BARTON
COMMUNITY COLLEGE

HLC Accreditation Evidence

Title: Program Assessment Report 2019-2021

URL:

Office of Origin: Vice President of Instruction

Contact(s):

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PROGRAM ASSESSMENT REPORT
2019 - 2021

BARTON COMMUNITY COLLEGE

Contents

R = Remember & Understand   *A = Apply & Analyze*   *E = Evaluate & Create*

PROGRAM LEARNING OUTCOMES

Assessment focuses on specific student learning outcomes (SLOs) relating to what a student will remember, understand, apply, analyze, evaluate, or create when they have completed a given learning experience. Consequently, program assessment looks at the various SLOs students should achieve throughout a given program at Barton. These SLOs are referred to as program learning outcomes (PLOs).

Benchmark Definition

Student learning outcomes are compared to a benchmark, or minimum level of performance, as decided by the respective faculty, staff, or other associated party. The benchmark must be met for the SLO to be reached or attained. For the purposes of this report, **70% is the standard benchmark** used with an **aspirational benchmark of 80%.**

BLOOM'S TAXONOMY

A traditional programmatic analysis typically looks at where PLOs are Introduced (I), Practiced (P), and Applied (A), to find any gaps in this sequence. However, most programs at Barton do not have a series of sequential courses, rather students can complete most courses in any order, and thus a traditional IPA analysis is problematic. Instead, at the direction of the Higher Learning Commission (HLC) Assessment Academy Mentors, a Bloom's analysis of the PLOs was applied.

Bloom's Taxonomy is a model used for the classification of SLOs into tiers or categories of increasing complexity and cognition. The abbreviated categories listed in order from lowest to highest are Remember, Understand, Apply, Analyze, Evaluate, and Create with multiple verbs listed as subcategories within each. HLC Mentors suggested grouping the main categories into pairs. Specifically, based on the success at other institutions, they suggested pairing Remember & Understand (R), Apply & Analyze (A), and Evaluate & Create (E). These three categories, RAE, then mirror the traditional IPA analysis mentioned earlier while achieving the same purpose.

For more information on Bloom's Taxonomy, a quick search online will supply a wealth of information.

ANALYSIS

Barton values the learning rates of its students just as much as it values their passing rates, and this report seeks to analyze the interconnection between these two concepts. Consequently, this report does not look at one specific program, as the individual program assessment reports already serve that purpose, but gives an overall analysis of student learning at Barton.

To this end, various statistical analyses were applied to the given data, and resulting p-values are reported. A p-value can be thought of as the probability a given result happened by chance alone. Within this report, a p-value marked with an * indicates a statistically significant result, one that is likely a direct result of the parameters in place and not a coincidence.

For more information on p-values, a quick search online will supply a wealth of information.

Multiple Regression Analysis

A multiple regression analysis was completed looking at the connection between the RAE category (x_1), the percentage of students meeting a competency (x_2), the year (x_3), and the percentage of students passing a course (y).

The variables were set up as follows:

- $x_1 = \{R = 1, A = 2, E = 3\}$
- $x_2 = \%$ met
- $x_3 = \{2019 = 1, 2020 = 2, 2021 = 3\}$
- $y = \%$ pass

The respective rates of change (β's) were calculated for each variable as follows:

- $\beta_1 = -0.0301$ with a margin of error $= \pm 0.0115$ (p-value $= 0.0000001*$)
- $\beta_2 = 0.1337$ with a margin of error $= \pm 0.0460$ (p-value $= 0.00000001*$)
- $\beta_3 = 0.0272$ with a margin of error $= \pm 0.0126$ (p-value $= 0.00001*$)

The practical interpretation of these results is as follows:

- For each Bloom's level increased, the pass rate of the course decreased on average by 2 – 4%
- For each competency fully met, the pass rate of the course increased on average by 9 – 18%
- Each year, the pass rate increased on average by 1 – 4%

To elaborate further on the second bullet point, this shows that when a competency goes from 0% met to 100% met, the pass rate of the course should increase on average by about 13%. Equivalently, if a competency sees a 50% increase in overall achievement (i.e., 25% met to 75% met), the pass rate of the course can be expected to increase by half that, so on average about 7%. As shown, **there is a significant connection between learning rates and passing rates**.

