

**AGENDA ITEM C2: STUDENT DEVELOPMENT**  
**BOARD RULE 400.0100.00**  
**ASSESSMENT OF STUDENT CORE LEARNING OUTCOMES**  
**BOARD OF TRUSTEES MEETING: SEPTEMBER 23, 2010**

Belmont Technical College is committed to helping students develop as lifelong learners. “In both the general education and technical core, students will acquire knowledge and skills on which to build a foundation for further education” (Board of Trustees, *Ends policy 400.0100.00*, Student Development). Assessment of core learning outcomes is an integral part of monitoring students’ progress toward their development as lifelong learners. This report presents data and analysis related to assessment of students’ critical thinking skills.

Administrators and faculty members agreed upon four critical components for students’ success during the 2001 Student Success Summit. These four Core Learning Outcomes (CLOs) include 1) Communicates effectively; 2) Learns actively; 3) Thinks critically; 4) Behaves with accountability. CLOs are grounded in the college’s learning philosophy and are cultivated in all students seeking certificates and degrees. CLOs are assessed on a four-year cycle, and spring 2010 brought full circle assessment of the objective focused on students’ development of critical thinking. When appropriate and applicable to the course content, faculty members are integrating outcome competencies and goals in course activities and assignments. CLOs are being assessed across programs in order to evaluate students’ improvement as they progress through their programs of study and to document students’ attainment of educational goals. Upon graduation, all students are expected to demonstrate proficiency on the four outcomes: *communicates effectively, learns actively, thinks critically and behaves with accountability*.

Assessment of *critical thinking* is achieved by use of a grading rubric which provides a direct measure of student learning. In addition, this assessment helps to distinguish for faculty and students the areas of strength and weakness in students’ mastery of this important core learning outcome. Critical thinking is a skill that many employers seek in their employees and assists in the personal and professional growth of students.

Presentations at fall and winter forums have provided information to faculty members about ways to assess CLOs in their classrooms. Faculty members who have begun the assessment process in their classes have shared their assessment data and analyses with others. This has helped faculty to understand how to develop assignments and use the rubric properly. Faculty members are also sharing the rubric with their students so they are aware of the expectations for assessment of critical thinking. Posters addressing CLOs have been placed in every classroom and CLO bookmarks are distributed by the bookstore. During spring 2010, the Celebration of Learning was held using themes derived from the CLOs. Approximately 200 students and eight faculty and staff members participated in the contest for the best projects focused on the CLOs. A rubric patterned after Belmont’s Core Learning Outcome rubric was used to assess the projects submitted.

***Data***

Average score data for CLO assignments in 14 programs were reviewed for this report. Students who entered programs to obtain degrees or certificates in Accounting, Business Administration, Business Entrepreneurship, Child Development, Computer Science, Interactive Media, Microcomputer Applications, Network Administration, Programming, Web Design, Office Administration, EMS/Paramedic, Mental Health, and Practical Nursing completed

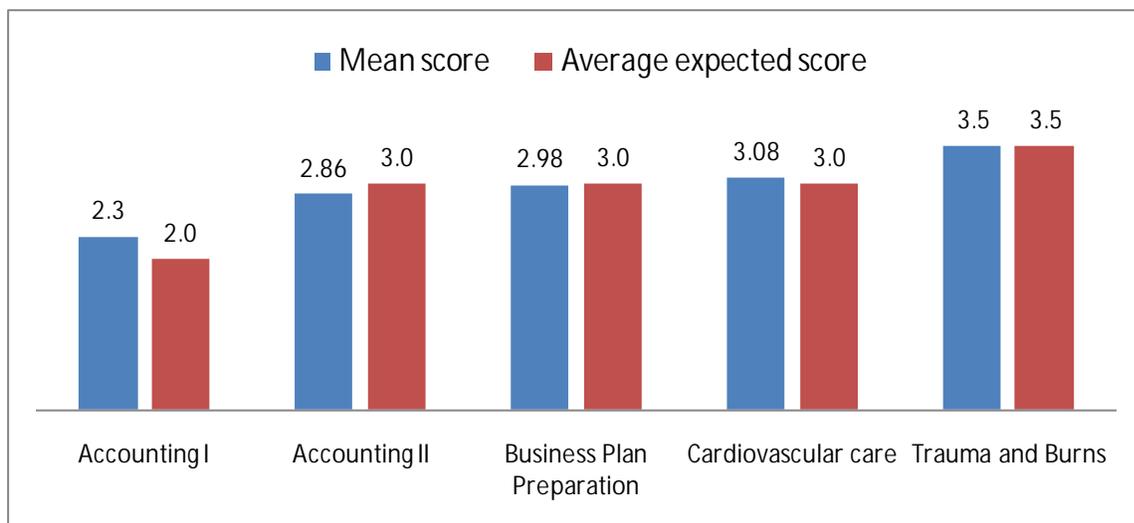
assessments of *critical thinking* skills in fall 2008. Table 1, *Critical thinking CLO mean scores, fall 2008 through spring 2010* displays assessment data from three data programs. Data in the table serve as examples of how assessment scores are documented with mean scores and average expected scores for cohorts of students within courses and programs.

