Response to NWCCU Recommendations of March 19, 2009

Background
As a member of the group of four colleges pilot-testing the new accreditation process, Columbia Basin College (CBC) submitted its Year 1 Report to the Northwest Commission on Colleges and Universities (NWCCU) on March 1, 2009. The Commission reviewed the report and formally accepted the submission at its March 10, 2009 meeting. In a subsequent letter to CBC (dated March 19, 2009) the Commission listed four Commendations regarding the quality of the report as well as two Recommendations for follow-up actions. These actions were:

1. The Commission recommends that the College review its core theme goals and achievement indicators to ensure they inform meaningful judgments of its achievements.
2. The Commission recommends that the College review its core theme indicators to ensure they represent direct evidence of intended achievements.

In addition to the two Recommendations, the Commission mentioned specific concerns with two proposed indicators: (a) faculty quality based on the ratio of full-time to part-time faculty members (Academic Theme, Goal D, Indicator 1); and (b) an indicator based on the percentage of disabled students receiving services compared to a statewide average (Access Theme, Goal C, Indicator 2). These two measures received particular attention in the review process.

The purpose of this report is to summarize actions taken by CBC in response to the Recommendations.

The Review Process
A three-part review process was conducted. First, a brief literature review was performed to cross-check CBC's measurement approach against current approaches to measuring organizational and educational performance. The literature review examined definitions of commonly-used terms, examples of indicators, measurement issues associated with the reliability and validity of indicators, and recommendations of experts on developing sound measurement systems. The review included Nichols' *A Practitioner's Handbook for Institutional Effectiveness and Student Outcomes Assessment and Implementation* (1995), *Monitoring School Quality: an Indicators Report* (NCES, 2000), *Assessing Organizational Performance in Higher Education* (Miller, 2006), *The Balanced Scorecard* (Kaplan and Norton, 1996), and two books by Robert Pritchard: *Organizational Productivity Measurement* (Pritchard, Jones, Roth, Stuebing & Ekberg, 1987) and *Measuring and Improving Organizational Productivity* (Pritchard & Weaver, 2007). The review did not surface any real or potentially problematic areas for CBC's approach, but did note inconsistencies across writers in terms of definitions (e.g., use of the terms "indicators" versus "measures"), little attention given to relating indicators with standards in order to interpret results, and relatively few examples of indicators that might be useful for CBC. However, Robert Pritchard's (2007) work on developing rigorous, ratio-scale measures based on performance standards related to standards promises to be very useful. Several potential indicators have been developed for CBC using his Productivity Measurement and Enhancement System (PROMES).

Second, the Goals for each of the Core Themes were evaluated by the Dean for Institutional Effectiveness and by the Theme lead administrator. The focus of the review was the importance of each Goal to accomplishing the Theme and whether, taken together, the Goals reflected a broad coverage of the domain of the theme. As a result of the review, wording to a number of the Goals was modified (detailed in tables provided below).

Third, each indicator was reviewed in terms of (a) the degree to which it contributed to a meaningful judgment of achievement of its associated Goal and (b) categorized as being either objective or subjective in nature.   A number of indicators were subsequently modified to improve their specificity, improve their direct relationship to the associated Goal, and increase meaningfulness and degree of objectivity.

Findings by Theme Area
Theme 1: Open Access
Results of the review process for the first Theme, Open Access, are provided in Table 1. Goal A was revised to focus more specifically on CBC enrollments in comparison to community demographics, thus reflecting open access by all community members. Goal B was modified to address reasonable progress by students in their educational programs, rather than "high rate" of retention and completion.   Goal C (Student Services effectiveness) was unchanged, while Goal D was eliminated because it was covered under revised Goal A.

Indicators under Goal A and Goal B were modified to reflect enrollment rates and educational progress for students of different demographic characteristics and locations within the service area, resulting in more meaningful measures of access.   Other measures were eliminated either due to redundancy or inadequate level of meaningfulness.