To investigate the association between learning rates and passing rates further, a scatter diagram was created plotting the data points. The percentage of students meeting the competency (learning rate) was plotted on the horizontal axis and the percentage of students passing the respective course (passing rate) was plotted on the vertical axis, with the average point marked.
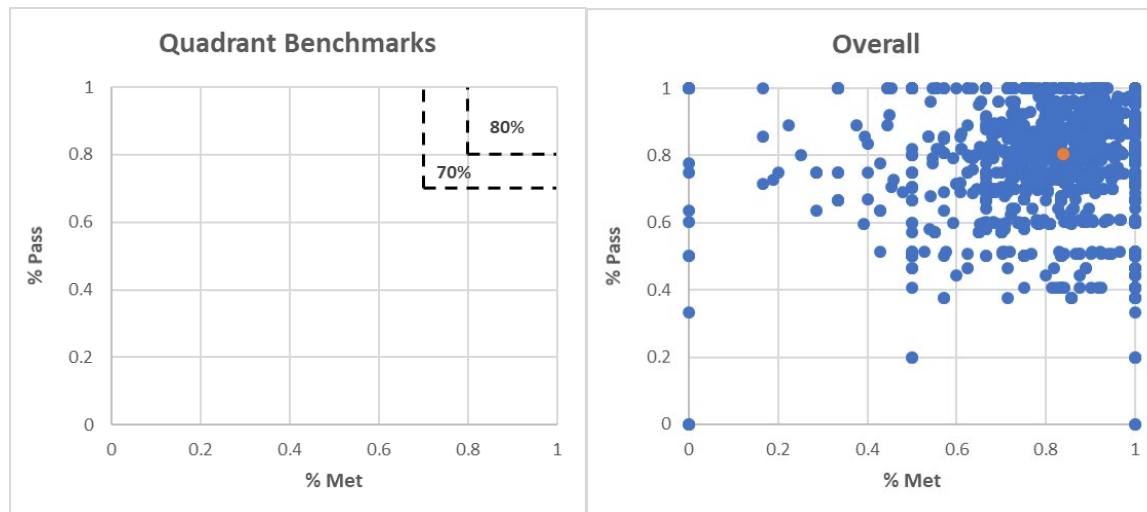
The overall goal is for the data to lie in the upper-right quadrant where high pass rates and high learning rates occur, hence the location of the quadrant benchmarks. As shown, a vast majority of data values lie beyond the 70% quadrant benchmark showing not only high passing rates, but also high learning rates. High passing rates paired with low learning rates and vice-versa would both be issues, fortunately this is not the case for most of the data.

RAE Analysis

Delving into the data further, this report breaks down the data by the percentage of students who met a competency and the respective Bloom category, with Remember & Understand (R) on the low end, Apply & Analyze (A) in the middle, and Evaluate & Create (E) on the high end. Then the percentage of students meeting competencies within each RAE category was sorted by courses with high pass rates (70% or more) and low pass rates (less than 50%).

% Met	Overall	High Pass Rate	Low Pass Rate
Remember (R)	0.8560	0.8617	0.8182
Apply (A)	0.8275	0.8366	0.8268
Evaluate (E)	0.8221	0.8286	0.8333

As shown, all percentages are above the 80% aspirational benchmark regardless of course pass rates, which is outstanding. **Barton is exceeding its aspirational benchmark for student learning**.