Table 1, *Critical thinking CLO mean scores, fall 2008 through spring 2010*

Program	Course	Assignment	# of students	Mean score	Average expected score
<b>Accounting</b>	Accounting I	Practice set	48	2.3	2.0
	Accounting II	Practice set	23	2.86	3.0
<b>Business/Entrepreneurship</b>	Accounting II	Practice set	23	2.86	3.0
	Business Plan Preparation	Business Plan	9	2.98	3.0
<b>EMS/Paramedic</b>	Cardiovascular care	Case study: cardiac patient in ER	11	3.08	3.0
	Trauma and Burns	Case study: trauma patient in ER	5	3.5	3.5

Data from the spring 2010 assessment of critical thinking is presented graphically in Figure 1, *Critical thinking CLO mean scores, fall 2008 through spring 2010*. Pairs of columns in this figure represent the mean and expected scores for each of five courses. On the left in each pair is a **blue** column representing average scores for students who completed the assessment. The column on the right in each pair, shown in **red**, represents the average expected score for students in the course where the assessment was completed. The figure shows comparisons between actual and expected averages and shows the progression of expected scores across courses. In Accounting I, the expected average is 2.0 and in Accounting II, the expected average is 3.0. Average scores for students in Accounting I are slightly above the expected average, and in Accounting II are slightly below the expected average.

Figure 1, *Critical thinking CLO mean scores, fall 2008 through spring 2010*



## ***Analysis***

### ***Accounting program***

Students hover around the 2.0 benchmark in ACC111, Accounting I, because they are so new to the college experience. If they are coming directly from high school, thinking skills do not appear to be well developed. Adult learners, in many instances, have been out of the academic world for a number of years and need to re-acclimate themselves to the rigors of academia.

Both of these factors affect how the students learn. Faculty members challenge students by allowing them to be at the center of their learning experience. Faculty use many techniques to ensure that the classroom is a learning centered environment and not a teacher centered environment, such as breaking the students into small groups and encouraging them to work together. Faculty do not teach just from the textbook; they create assignments that enable students to research the current topics in Accounting, of which there are many, and then apply that research back to the course material.

The data suggest that by the time students are enrolled in ACC112, Accounting II, they have begun to think more critically and creatively and are beginning the process of applying that to their assignments.

### ***Business Entrepreneurship program***

In the Business Plan Preparation course for the core learning outcome of critical thinking, students were assessed over a 10-week assignment. During the 10<sup>th</sup> week, the student's critical thinking was measured using the standard rubric. In this assessment, students were given instruction in completing tasks. These tasks comprised the various parts of a 40 page business plan. Nine students participated in this assignment. Students were divided into two groups; one group had four students and the other had five. Each group was asked to write the 40 page business plan. As part of the project, the students were expected to utilize the skills gained in Accounting II, the first course wherein the CLO of critical thinking was measured. Various financial statements were required, i.e. Balance Sheet, Profit and Loss, Break-Even and Cash Flow Statements. Both groups demonstrated the necessary accounting proficiencies.

### ***EMS/Paramedic program***

Students are currently meeting the criteria for overall performance. As this course is near the completion of the program, students have been able to score consistently higher than their counterparts in earlier courses. (Overall aggregates in initial courses averaged 3.1 and 3.06.) Degree seekers in the Paramedic program showed improvement as they moved through the program and gained experience. Students are very capable of exploring how various situations impact a problem but have less experience with implementing and reflecting on solutions. Their area of greatest weakness involves the decision making process where they achieved an overall score of only 3.2. Overall, critical thinking skills are used consistently throughout the program, and a goal in the program is to give students the foundation and tools needed for successful application of critical thinking in the classroom. Building on this foundation, students will then apply the skills in their professional practice.

## ***Recommendations/Conclusions***

Program chairs and instructors review data gathered on CLOs to revise teaching methods and to strengthen the curriculum for students. Data presented in this report have been reviewed

by faculty members and administrators in the Accounting, Business Management, Office Administration, Emergency Medical, Information Technology, Mental Health, and Practical Nursing programs. Conclusions about the data and recommendations for improvements to teaching and learning are reported by programs in this section.

#### *Accounting program*

The results achieved by students are typical of most incoming students. The program chair and faculty members recommend continuing to use practical applications of information which are presented in the curriculum along with the insertion of real-world analysis to aid the students in seeing the importance of accounting in the business world.

In addition, the application of real-world analysis aids the students in realizing that accounting principles and practices affect not only the businesses where students work, but also have a global effect on the entire economy. This results in a realization of the ethical impacts of fraud that has occurred within the financial industry. This is a topic that permeates throughout the entire Associate of Applied Business degree curriculums.

#### *Business Entrepreneurship*

Assessments of students' critical thinking skills in the Business Entrepreneurship program will be investigated further. While students did not meet the benchmark for the final course in this series, the targeted skills and abilities were evident in students' work. The business plan assignment seems to be a good tool to measure students' abilities to think critically in a business environment.

#### *EMS/Paramedic*

The critical thinking assessment project as it is an essential part of functioning in the work environment, and students are meeting the benchmark; however, additional feedback will be given throughout the program to help students further develop their critical thinking skills. The recent purchase of an interactive simulation manikin will allow students to have additional opportunities to practice creative and critical thinking much as they would in a real patient situation. Extra attention will be focused on helping students improve their decision making skills during scenario/lab based learning experiences. In addition, students are continually monitored on clinical patient care and are encouraged to improve the documentation and skills required through review of their work. Open discussion in the classroom and instructor participation with this project help to ensure the development of critical thinking skills and will remain an integral part of the paramedic curriculum.

#### ***Conclusions/Recommendations for Core Learning Outcomes Assessment Process***

The Core Learning Outcomes Team has developed a schedule for assessment of each Core Learning Outcome using a two year cycle for summative and formative assessment. A workshop will be held during fall quarter to educate faculty about the next Core Learning Outcome to be assessed. That is *active learning*. The CLO team will provide a demonstration of how to measure the outcome using a standardized college rubric. A college-wide benchmark for achievement in each of the courses where the CLO is assessed will be considered to facilitate comparison between different programs. In addition, more emphasis on inter-rater reliability will be encouraged in programs that are using multiple evaluators for measuring the outcomes.