## Developmental Achievement \& Student Satisfaction Reports Fall 2018 <br> Author: Joseph F. van Gaalen, Ph.D., Asst. VP, IR, Assessment \& Effectiveness

Florida SouthWestern State College's assessment measures for the Developmental Accountability plan include a collection of achievement data to determine the efficacy of the developmental options and to inform course and program improvement. Additionally, FSW tracks satisfaction of current developmental courses through a survey administered at the end of each term. The data is in support of assessment measures for the Developmental Accountability plan to determine efficacy of developmental options and to inform course and program improvement. What follows is the assembly of achievement and student satisfaction reports for each of the developmental courses (ENC 0022, REA 0019, and MAT 0057).

The faculty for ENC 0022 Writing for College Success reviewed achievement to determine if there is any significant difference across developmental strategies (Compressed and Modularized).

The faculty for MAT 0057 Mathematics for College Success reviewed achievement to determine if there is any significant difference across developmental strategies (Compressed and Modularized).

The faculty for REA 0019 Reading for College Success use a defined course outcome in AY 2016-2017 that students will read at a post-secondary level that correlates with college success by the completion of the Developmental Reading sequence. Faculty established 1) a goal of the mean score difference (pre-/post) test of the course mastery exam will improve significantly college wide, 2 ) a goal of the mean score difference (pre-/post) of the course mastery exam will improve significantly across developmental strategies (Compressed, Contextualized, and Modularized), and 3) that $80 \%$ of REA 0019 completers will pass the course mastery exam for reading and complete the course with a ' C ' or better.

Note that surveys were not conducted during fall 2018 term as they are being revised.

* Section 1: ENC 0022 Common Course Assessment Report (includes ENC 1101 \& LIT 2000)
* Section 2: ENC 0022 Final Exam Assessment Report
* Section 3: MAT 0057 Final Exam Assessment Report
* Section 4: REA 0019 Final Exam Assessment Report

Section 1

# English Assessment Report Fall 2018 

Author: Joseph F. van Gaalen, Ph.D., Asst. VP, IR, Assessment \& Effectiveness

## 1 INTRODUCTION

Fall 2014 marked the beginning of a new assessment plan for the English Department of Florida SouthWestern State College (FSW) in three courses: ENC 0022 Writing for College Success, ENC 1101 Composition I, and ENC 1102 Composition II. In fall 2017, ENC 1102 would be replaced by LIT 2000 Introduction to Literature (I). The planned assessment practice continues in fall 2018 with a few modifications. Instructors use a common rubric with seven identified rubric dimensions in the case of ENC 0022. In ENC 1101 and LIT 2000, two dimensions have been identified for study. The assessment plan uses a random sample of $40 \%$ of all course sections offered in ENC 1101 and LIT 2000. In the case of ENC 0022, because it is a course being assessed by assessment plans in addition to the English Department (Developmental Accountability Plan) all course sections for ENC 0022 are assessed.

The standard assessment plan highlighted above is designed to evaluate each course and inform faculty on Student Learning Objectives (SLOs) for future assessment plans. Additionally, the plan provides information on achievement levels of Dual Enrollment artifacts compared with non-Dual Enrollment, as well as online artifacts compared with traditional artifacts. Other analyses such as comparison by term length (standard vs. mini-term) and longitudinal studies are included.

For additional detail or further analysis not provided in this report, please contact Dr. Joseph F. van Gaalen, Asst. VP, IR, Assessment \& Effectiveness, Academic Affairs (ifvangaalen@fsw.edu; x16965).