R = Remember & Understand   *A = Apply & Analyze*   *E = Evaluate & Create*

Nonetheless, something interesting occurred. For courses with a high pass rate, the percentage of competencies being met decreased as expected. R competencies are more rudimentary in nature than E competencies, and thus more likely to be met. But for courses with a low pass rate, the values are reversed with E competencies being met at a higher rate than R competencies.

Therefore, these low pass rate courses have students learning at a higher level, but something is keeping them from being successful and passing the course. A topic which needs further consideration. Perhaps the frequency of R competencies is higher than E competencies for these courses and thus the percentage of a student's grade may be skewed more towards R competencies bringing their overall grade down due to the lower percentage of R competencies being met for this group.

However, the differences between high and low pass rates were negligible except for R with 86% met being almost statistically greater than 82% met with $p = 0.0935$. The other p-values were 0.6917 for A and 0.4728 for E, both significantly larger than 0.0935. As such, the significance of lower tier competencies and their resulting influence on the attainment of higher tier competencies will need to be investigated further.

It at least appears that the emphasis on the attainment of the R competencies within the high pass rate courses, but not within the lower pass rate courses may be the determining factor with regards to pass rates.

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RAE Regression Analysis

To investigate the association between learning rates and passing rates further, a scatter diagram was created plotting the data points by Bloom's RAE categories. As before, the percentage of students meeting the competency (learning rate) was plotted on the horizontal axis and the percentage of students passing the respective course (passing rate) was plotted on the vertical axis.
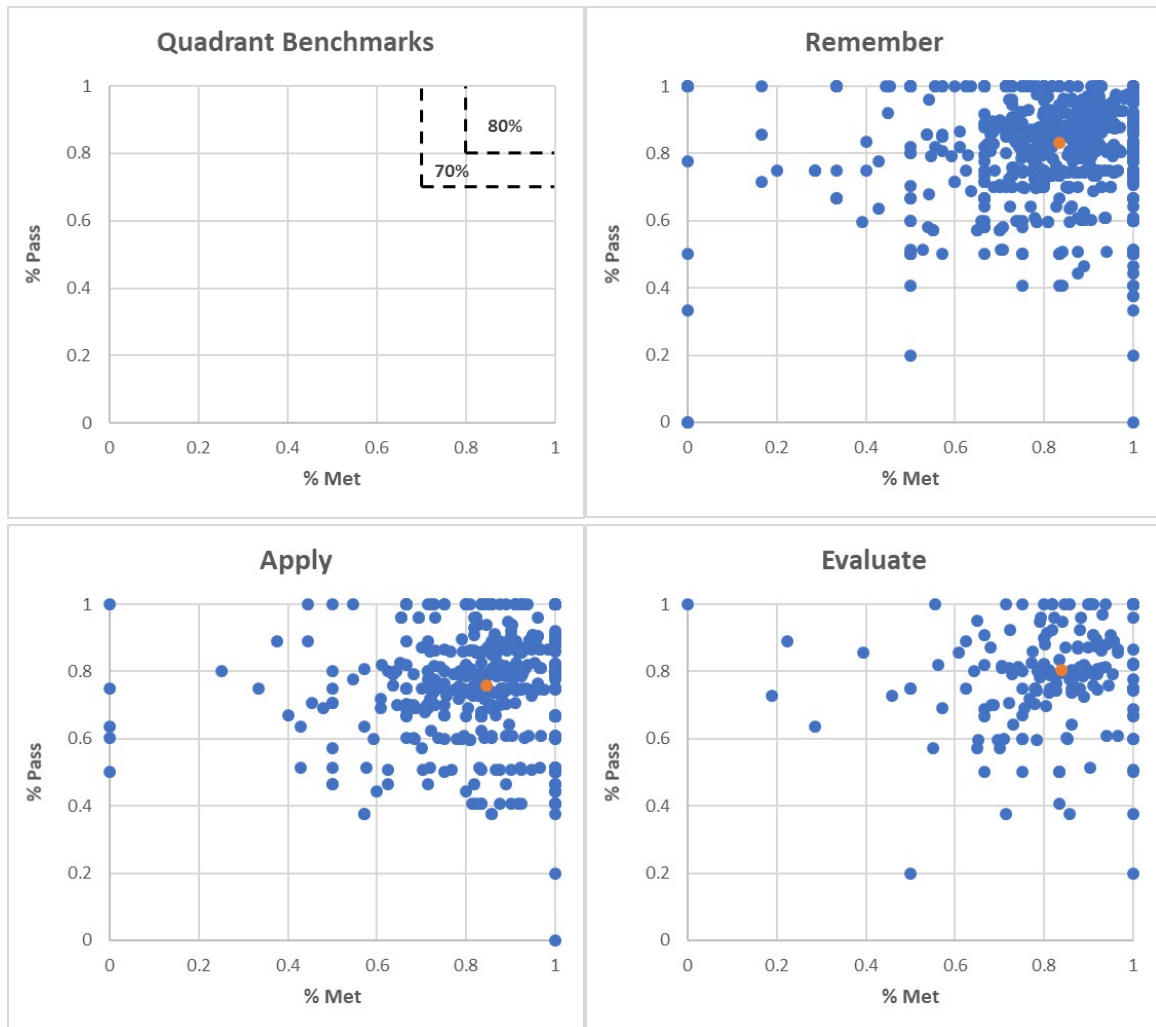
Once again, **Barton is doing well as most of the data is in the upper right quadrant as desired where both high learning rates and high pass rates occur.**

