

El Camino College

Critical Thinking Institutional Learning Outcome Results- Spring 2016



Background

Institutional Learning Outcomes (ILO's) , formerly called Core Competencies at El Camino College, are the sets of skills which a student would be expected to develop through interaction with the college curriculum. El Camino College currently has four ILO's covering *Critical Thinking, Communication, Community and Personal Development, and Information Literacy*. These Institutional Learning Outcomes are linked to and supported by Student Learning Outcomes at the course (SLO's) and program level (PLO's). All ILO's are assessed on a four year cycle.

During the Spring 2016 Semester El Camino College assessed Institutional Learning Outcome #1 to determine how well students have mastered *Critical Thinking* skills based on the statement:

Students apply critical, creative and analytical skills to identify and solve problems, analyze information, synthesize and evaluate ideas, and transform existing ideas into new forms.

- **Identify vital questions, problems, or issues and evaluate solutions.**
- **Analyze, compose, and assess the validity of an argument.**
- **Compute and analyze multiple representations of quantitative information, including graphical, formulaic, numerical, verbal, and visual.**

Because this is the first time the college is assessing this ILO in this format, this year is serving as a baseline for the college. Based on these outcomes, and institutional standard will be established for the next assessment cycle.

Methodology

When Core Competency I: Critical Thinking was assessed during the Spring 2011 term, the methodology involved student self-ratings, teacher ratings, and a Grade-Point Average (GPA) analysis. The Assessment of Learning Committee (ALC) decided to move away from that methodology for the current assessment cycle. The ALC decided student self ratings and GPA analysis did not inform the discussion of outcomes.

During the Fall 2014 semester, faculty engaged in a comprehensive effort to match courses, program, and institutional learning outcomes together. This crosswalk did not exist during the previous assessment of the Critical Thinking ILO. For this round, the Critical Thinking ILO was assessed in courses that have linked SLO's and which were scheduled to perform an SLO assessment during the Spring 2016 term. Instructors in identified courses were asked to

participate in the data collection. Instructors in 97 sections volunteered to participate in the ILO data collection. The selected sections consisted of classes at both El Camino College Torrance campus and El Camino College Compton Center. They were asked to replace the rubric used to assess the SLO with a rubric developed for the ILO.

Sample

Instructors in 97 sections were sent rosters to be rated. These included courses in all divisions at both locations and consisted of courses students might take in their first term as well as courses which would be taken when a student is further along in their education. There were 67 sections- 56 at the El Camino College and 11 at the ECC Compton Center. In all, 1,422 completed student ratings were returned by the instructors (margin of error $\pm 2.53\%$). There were two ratings which only had one component of critical thinking rated by the instructor so they were removed from the sample.

Method of Assessment

Faculty were given the Critical Thinking Rubric adapted by the Assessment of Learning Committee which directed faculty to rate students' critical thinking in terms of

1. *Identify*- ability to identify questions, problems, or issues;
2. *Analyze*-ability to analyze the solution, plan, or argument; and
3. *Conclude*- ability to synthesize or draw conclusions based on given information.

A rating scale of 0-3 was established with 0 being "Missing" and 3 being "Exemplary" for each component of critical thinking. See Appendix C. A student needs to earn a score of 2 (Proficient) or 3 in all three component to pass the ILO. Faculty were given the freedom to select their method of assessment so instruments vary.

Assessment Results

There were 1,422 assessments completed with varying degrees of success. Students performed fairly well in each critical thinking component. Each individual component of the critical thinking ILO was passed by at least 75% of the assessed students. However, the overall ILO passage rate was much lower because fewer students were able to pass all three components to meet the ILO goal. The overall rate shows 68.8% of the students successfully completed the ILO. See Table 1. Students did very well with Identify, passing at 82.1%. Students had the most difficulty with Conclude, passing at a rate of 77.1%.