Table 1. Open Access Theme

Theme 1: Open Access			
Goal A: Columbia Basin College achieves high rates of new and ongoing enrollment from the community			**Revised Goal A**: CBC enrollment comes from all segments of its service area, indicating an open access that is not dependent on location or demographics
Indicators	**Meaning-fulness**	**Objective or subjective**	**Proposed Changes:**
A1: FTE enrollment	Moderate	Objective	Enrollment by demographics vs community demographics
A2: Enrollment vs. allocation	Low	Objective	Eliminate--not an indicator of access
A3: High school graduate enrollment	Moderate	Objective	% graduating class enrolling, by high school

Indicators	Meaning-fulness	Objective or subjective	Proposed Changes:
A4: Running Start enrollment	Moderate	Objective	Running Start enrollment by high school

Goal B: Students display high rates of retention, progress, and completion			**Revised Goal B**: CBC students display educational progress and graduate in a reasonable amount of time, indicating ongoing access to education. Minority groups make progress at rates similar to that of Whites.

Indicators	Meaning-fulness	Objective or subjective	Proposed Changes:
B1: Fall-to-winter, fall to fall retention	Moderate	Objective	Continue each measure, but include sub-group results as well
B2: 3-yr completion rates	Moderate	Objective	
B3: % showing "substantial progress"	Moderate	Objective	
B4: SAI momentum points	Moderate	Objective	

Goal C: The College provides effective support services and resources to prospective and enrolled students in order to eliminate barriers to access and success			Accept with no change

Indicators	Meaning-fulness	Objective or subjective	Proposed Changes:
C1: Percentage of students receiving financial aid	Low	Objective	Modify-- % of students completing financial assistance applications, by sub-group (including those with disabilities)
C2: Percentage of disabled students receiving services	Low	Objective	Eliminate this indicator
C3: Completion rates of disabled students	High	Objective	Redundant (eliminate); covered in Goal B
C4: Student ratings of services	High	Subjective	Student perceptions of services and barriers
C5: Student perceptions of barriers	High	Subjective	Faculty perceptions of student services, barriers

Goal D: Minority students display rates of enrollment, retention, and completion similar to those of Whites			Eliminate Goal D-- now covered in Goal A

Indicators	Meaning-fulness	Objective or subjective	Proposed Changes:
D1: Minority enrollment rates at CBC	High	Objective	Eliminate-- now covered in Goal A
D2: % of Minority at CBC vs. community	High	Objective	
D3: Minority retention rates	High	Objective	
D4: Minority graduation rates	High	Objective	

Theme 2: Academic
Results of the review for the second Theme, Academic Performance, are shown in Table 2. Goal A (Student Learning Outcomes) was eliminated because the proposed SLO indicators will appear under the analysis of General Education Outcomes in a separate report. Goal B (Student demonstrate learning) was removed from this section because the objective indicators will be provided under the heading of Program Review. Subjective student evaluations of their educational experience were moved to Goal E. The Goals and Indicators for Transfer Success (now Goal A) and High Quality Faculty (now Goal B) basically remained the same. The new Goal C Indicators were expanded to include specific student ratings provided on the Community College Survey of Student Engagement (CCSSE).   Goal D was added to include specific indicators on use of technology to enhance learning.

Table 2. Academic Theme

Academic Theme			
Goal A: Students accomplish the skills identified in the Student Learning Outcomes (SLOs)			Remove goal and indicators from this location-- cover SLO performance under General Education Outcomes
Indicators	**Meaning-fulness**	**Objective or subjective**	**Proposed Changes:**
A1: Learning outcomes are clearly defined and mapped	High	Subjective	Remove--included under General Education Outcomes
A2: Performance on each SLO	High	Subjective	Remove-- included under Gen Ed outcomes
A3: Extent that students engage in Student Learning Outcome-related behavior in the classroom (survey results).	High	Subjective	Move to Goal C below
A4: Extent that an instructor encourages Student Learning Outcome behavior (faculty survey)	High	Subjective	Move to Goal C below
Goal B: Students demonstrate learning at CBC			Eliminate-- student progress and success are already covered under Theme 1: Access
Indicators	**Meaning-fulness**	**Objective or subjective**	**Proposed Changes:**
B1: Success rates	Low	Objective	Eliminate-- covered under Access
B2: Withdrawal rates	Low	Objective	Eliminate-- covered under Access
B3: Rates of successful completion of Gateway courses by minority students	Low	Objective	Eliminate-- covered under Access

