General Education Assessment: Critical Thinking Results 2020

What do we mean by Critical Thinking?

Virginia Western describes Critical Thinking as the ability to use information, ideas and arguments from relevant perspectives to make sense of complex issues and solve problems.
A competent critical thinker evaluates evidence carefully and applies reasoning to decide what to believe and how to act. A student who thinks critically can:

- o identify and summarize issues
- o identify key assumptions
- o provide accurate evidence
- o present logical conclusions

How did we Critical Thinking?
We assessed students' quantitative literacy abilities through assessment of selected classwork.

How was student work selected?

Fall 2019

- At the beginning of the fall 2019 semester, program heads discussed the general education competencies that would be assessed that year with the faculty in their area. For 2019-20, these competencies were Quantitative Literacy and Critical Thinking.
- Faculty identified what assignments in their courses might be appropriate to serve as "artifacts" for the assessment process, and submitted a list of these to the Institutional Effectiveness Office. Such assignments might include homework, lab assignments, test questions, projects, or other student work.
- The Institutional Effectiveness Office reviewed the lists and worked with program heads and faculty as needed to ensure that an appropriate array of course sections was included.

Spring 2020 – Fall 2020

- By the end of the following semester (spring 2020), faculty sent the Institutional Effectiveness Office the student work (artifacts) from all of the students in their class for the selected assignments. Because of COVID-19 disruptions, not all of the planned assignments were conducted. The collection period was then extended through summer 2020 and fall 2020.
- The faculty submissions were not graded and included the student names and student IDs for demographic analysis. All student and faculty information was redacted from the artifacts by the Institutional Effectiveness Office prior to assessment.

Spring 2021

- The Institutional Effectiveness Office selected a random sample of 150 redacted quantitative literacy artifacts to be assessed.
- Student artifacts from 2020 were assessed from the following classes, which include a range of subjects, instructor types, student levels, and course modalities:

Course	Instructor Type	Course Level	Mode of Instruction
ADJ	Full-time	1xx	Day (converted to Zoom due to COVID)
BIO	Full-time	1xx	Hybrid (converted to Zoom due to COVID)
BIO	Full-time	1xx	Online
ENG	Adjunct	1xx	Evening (converted to Zoom due to COVID)
ENG	Dual	1xx	Dual enrollment in the high schools
ENG	Full-time	2xx	Day (converted to Zoom due to COVID)
HIS	Adjunct	1xx	Day (converted to Zoom due to COVID)
HIS	Adjunct	1xx	Online
LGL	Full-time	2xx	Hybrid (converted to Zoom due to COVID)
PLS	Adjunct	2xx	Online
PSY	Full-time	2xx	Online

Who assessed the student work?

- Through the governance process, some faculty chose to serve on the General Education Workgroup for 2020-21. This workgroup was charged with:
    - Assessing the artifacts for the selected general education competencies
    - Analyzing prior general education assessment results and developing a plan for improving student learning for these outcomes
    - Revising the assessment rubrics as needed
- The members of the workgroup were divided into teams, each assessing an equitable set of artifacts from 2020. The team members evaluated and scored each artifact based on criteria in the appropriate rubric.
- Each team then provided the Institutional Effectiveness Office with a list of reconciled scores as well as summary information regarding the process, the rubric, student strengths and student weaknesses.
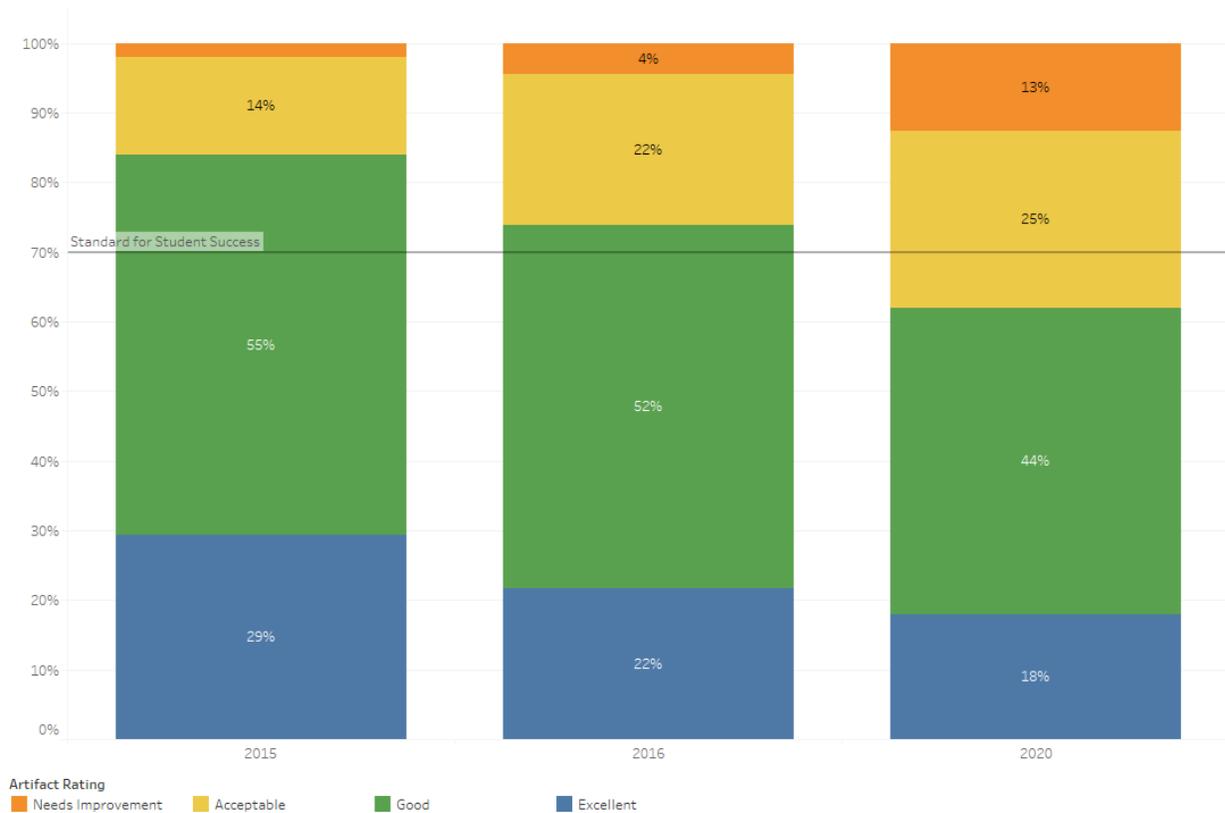
The Institutional Effectiveness Office then analyzed the results, with comparison against a target for student achievement of the competency. This target was established by the Vice President of Academic and Student Affairs based on prior results and approved by Faculty Senate. The results will be discussed with faculty at the beginning of the fall 2021 semester.