Table 1: Critical Thinking Components Success Rate

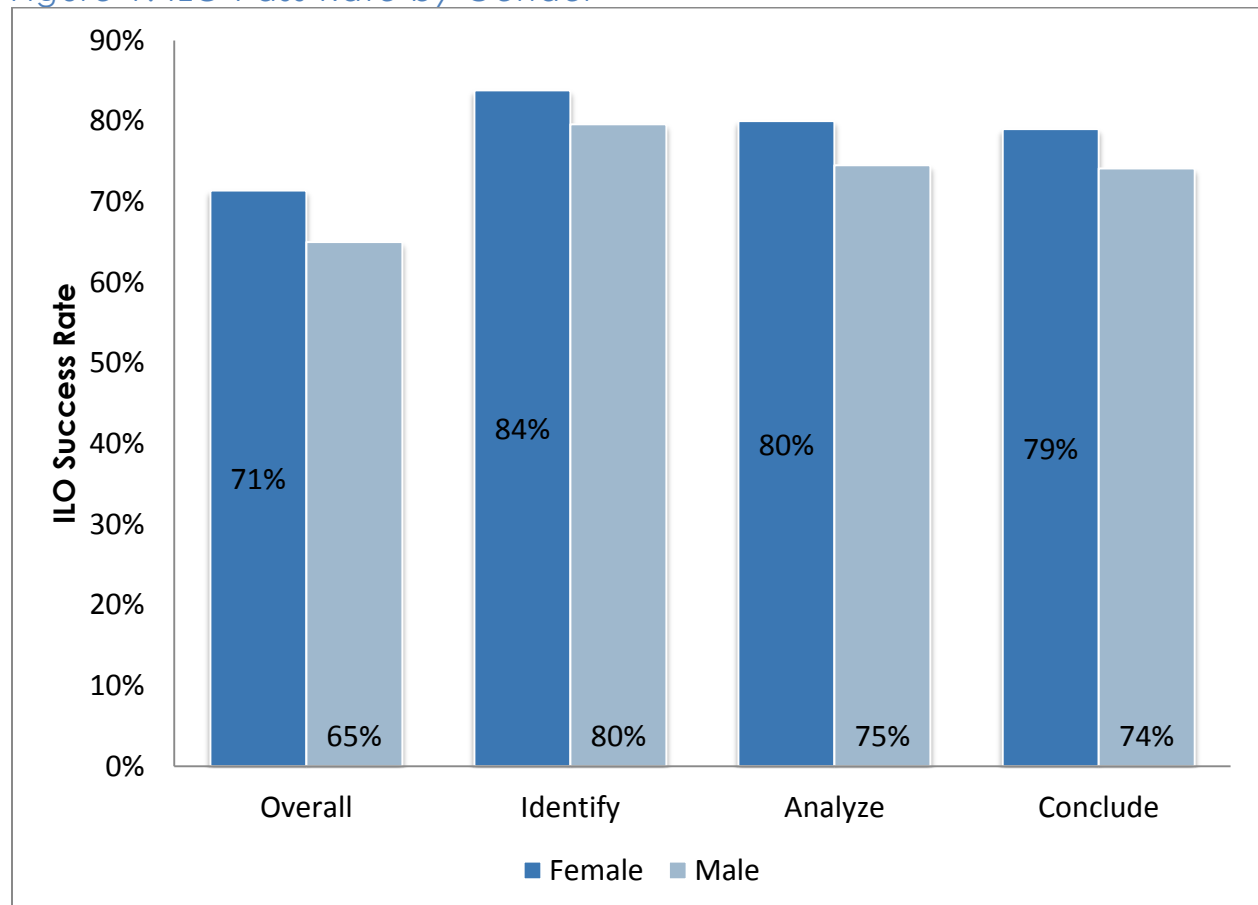
ILO	Rate	N
Overall	68.8%	1,422
Identify	82.1%	1,422
Analyze	77.8%	1,422
Conclude	77.1%	1,422

Outcomes by groups

The results of these outcomes were disaggregated by demographic groups where possible. Data was disaggregated by gender, race/ethnic group, disabled student status, economic disadvantage, and units completed. There were not enough Veterans or Foster Youth in the sample to include these populations in the disaggregation analysis.