	Meaning-fulness	Objective or subjective	
B4: Content knowledge data through the possible use of Collegiate Assessment of Academic Proficiency (CAPP) testing and survey data	High	Objective	Eliminate-- due to cost considerations
Goal C: Students succeed after transferring to four-year institutions			Modify: **Goal A:** Students are able to transfer to baccalaureates and succeed academically
Indicators	**Meaning-fulness**	**Objective or subjective**	**Proposed Changes:**
C1: % of students who transfer as compared to other WA community colleges	High	Objective	Accept with no change
C2: CBC transfer student performance (GPA) at baccalaureate institutions	High	Objective	Accept with no change
C3: Graduations rates from four-year institutions	High	Objective	Accept with no change
Goal D: CBC has a highly qualified faculty			**Goal B**: (re-numbering of this goal)
Indicators	**Meaning-fulness**	**Objective or subjective**	**Proposed Changes:**
D1: Full-time to part-time faculty ratio	Moderate	Objective	Accept with no change
D2: Faculty salaries as compared to other WA community colleges	Moderate	Objective	Accept with no change
D3: Faculty diversity in age, ethnic group, and educational level	Moderate	Objective	Accept with no change
D4: % of faculty with a doctoral or terminal degree	High	Objective	Accept with no change
	High	Subjective	Add: D5: student perceptions of faculty qualifications
Goal E: Students are satisfied with their educational experience at CBC and access to a variety of instructional approaches			**Goal C**: Students are satisfied with their educational experience; perceive an effective learning environment
Indicators	**Meaning-fulness**	**Objective or subjective**	**Proposed Changes:**

Indicators	Meaning-fulness	Objective or subjective	Proposed Changes
E1: Student satisfaction with their education at CBC in aspects of value, quality, level of equipment/technology, preparation for transfer, and availability of courses	High	Subjective	Separate into discrete indicators-- C1: Acquiring a broad general education, C2: Writing clearly and effectively, C3: Speaking clearly and effectively, C4: Thinking critically and analytically, C5: Solving numerical problems, C6: Using computing and information technology, C7: Working effectively with others, C8: Learning effectively on your own
E2: Distance learning (DL) enrollment growth, and availability by department	High	Objective	Move to new goal D below
E3: Distance learning course completion rates as compared to other WA community colleges	Low	Objective	Eliminate: reliable data not available
E4: Students' perceptions of distance learning through survey information	High	Subjective	Move to Goal D below
			Goal D: CBC adopts appropriate technologies in the classroom
Indicators	**Meaning-fulness**	**Objective or subjective**	**Proposed Changes:**
	Moderate	Objective	D1: Distance Learning enrollment growth, availability by Department
	High	Objective	D2: % faculty using WebCt or Angel in courses
	High	Objective	D3: % faculty using Tegrity or other course software
	High	Subjective	D4: Perceptions of faculty regarding availability of teaching technologies
	High	Subjective	D5: Perceptions of students regarding availability of technologies in the classroom

Theme 3: Workforce
Few changes were made to the Goals and Indicators for this Theme. Under Goal A, individual items from the CCSSE survey were specified as indicators, rather than a more general statement about student perceptions of career learning.

Table 3. Workforce Theme

Workforce End State			
Goal A: CBC workforce students learn and develop program skills			Accept with no change
Indicators	**Meaning-fulness**	**Objective or subjective**	**Proposed Changes:**
A1: Student perceptions of career learning via CBC Survey	High	Subjective	Use CCSSE items including 12b: Acquiring job or work-related knowledge and skills, 12h: Working effectively with others, 12n: Developing clear career goals, 12o: Gaining information about career opportunities
A2: Workforce student satisfaction ratings on Community College Survey of Students Engagement (CCSSE) survey	Moderate	Subjective	Eliminate—redundant with revised A1
A3: Performance on standardized exams and certifications	High	Objective	Accept with no change
A4: Performance on each SLO and the program outcomes	Moderate	Objective	Eliminate-- SLO results appear elsewhere
Goal B: Students complete workforce programs			Accept with no change
Indicators	**Meaning-fulness**	**Objective or subjective**	**Proposed Changes:**
B1: % of students earning certificates/degrees	High	Objective	Accept with no change
B2: Completions as % of headcount	High	Objective	Accept with no change
B3: Workforce completions at CBC	High	Objective	Accept with no change
B4: Cohort degree/certificate completion rates	High	Objective	Accept with no change
B5: Graduation rates for sample of programs	High	Objective	Accept with no change
Goal C: Workforce programs are viable based on continued student enrollment and community need			OK as-is
Indicators	**Meaning-fulness**	**Objective or subjective**	**Proposed Changes:**
C1: Workforce enrollments as percentage of total	Moderate	Objective	Eliminate—covered in Access Theme
C2: Program enrollments	High	Objective	Accept with no change
C3: Growth in enrollment	High	Objective	Accept with no change
C4: Projected job growth	High	Objective	Accept with no change