Who were the standards for assessment?

What were the standards for assessment?

The rubric used to assess the 2020 critical thinking artifacts is included at the end of this report.

What were our results?

Critical Thinking Assessment
Overall Artifact Rating Trends

	2015	2016	2020
Needs Improvement		4%	13%
Acceptable	14%	22%	25%
Good	55%	52%	44%
Excellent	29%	22%	18%

Standard for Student Success — 70%

Artifact Rating
- Needs Improvement
- Acceptable
- Good
- Excellent

Note: The standard for student success is that at least 70% of examined artifacts receive a rating of "Good" or "Excellent".

The assessment teams noted the following overall student strengths:

- Many artifacts indicated students had at least an understanding of how to set up and begin the calculations
- Most students were able to set up initial steps and calculations

The teams also noted the following overall student weaknesses:

- Students showed difficulty either knowing how to complete calculations or at some point had math errors
- Some students seemed to lack critical thinking skills for problem solving, as indicated by difficulties in identifying the relevant information as they moved through the calculation and carrying appropriate results over to the next step.

Have results changed since the last time this outcome was assessed?

Prior to 2017, all general education competencies were evaluated each year. This resulted in an overload of information that made it difficult to implement meaningful change. It also meant that Virginia Western had several assessment teams, which led to turnover and potential discrepancies in assessment over time. Starting in 2017, the college shifted to focusing on two general education competencies each year. Faculty were encouraged to remain with the assessment teams from year to year even though the competencies to be assessed were different each year. This led to reduced turnover and a deeper cohesiveness within the assessment teams. The college was also able to analyze results more fully and make deliberate change to impact student learning in specific areas.

Year	% of Artifacts assessed as Excellent or Good
2020	62%
2016	74%
2015	84%

The percentage of artifacts assessed as Excellent or Good declined markedly in 2020, and for the first time fell below the standard for success set at 70%. Possible factors affecting these results include:

- COVID effects (most likely)
- Changes in the rubrics over time
- A more experienced assessment team
- Changes in the assignments used for assessment

Breakdown of current results

The following demographics were not analyzed due to an insufficient number of artifacts in these categories:
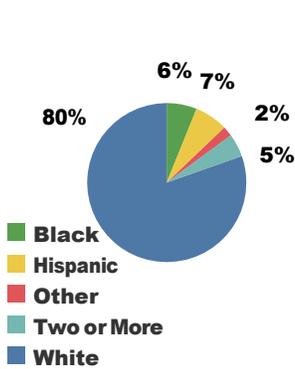
- Dual enrollment

Within the remaining demographic categories, the largest differences were by degree level, by age range, and by Pell grant eligibility.