There were 854 females in the sample and 568 males. Females performed better than males, scoring 6.4% higher than males overall. Females also outperformed males by close to five percentage points in each Critical Thinking component. Females were able to Identify at a rate of 84%, Analyze at 80%, and Conclude at a rate of 79%. Males passed at rates of 80%, 75%, and 74%, respectively. See Figure 1.

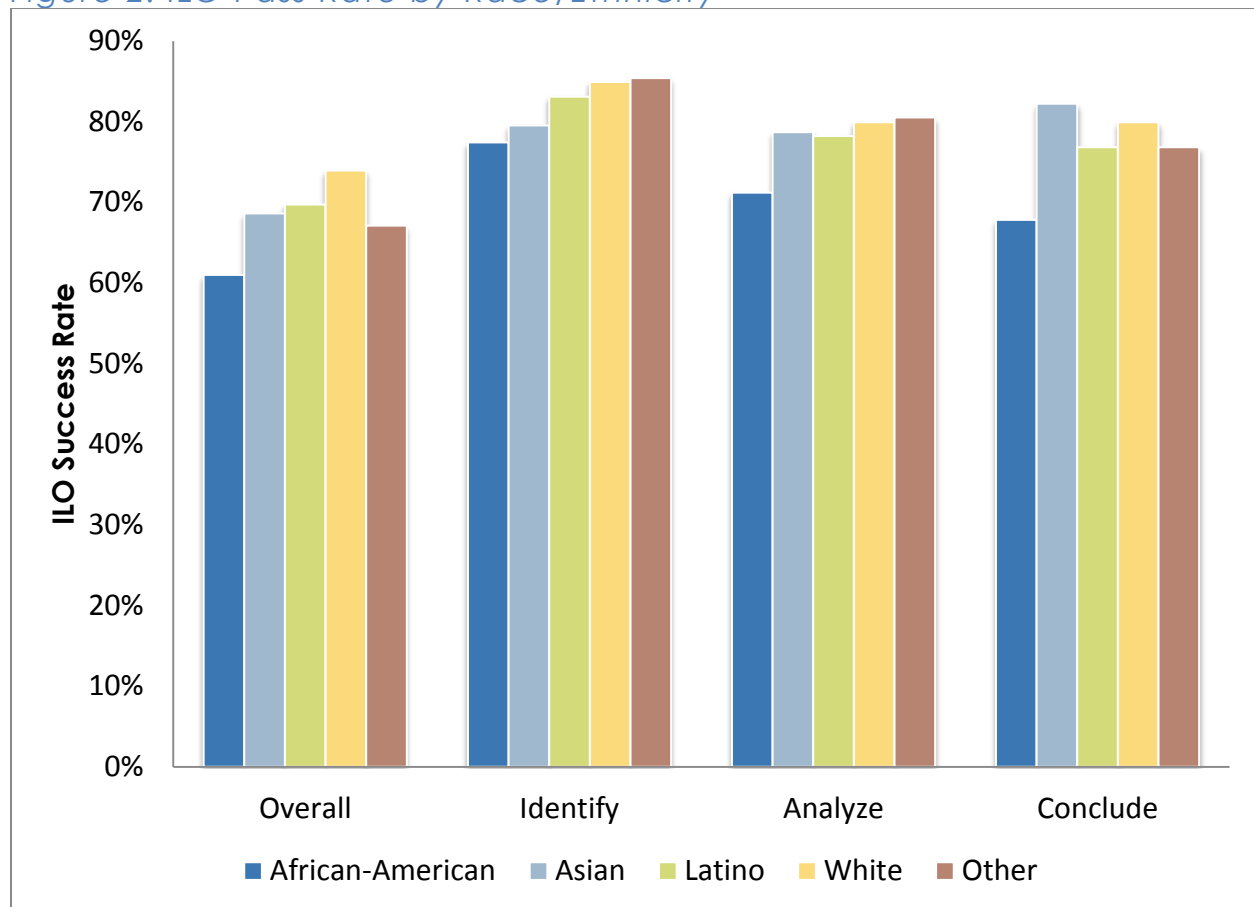
Figure 1: ILO Pass Rate by Gender



Outcomes were more varied when comparing racial/ethnic groups. The sample consisted of 177 African-Americans, 258 Asians, 706 Latinos, 199 Whites, and 82 students in the “other” category. African-Americans, one of the target groups in the college Student Equity Plan, had the lowest success rate in all categories. African-Americans successfully completed the Critical Thinking ILO at 61% which is much lower than the outcomes for the other group. Not only were African-Americans the group with the lowest overall ILO outcomes, they were the only ethnic/racial group to have less than 70% pass the Analyze or Conclude components of critical thinking.

Figure 2 shows the difference in performance patterns by ethnic group for the Critical Thinking ILO. White students had the highest overall performance, followed by Latinos and then Asian students. Subgroups generally performed the highest in the ability to identify questions, problems, or issues and lowest in the ability to Conclude. The exception was Asians, who performed highest in the ability to Conclude.