Goal D: Workforce students obtain jobs and earn a good salary			Accept with no change
Indicators	**Meaning-fulness**	**Objective or subjective**	**Proposed Changes:**
D1: Student employment rates for completers	High	Objective	Accept with no change
D2: Employment rates for leavers	High	Objective	Accept with no change
D3: Median annual pay by program	High	Objective	Accept with no change
D4: Student perceptions of jobs, pay, and opportunity	High	Subjective	Accept with no change

Theme 4: Basic Skills

Several changes were made to the Basic Skills Goals and Indicators. Goal A, addressing enrollments, was eliminated, with the intent of covering these results under the Access Theme. The indicator related to CASAS performance was eliminated as being redundant with measures from the Student Achievement Initiative (SAI). Indicators regarding the transition of ABE/GED/ESL students to higher educational levels were expanded to include transition to a level above the most immediate higher level. In addition, indicators were added to include student perceptions based on survey responses (currently, these students are not included in the campus-wide survey process)

Table 4: Basic Skills Goals and Indicators

Basic Skills Theme			
Goal A: Students enroll in Basic Skills programs in increasing numbers			Drop this goal-- enrollment issues are addressed under Access Theme
Indicators	**Meaning-fulness**	**Objective or subjective**	**Proposed Changes:**
A1: English as a Second Language (ESL) enrollment	High	Objective	Eliminate these indicators; covered under Access theme
A2: Adult Basic Education (ABE) enrollment	High	Objective	
A3: General Education Diploma (GED) enrollment	High	Objective	
A4: Basic Skills FTE growth compared to the Academic Transfer, Workforce, and Developmental Education FTE growth	Moderate	Objective	
Goal B: Students demonstrate progress through their programs			Becomes Goal A
Indicators	**Meaning-fulness**	**Objective or subjective**	**Proposed Changes:**

8

Indicators	Meaning-fulness	Objective or subjective	Proposed Changes:
B1: Percentage of students making level gains on the Comprehensive Adult Student Assessment System Test (CASAS)	High	Objective	Eliminate-- redundant with SAI points
B2: Annual Student Achievement Initiative (SAI) points achieved per Basic Skills student	High	Objective	Accept with no change
B3: SAI points achieved per ESL student.	High	Objective	Accept with no change
B4: SAI points achieved per ABE/GED student	High	Objective	Accept with no change
Goal C: Students transition to higher-level programs			Goal C: Students transition to higher-level <u>educational</u> programs
Indicators	**Meaning-fulness**	**Objective or subjective**	**Proposed Changes:**
C1: Transition of ESL students to Developmental Education (Dev Ed) within 5 years of completion of the highest ESL level	High	Objective	Add: Transition to Dev Ed or <u>higher level</u>
C2: Transition of ABE/GED students to Dev Ed within five years of GED completion	High	Objective	Add: Dev Ed or higher level
C3: Transition of ABE/GED students to College level classes	High	Objective	Accept with no change
Goal D: Students enroll in I-BEST programs			Accept with no change
Indicators	**Meaning-fulness**	**Objective or subjective**	**Proposed Changes:**
D1: Increased I-BEST annualized FTEs	High	Objective	Accept with no change
D2: Increased number of I-BEST programs offered	Moderate	Objective	Accept with no change
Goal E: Students are satisfied with the program and their progress			Accept with no change
Indicators	**Meaning-fulness**	**Objective or subjective**	**Proposed Changes:**
E1: Survey results for ABE/GED	High	Subjective	Add specific items from CCSSE: 9a: Encouraging you to spend significant amounts of time studying, 9b: Providing the support you need to succeed, 11b: Quality of relationships with instructors, 12a: Acquiring a broad general education, 12c. Writing clearly and effectively,

			12d. Speaking clearly and effectively
E2: Qualitative assessment for ESL students	High	Subjective	Eliminate (redundant with E1)
Goal F: Faculty remain current in their discipline			Goal F: Hiqh quality faculty
Indicators	**Meaning -fulness**	**Objective or subjective**	**Proposed Changes:**
F1: Faculty education and training	High	Objective	Accept with no change
	High	Objective	F2: Student perceptions of faculty from survey

Theme 5: Cultural Enrichment
Only minor changes were proposed to the Cultural Enrichment Indicators (Goals were not revised).   The changes involved a greater focus on number of students attending cultural or diversity-oriented events and their satisfaction with these programs.