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To investigate this, the number of data points that lie in each benchmark quadrant is counted to calculate the percentage located in the upper right quadrant. The resulting percentages for each benchmark quadrant, sorted by RAE category, are as follows:
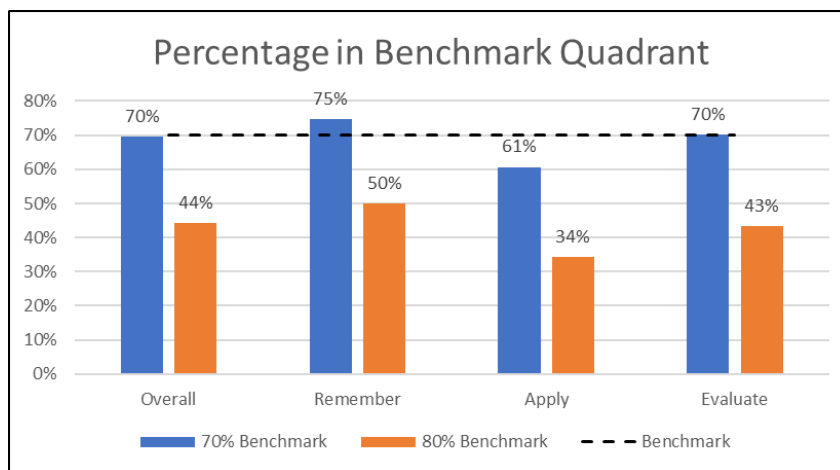
As shown, only the Apply & Analyze (A) competencies miss the 70% benchmark with 61% of data points within the 70% quadrant. So, although improvements can be made, it is worth noting that **Barton is once again meeting its benchmark overall with regards to student learning**.

The respective rates of change (β's) were calculated for each scatter diagram as follows:

- $\beta_R = 0.1634$ with a margin of error $= \pm 0.0564$ (p-value = 0.0000002*)
- $\beta_A = 0.0560$ with a margin of error $= \pm 0.0921$ (p-value = 0.2328)
- $\beta_E = 0.2283$ with a margin of error $= \pm 0.1363$ (p-value = 0.0011*)

The practical interpretation of these results is as follows:

- For each R competency fully met, the pass rate of the course increased on average by 10 – 22%
- For each A competency fully met, the pass rate of the course does not change at a statistically significant level, note a 0% change is possible based on the margin of error
- For each E competency fully met, the pass rate of the course increased on average by 9 – 36%

The significance of the Remember & Understand (R) competencies once again stands out as one of the biggest takeaways. As these tend to be the more basic competencies, the time needed to cover them when compared to the amount of time needed to cover the more complex Evaluate & Create (E) competencies makes R competencies a greater return on the investment.