Figure 2: ILO Pass Rate by Race/Ethnicity

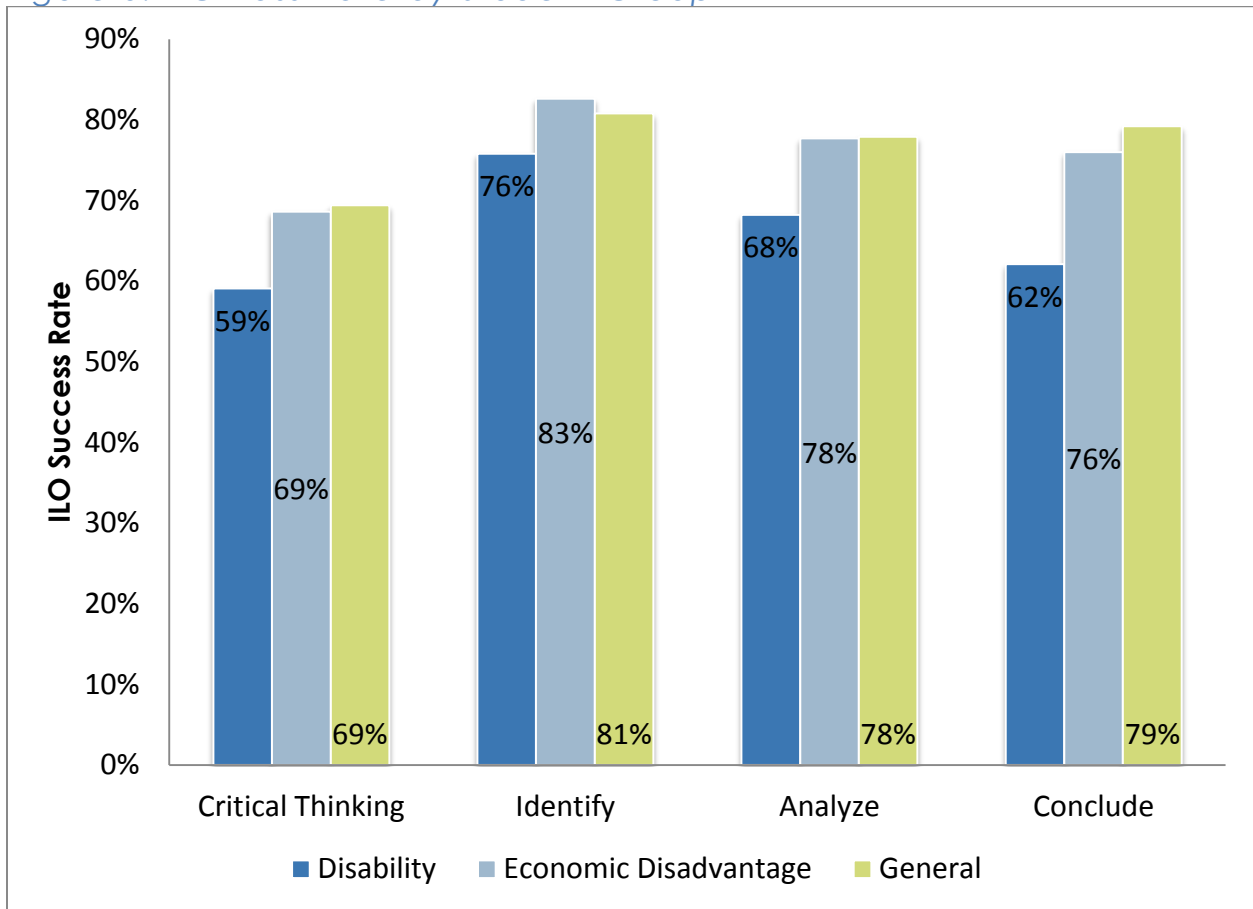


The college is required to disaggregate outcome data by veterans status, disability status, Foster youth status, and economic disadvantage status as well to ensure equitable outcomes are being achieved. However, the small number of veterans (N=15) and Foster youth (N=11) in

the sample discourage disaggregation by those two groups. The only groups in the sample large enough to be compared are the disabled student population (N=66) and the economically disadvantaged (N=846). The disabled student population is determined by those students with a disability verified by the Special Resource Center (SRC). Economic disadvantage is determined through financial aid awards received. Students who received a Board of Governor's Fee Waiver or a Pell Grant meet the requirements for being considered economically disadvantaged. Students in the sample who were not placed into one of these categories were labeled "general" students and are used for comparison. There may be students in the general group who would qualify for one or more subgroups, but if support was not sought, the college has no basis to label them as such.

Students registered with the SRC demonstrate successful outcomes at considerably lower rates than the general student population. The disabled population passed the Critical Thinking ILO at a rate of 59.1%, which is 10 percentage points lower than the general students. This gap continues for the Analytical component and increases to 17% for Conclude. The gap between the disabled student population and the general population decreases