Table 5: Cultural Enrichment Theme

Cultural Enrichment			**Revised Theme Title: "Cultural Enrichment and Diversity**
Goal A: Students, staff, and the community engage in culturally enriching experiences involving music, theater, literature, and art			Accept with no change s
Indicators	**Meaning-fulness**	**Objective or subjective**	**Proposed Changes:**
A1: Number of cultural events offered per year	Moderate	Objective	A1: Number of students attending cultural events/year
A2: Community satisfaction with facilities used in the fine and performing arts	Moderate	Subjective	A2: Attendee satisfaction with cultural enrichment programming
A3: Student and faculty satisfaction with cultural events	High	Subjective	Accept with no change
A4: Number of students enrolled in fine arts, humanities and relevant social sciences classes	High	Objective	Accept with no change
A5: Amount of funding for arts and humanities provided by ASCBC	High	Objective	Accept with no change

Indicators	Meaning-fulness	Objective or subjective	Proposed Changes:
A6: Summer Showcase attendance	High	Objective	Accept with no change
A7: Number of students, staff and community members attending cultural events	High	Objective	Eliminate (covered in A1 above)
Goal B: Students engage in diversity-oriented educational and cultural programs and activities			Accept with no change
Indicators	**Meaning-fulness**	**Objective or subjective**	**Proposed Changes:**
B1: Number of campus events per year considered multicultural or with a diversity theme	High	Objective	Number of students attending multicultural or diversity events.
B2: Number of students participating in multicultural or diversity events	High	Objective	Accept with no change
B3: Amount of funding provided by ASCBC for multicultural events	High	Objective	Accept with no change
	High	Subjective	B4: Student satisfaction with diversity-oriented programs on campus
	High	Subjective	B5: Faculty satisfaction with diversity-oriented programs and events

Theme 6: Physical and Emotional Well-Being

Only a few changes were made to the Goals and Indicators for this Theme. Wording changes to several Goals were made mainly to simplify and shorten the statements. Several Indicators were re-worded to focus on student or staff participation in events or programs, rather than counting the number of programs offered. An indicator that originally involved a count of the number of counselors offering mental health services was revised to indicate a per capita number of counselors compared to other community colleges.

Table 6: Physical and Emotional Well-Being

Physical and Emotional Well-Being			
Goal A: Students, staff, and community members engage in activities that improve their physical and emotional health and well-being			Goal A: the college provides activities and resources that improve physical and emotional health
Indicators	**Meaning-fulness**	**Objective or subjective**	**Proposed Changes:**
A1: Faculty, staff, and student participation in campus wellness activities	High	Objective	Accept with no change

Indicators	Meaning-fulness	Objective or subjective	Proposed Changes:
A2: Satisfaction with wellness opportunities on campus	High	Subjective	Accept with no change
A3: Use of the Fitness Center by stakeholder groups	High	Objective	Accept with no change
A4: Academic programs and curriculum centered on health and well-being	High	Objective	% students enrolling in health and well-being oriented courses and programs
A5: Student-athlete success	Low	Objective	Student participation in athletic activities
Goal B: The College promotes emotional well-being by providing information on emotional health issues and providing mental health assistance to students, faculty, and staff			Goal B: The college promotes emotional well-being via information and services
Indicators	**Meaning-fulness**	**Objective or subjective**	**Proposed Changes:**
B1: Educational activities and events on emotional health issues	High	Objective	Participation in activities and/or events on emotional health issues.
B2: Counselors continually update their knowledge and skills in providing mental health assistance to students	Moderate	Objective	Hours of professional and skills development completed by counselors
B3: Number of counselors providing mental health services	High	Objective	# counselors providing mental health services, compared to other colleges
B4: Student utilization of counseling services	High	Objective	Accept with no change
B5: Student satisfaction with counseling services	Moderate	Subjective	Accept with no change
B6: Percentage of students receiving accommodations for psychosocial disorders	High	Objective	Accept with no change
B7: Faculty and staff satisfaction with the EAP program	High	Subjective	Accept with no change
Goal C: The College guards students and staff from physical threats and harm			Accept with no change
Indicators	**Meaning-fullness**	**Objective or subjective**	**Proposed Changes:**
C1: Students, faculty, and staff are aware of processes used to prevent and manage threats	High	Subjective	Accept with no change
C2: Student Behavior Intervention Team (SBIT) cases with intervention strategies	Low	Objective	Eliminate -- provides little information
C3: Student discipline cases	High	Objective	Number of student discipline cases involving potential threat, harm

