The third year will hopefully involve a field test of a refined instrument at all institutions. If the test goes well, the following year could see the initiation of measurement, to provide evidence that undergraduate students meet a minimum standard of competence in QR. In addition, the taskforce will focus on the instructional implications of QR and provide recommendations at the department level for faculty engaged in the teaching of courses that meet the requirements for being considered a core QR course.

Introduction

Our statewide Student Learning Outcomes discussion group has identified a philosophical approach to the measurement of QR, but development has not yet proceeded further. At this juncture, we recommend the broad approach summarized below and recommend moving ahead at a modest pace with further definition of desired competencies and possible measures.

Definitionally, QR calls for logical reasoning—in particular, problem solving—that involves quantities and the translation between verbal and quantitative constructions. It need not be complex mathematically. QR and "math" are not synonymous.

"Postindustrial society" creates a need for greater quantitative skill, while at the same time providing the computer technology that supplants traditional math, widening the gap between QR and math as such. Our everyday world is quantitative to an unprecedented degree, yet sophisticated tools "automate" routine calculations, making it possible to reason relatively well about many quantitative matters without mastery of the traditional "advanced" mathematical tools such as calculus. These dual developments—a growing need for quantitative sophistication accompanied by the power of computers to raise the level of reasoning in absence of some traditional math skills—inform the calls for K-12 curricular reform made by the National Council of Teachers of Mathematics.

The QR Goals of a University Education

Even more than for other basic skills, there is a marked divide between QR within the major field and QR for all graduates in all fields—for "the college graduate."

1. QR in the major. In some fields, QR uses advanced mathematical tools to reason about focused problems. The logic is to translate verbal ideas into mathematical formulae or quantities that can be tested, manipulated, etc. and then returned to verbal conclusions. Other fields involve essentially no math and little QR. It follows that any advanced math or QR skills must be measured in the context of each major field.

2. QR skills for all graduates. The minimum mathematics achievement we expect of graduates in non-quantitative major fields is no different from that of an average college-bound high school student. However, college level education implies improved critical reasoning skill, whether using highly specialized or readily accessible quantitative tools.
For students in non-quantitative majors, the appropriate demand is that QR instruction act as a basic element of the "liberal arts" curriculum: that it prepare graduates to function well as citizens in modern society. Many students do not learn sophisticated math skills, but all should be able to use simple math tools to reason--to understand, interpret, critique, debunk, challenge, explicate, and draw conclusions. In short, college graduates should be able to evaluate the crush of quantitative data modern life throws at all literate citizens

What we should be measuring at the university-wide level

As a measure of the college graduate's preparation to function well in modern life, a QR measure might appropriately begin with materials from the daily life information flow confronting a typical educated citizen—someone who reads and must react to a variety of issues, claims, evidentiary statements, etc. that involve quantities and quantitative reasoning challenges. The appropriate performances to be assessed would be the quality, thoroughness, insight, and correctness of students' critical reasoning about those materials and the challenges they present. We might call this competency the "educated citizen QR."

Two primary differences demarcate QR that assumes advanced mathematical skill from this "educated citizen QR" approach. The first is, of course, the level of mathematical tools required to analyze the quantities involved. The second lies in the issue of translation between verbal and quantitative domains. Truly mathematical QR requires a student to begin with a verbal problem statement, to translate it into quantitative terms, to create a quantitative system capable of testing or analyzing the problem, to perform mathematical analyses in that system, and to then translate back to a verbal conclusion. The citizen QR measurement involves both verbal and quantitative components and requires students to move between the two but not to create their own quantitative system. That is, they should be required to understand the conversion between verbal and quantitative forms but not to create the quantitative system. In addition, the mathematical manipulations they perform should not require advanced tools. (The dividing point between basic and advanced mathematical tools needs thorough discussion.)

A citizen QR problem might pose a question verbally and also provide quantitative data that could be used to address the problem using simple mathematical tools, and then ask for a verbal conclusion that draws accurately and thoughtfully on the quantitative material. The data might be as refined as a graph of the sort that might be found in *USA Today* or other news media, or as "raw" as data in a spreadsheet format. The problem posed might be convergent, so that a careful analysis of quantities leads to one correct answer, or it might be divergent with several data sources relevant and more than one answer that could be logically defended. The nature of the tasks will depend on the competencies identified for measurement.

The critical need not yet addressed in the process of our thinking about QR is identifying the set of competencies the measure should tap. The nature of the problems posed, the nature of the quantities provided, the thought process demanded to link quantities to the verbally expressed problem, and the scoring criteria (rubric) must all emerge from a discussion of the appropriate competencies.

That discussion and development will also no doubt supplant the thinking in this report. Nonetheless, a set of sample scoring criteria are posed below as an indication of the direction this proposal is taking. These are laid out roughly in order of the complexity of thinking involved, in part to illustrate that scoring could remain rather basic or could rise to the attempt to include a critical thinking component.

Examples of Possible Scoring Criteria

- <u>Accurate understanding of basic components</u>.

  Does the student understand the verbal question and what the quantities (data, numbers, graphs, etc.) represent?

- <u>Accurate direct interpretation</u>.

  Do students accurately portray the meaning of the quantities in and of them

- <u>Translating between domains: asking appropriate questions of the quantities</u>.

  Does the student structure questions of the available quantities appropriately in order to address the verbal problem posed?

- Translating between domains: making appropriate inferences from quantities.

  Does the student go beyond the data per se and appropriately apply conclusions or patterns in the data to draw conclusions regarding the problem posed verbally?

- Articulating underlying principles.

  Can students explain their reasoning clearly, communicating to others, and in such a way as to show that they are conscious of their own reasoning process?

- Higher order (critical) thinking processes.

  Can students identify and evaluate conflicts within the available data, alternative bases on which to evaluate the same quantities, reasons why the data presented are inadequate to fully address the question posed, etc.?

Next Steps

The specific QR competencies appropriate for all college graduates need to be specified. That step will require faculty expertise, ideally by work groups including a variety of major fields. Only after competencies are more fully specified can we move on to have a group develop measures, although working through some sample measurement exercises will no doubt be a part of the conceptual development phase.

We propose that assessment directors, together with faculty, begin laying the groundwork to define QR competencies. The immediate goal of that work should be to prepare for the Fall, 2000 Assessment Colloquy, which should focus entirely or in part on QR. Following the base laid by the colloquy, inter-institutional teams could be formed to continue the development of a coherent QR assessment.

An Obstacle

One very important obstacle is unique to this measure, among the four currently being discussed as possible statewide measures: the fact that there are no naturally occurring student products amenable to QR scoring. That is, QR is not built into the curriculum as a particular course that all students take, nor is it embedded throughout the curriculum in a way that would make the portfolio approach possible.

Given that, a measure must be administered specially (out of the curricular context), which introduces some logistical problems concerning selection and recruitment of students, and especially concerning the maximum length of the measurement instrument. In addition, motivation and engagement with the testing becomes problematic. All these issues will need to be addressed, but should remain in the background until competencies are more fully defined.