to 5% for Identify. Students who are considered economically disadvantaged show little difference in terms of outcomes when compared to the general student population. Both groups pass the ILO at approximately 69%. Both groups also pass each component of the ILO within a few percentage points of each other. The largest difference between the economically disadvantaged and the general student group is in the judgement of their ability to Conclude, with a difference of 3.2%. See Figure 3.

Figure 3: ILO Pass Rate by Student Group



Outcomes by units completed

Outcomes were also compared for students based on number of units completed. Students were grouped by the number of units completed prior to the Spring 16 semester. There is little difference seen in the outcomes for students by units completed. New students (less than 15 units) successfully pass the ILO at a rate of 68.1% while students who have completed enough units to earn a degree (60 or more units) successfully pass it at 70.2%. The similarities are visible for each component of critical thinking as well.

Table 2: ILO Pass Rate by Units Completed

ILO Passage		Identify	Analyze	Conclude	People
Units	Rate				
Total	68.8%	82.1%	77.8%	77.1%	1,422
<15	68.1%	81.3%	79.4%	75.6%	160
15-29	67.5%	80.1%	74.7%	76.9%	372
30-59	69.0%	82.9%	78.4%	77.7%	467
60+	70.2%	83.5%	79.2%	77.1%	423

Conclusion

Assessments show there are opportunities for improvement at El Camino College and the ECC Compton Center. Students are able to identify the problem or issue, but analyzing the data and drawing conclusions from the information are areas where students pass at lower rates.