C4: Faculty, staff, and students feel safe at the College	High	Subjective	Accept with no change

Conclusion

Following two Recommendations by the Commission in its March 19, 2009, letter, CBC's accreditation team reviewed the Goals and the Indicators for each of its Core Themes. The Indicators were also reviewed in terms of their meaningfulness, relation to their associated Goal, and whether they provided objective versus subjective data.   As a result of the review, a number of the Goals and Indicators were modified in some way. Most of the modifications involved minor rewording to increase clarity or focus. In a few cases, where information would be better provided elsewhere, Goals or Indicators were eliminated. Some Goals and Indicators were subjected to a major conceptual revision.

Of the two Indicators mentioned specifically in the March 19 letter, one was eliminated and one was retained. The indicator involving percentage of disabled students receiving services (Access Theme, Goal C, Indicator 2) was eliminated due to inherent ambiguity. For example, a high percentage of disabled students receiving services might indicate either genuinely effective performance or might indicate a level of service in excess of actual need. At the other extreme, a low percentage of disabled students receiving services might indicate that many disabled students in need of aid are not getting it or might simply indicate a low level of actual need.

The other indicator of concern mentioned by the Commission was the ratio of full-time to part-time faculty (Academic Theme, Goal D, Indicator 1), with higher ratios indicating better performance.   A brief review of the research literature was conducted to assess the validity of this indicator.   Umbach (2007, 2008) found that part-time faculty, compared to full-time faculty, interacted less with students, spent less time preparing for class, had lower expectations of their students, spent less time advising, used active teaching techniques less often, included diversity topics less frequently, and were less likely to participate in faculty development workshops. Other studies have found negative relationships between the use of part-time faculty and student persistence (Eagen, Jaeger & Thornton, 2008) and graduation rates (Ehrenberg and Zhang, 2005). Umbach (2008) used social exchange theory and psychological contracts research to explain why aspects of the part-time faculty work context (e.g., low wages, lack of health benefits, heavy teaching loads, no office space) explain lower part-time faculty teaching performance.   Consequently, we concluded that it is an important aspect of the CBC educational environment to maintain an adequate ratio of full-time to part-time faculty, and therefore retained the indicator.

Given the complex nature of the Goals and Indicators developed for the CBC measurement system, it is our intention to continue to monitor their effectiveness on an ongoing basis and engage in continuous improvement activities. We welcome any additional feedback or comment from the Commission regarding our measurement system.

References

Eagen, K. Jaeger, A.J., & Thornton, C.H. (2008). *Examining the effects of part-time faculty instruction in introductory courses on student persistence.* Paper presented at the 2008 Annual Meeting of the American Educational Research Association. New York, NY.

Ehrenberg, R.G. & Zhang, L. (2005). Do tenured and tenure-track faculty matter? *Journal of Human Resources*, *40*(3), 647-659.

Kaplan, R.S. Norton, D.P. (1996). *The Balanced scorecard.* Boston, MA: Harvard University Press.

Mayer, D.P., Mullens, J.E., & Moore, M.T. (2000). *Monitoring school quality: an Indicators report.* US. Department of Education, Office of Educational Research and Improvement. NCES 2001-030.

Nichols, J.O. (1995). *A Practitioner's handbook for institutional effectiveness and student outcomes assessment implementation.* New York: Agathon Press.

Pritchard, R.D., Jones, S.D., Roth, P.L., Stuebing, K.K., and Ekeberg, S.E. (1987). *Organizational productivity measurement: the Development and evaluation of an integrated approach.* AFHRL-TR-86-64. Brooks Air Force Base, Texas: Air Force Human Resources Laboratory.

Pritchard, R.D. & Weaver, Sally. (2007). *Measuring and improving organizational productivity: a practical guide.* Unfinished working draft.

Umbach, P. (2007). How effective are they? Exploring the impacts of contingent faculty on undergraduate education. *Review of Higher Education*, *30*(2), 91-123.

Umbach, P. (2008). *The effects of part-time faculty appointments on instructional techniques and commitment to teaching.* Paper presented at the 33rd Annual Conference of the Association for the Study of Higher Education. Jacksonville, FL.