- Degree level: Among non-program placed students (often transient students from other institutions), 88% of artifacts earned an assessment of Excellent or Good, versus 59% of artifacts from Transfer (AA and AS) students, and 53% of artifacts from Career Technical (AAS and certificate) students.
- Age range: By age range, 53% of artifacts from students age 19 or younger were judged as Excellent or Good, versus 79% from students 20-24 and 73% from students 25 or older.
- Pell eligibility: Among students eligible for Pell grants, 60% of artifacts earned an assessment of Excellent or Good, versus 75% of artifacts from students who were not eligible for Pell grants.
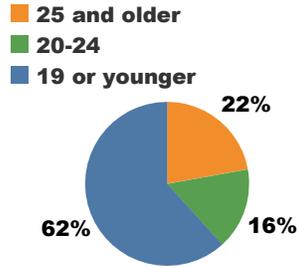
Critical Thinking Assessment
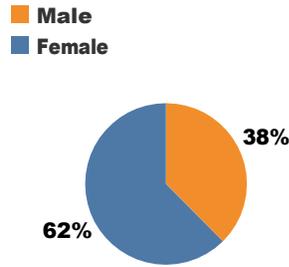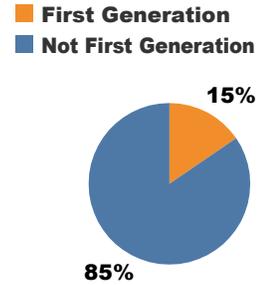## Percentage of Artifacts Examined by Demographic Category

Ethnicity**

80%
6%
7%
2%
5%

- Black
- Hispanic
- Other
- Two or More
- White

Age Range

- 25 and older
- 20-24
- 19 or younger

22%
16%
62%

Gender

- Male
- Female

38%
62%

First Generation

- First Generation
- Not First Generation

15%
85%

Degree

- Career Technical
- Not Program-Placed
- Transfer

27%
16%
57%

Pell Eligibility

- Eligible
- Not Eligible

13%
87%

Class Modality

- Virtual
- Dual *
- Face-to-Face

40%
8%
52%
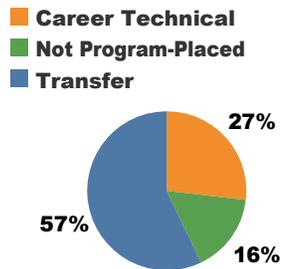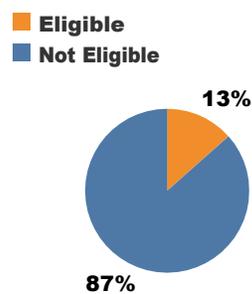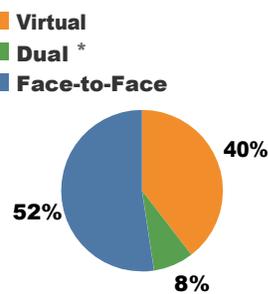
Categories that comprised less than 10% of examined documents are noted with an asterisk (*) and are not included in the following ratings breakdown.

**Non-white ethnicities represented together as "Minority" in breakdown.

Critical Thinking Assessment
Artifact Ratings by Demographic Category

What changes are we making to improve student learning for Critical Thinking?

Because this competency was assessed at the height of Covid, there were many unknowns for the campus community. Faculty were primarily focused on transitioning their courses to Zoom and making the necessary changes to course materials to accommodate the online modality and offer extra support to students. The faculty decided that the improvements for the critical thinking competency will be to increase the number of students assessed as well as assess a more diverse population of students, which will include assessments from all schools at the College. This will allow for more meaningful data to be collected and will provide a more accurate representation of whether or not the target was met.

Critical Thinking Rubric

Revised 3/13/19

Critical Thinking: A competent critical thinker has the ability to use information, ideas and arguments from relevant perspectives to make sense of complex issues and solve problems. This includes being able to locate, evaluate, interpret, and combine information to reach well-reasoned conclusions or solutions.

Critical Thinking Component	Excellent-4	Good-3	Acceptable-2	Needs Improvement-1
Identifies and summarizes issues	Student identifies and clearly states the basics of the issue	Student states the main issue but description leaves some terms undefined	Student states the main issue but description leaves most terms undefined	Student does not identify and summarize the problem, or identifies a different or inappropriate problem
Key assumptions	Student identifies and questions the validity of the key assumptions	Student identifies most of the key assumptions and questions some of the assumptions	Student identifies most of the key assumptions and minimally questions some of the assumptions	Student does not examine the assumptions that underlie the issue
Quality of evidence	Student presents evidence and thoroughly questions its accuracy and relevance	Student presents evidence and questions its accuracy and relevance	Student presents evidence but fails to question its accuracy and relevance	Student merely repeats information taking it as truth or denies evidence without adequate justification.
Conclusions	Student presents logical conclusions	Student presents logical conclusions with minor flaws	Student attempts to present a conclusion.	Student fails to identify conclusions