There is evidence of a disproportionate impact affecting African-American students when compared to other racial/ethnic groups. African-Americans are a group the institution is targeting as part of the Student Equity initiatives. The same gap was found during the assessment of the Communication ILO.

Similarly, students with an indicated disability are also showing evidence of a disproportionate impact.

Surprisingly, students who had earned more units did not show signs of increased critical thinking ability. More training and exposure to academic processes should have demonstrated greater critical thinking aptitude. Unfortunately, students did not have to do a pre/post assessment which could have shown changes in ability by student. The assessment design involved a central rubric that relied on different modes of assessment. In the future, more effort to norm the rubric should be made to help mitigate discrepancies in how students are rated

Appendix A: Courses Included in Analysis

The following 41 courses had ratings submitted for the Critical Thinking ILO analysis.

ASTR-25	COMS-1	HIST-101	NURS-253
BIOL-10	CSCI-1	HIST-102	PE-275
BUSI-17	CSCI-2	MATH-110	PE-54
CDEV-103	DANC-101	MATH-150	PHIL-105
CDEV-125	ENGL-1A	MATH-210	PHYS-11
CDEV-126	ENGL-1C	MATH-23	PHYS-31
CDEV-131	ESL-53B	MATH-73	POLI-1
CDEV-150	ESL-53C	OCEA-10	PSYC-9B
CH-1	FAID-1	NURS-154	SOCI-101
CHEM-4	HDEV-115	NURS-250	THEA-103
CIS-13			

Appendix B: Disaggregated Results

Gender	Female	Male
Overall	71.4%	65.0%
Identify	83.8%	79.6%
Analyze	80.0%	74.5%
Conclude	79.0%	74.1%

Race/Ethnicity	African-American	Asian	Latino	White	Other
Overall	61.0%	68.6%	69.7%	73.9%	67.1%
Identify	77.4%	79.5%	83.1%	84.9%	85.4%
Analyze	71.2%	78.7%	78.2%	79.9%	80.5%
Conclude	67.8%	82.2%	76.8%	79.9%	76.8%

Comparison Groups	Students with Disabilities	Economic Disadvantage	General
Overall	59.1%	68.6%	69.4%
Identify	75.8%	82.6%	80.8%
Analyze	68.2%	77.7%	77.9%
Conclude	62.1%	76.0%	79.2%

Appendix C: Critical Thinking Rubric: Assessment of ILO #3 – Spring 2016

ILO #1 – CRITICAL THINKING

Students apply critical, creative and analytical skills to identify and solve problems, analyze information, synthesize and evaluate ideas, and transform existing ideas into new forms.

- Identify vital questions, problems, or issues and evaluate solutions.
- Analyze, compose, and assess the validity of an argument.
- Compute and analyze multiple representations of quantitative information, including graphical, formulaic, numerical, verbal, and visual.

	0=Missing	1=Developing	2=Proficient	3=Exemplary
Identify	Introduction or identification of problem is not present	Problem is identified or introduced in minimal or simplistic way	Problem is identified or introduced clearly and with support	Problem is identified or introduced clearly and with all relevant information necessary for full understanding
Analyze	Analysis, solution, or plan is not present	Analysis, solution, or plan presents limited or biased perspective	Analysis, solution, or plan presents effective or comparative perspective	Analysis, solution, or plan presents full, comparative, or original perspective
Conclude	Conclusion or synthesis is not present	Conclusion or synthesis is disconnected or oversimplified	Conclusion or synthesis is clear and connected to relevant information	Conclusion or synthesis is logical, well-informed, and strongly connected to relevant information

ⁱ Adapted from:

Palomar College Learning Outcomes Council,
<http://www2.palomar.edu/pages/sloresources/rubrics/critical-and-creative-thinking-rubric/>