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CONCLUSIONS

Faculty can make the largest impact on both learning and passing rates for their courses by spending more time on foundational competencies to ensure student comprehension before moving onto higher orders of thinking.

Instructional Reviews

Along with the above data analysis, the 2021 Instructional Reviews were examined by the Program Assessment Subcommittee (PLAC). The team looked for trends in the given responses, items to be addressed, and any gaps in the interpretation and use of assessment data.

One area the committee reviewed was the explicit usage of student learning outcomes (SLOs) in completed instructional reviews. The table below expresses the frequency in which instructional reviews addressed specific student learning outcomes in their assessment questions, their goals, and their budgetary requests.
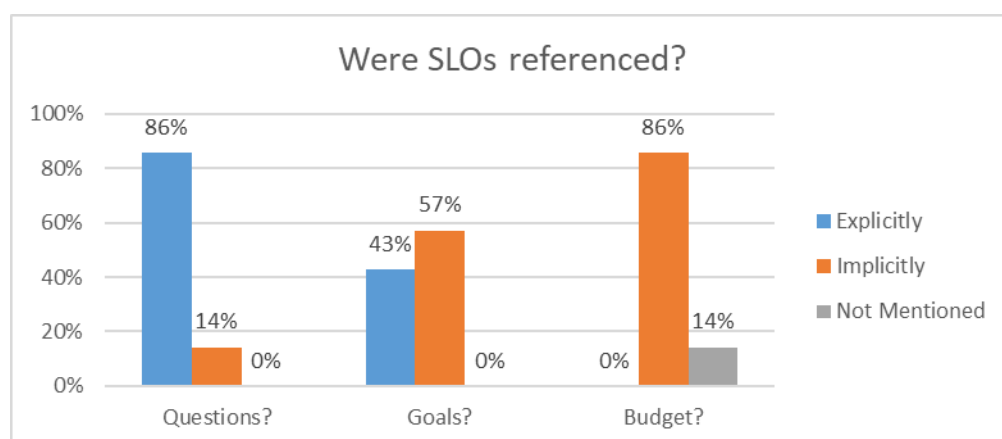
Faculty mentioned the student learning outcomes (SLOs), but there is room for improvement. Supplying explicit examples for future professional development is recommended. Completed instructional reviews that name specific SLOs, courses, curricular changes, or processes as examples can show clear expectations.

General Observations

- Programs mentioned the need to add new courses coupled with the need to hire more faculty
- Programs desire to expand outreach to specific student populations, and to connect to the community at large
- Programs are aware of instructional and student-specific supports and are working to integrate those supports into their curriculum
- Programs wrote down goals or action steps highlighting marketing practices for enrollment growth

Professional Development

The Center for Innovation & Excellence identified the following professional development trends:

- Canvas training
- Course design
- Repository help
- Center funding opportunities
- Course design/online support
- Assessment design
- Developmental education best practices and pedagogical differences
- Student needs
- Diversity, equity, and inclusion
- Educational technology such as H5P and VidGrid
- Essential skills
- Instructional quality
- Student engagement
- Non-cognitive skills
- Open Educational Resources

Summary

The analysis of instructional reviews by PLAC has led to recommendations for the formatting of the instructional review form, training topics for those programs completing the instructional review process, and professional development opportunities through the Center for Innovation and Excellence.

Barton values the learning rates of its students just as much as it values their passing rates, and the data supports and confirms this statement. Furthermore, the comments made by faculty and staff within the instructional reviews point to a greater focus on students and a desire to improve the overall learning experience.