## 2 ENC0022

### 2.1 LEARNing Objectives \& Descriptive Statistics

Using common rubric criterion as an assessment method, the FSW English faculty defined multiple areas of interest for evaluation based on core outcomes for the course. Those outcomes include:
> Plan and write paragraphs and essays reflecting styles and tones appropriate for their audience and use adequate support, coherence, and unity that demonstrate understanding of content for expository and persuasive purposes.
> Establish a substantive claim, link claims to relevant evidence, and acknowledge competing arguments, gather information needed, and accurately incorporate source material into their own writing to avoid plagiarism.
$>$ Identify and correctly use proper conventions for sentence grammar and avoid illogical shifts in pronouns and verbs in their own writing and on tests.
$>$ Identify and use proper conventions for spelling, capitalization, and punctuation in their own writing and on tests.
> Identify and correctly use the conventions of a variety of sentence structures and will be able to avoid sentence fragments, comma splices, and fused sentences in their own writing and on tests.
$>$ Identify and write effective topic sentences and thesis statements that address task and audience and use logical structure, support, and transitional devices for expository and persuasive purposes.

### 2.1.1 Learning Objectives

ENC 0022 is scored using a rubric with seven dimensions: Introductory Paragraph, Support Paragraphs, Organization, Concluding Paragraph, Grammar, Mechanics, and Research. Each dimension is scored on a scale of 1 to 4 (1-Unacceptable, 2-Needs work, 3-Average, 4-Above average), with 0s if the baseline of 'Unacceptable' is not met. The English department has identified a target statistic for measurement purposes (SLO1) of measuring the percentage of artifacts scoring a 2 or greater.

For the fall 2018 assessment, 129 artifacts were collected for ENC 0022 from 6 of 9 course sections. The lowest scoring rubric dimension for percentage of artifacts scoring a 2 or greater is Research at 88\%. All other dimensions exhibit percentage of $95 \%$ or higher (Table 1). For a visual comparison of scores by dimension, see Figure 1.

| Rubric <br> Score | Introductory <br> Paragraph | Support <br> Paragraphs | Organization | Concluding <br> Paragraph | Grammar | Mechanics | Research |
| ---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Developing <br> or higher | $95 \%$ | $99 \%$ | $96 \%$ | $97 \%$ | $97 \%$ | $98 \%$ |  |
| 4 | $29 \%$ | $35 \%$ | $32 \%$ | $28 \%$ | $25 \%$ | $19 \%$ | $19 \%$ |
| 3 | $41 \%$ | $48 \%$ | $48 \%$ | $44 \%$ | $54 \%$ | $52 \%$ | $39 \%$ |
| 2 | $26 \%$ | $16 \%$ | $16 \%$ | $25 \%$ | $18 \%$ | $26 \%$ | $30 \%$ |
| 1 | $5 \%$ | $1 \%$ | $4 \%$ | $3 \%$ | $3 \%$ | $2 \%$ | $9 \%$ |
| 0 | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $3 \%$ |

Table 1. Achievement by rubric dimension (includes percentage of students scoring in developmental level or higher as per SLO.


Figure 1. ENC 0022 distribution of rubric scores by dimension.

### 2.1.2 Descriptive Statistics \& Longitudinal Studies

Descriptive statistics for ENC 0022 artifacts can be found in Table 2. A histogram of artifact scores for all 129 artifacts is shown in Figure 2. Distribution of artifact scores is centered on 20/28, and is moderately negatively skewed, meaning scores are shifted towards the upper range. To describe the behavior of the rubric dimensions based on overall achievement a color map, or binary raster image was created by calculating the mean scores for each dimension as a function of combined score (Figure 3). To create this image the rubric scores ( $4,3,2,1$, or 0 ) for each artifact was grouped based on combined raw rubric score ( 7 dimensions x maximum rubric level of $4=28$ overall points). The color represents the mean rubric score achieved in each dimension based on the combined score as shown in the $x$-axis.

|  | Introductory <br> Paragraph | Support <br> Paragraphs | Organization | Concluding <br> Paragraph | Grammar | Mechanics | Research | TOTAL |
| ---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| n | 129 | 129 | 129 | 129 | 129 | 129 | 129 | $\mathbf{1 2 9}$ |
| Max | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 28 |
| Min | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 7 |
| Median | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 20 |
| Mode | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 20 |
| Mean | 2.9 | 3.2 | 3.1 | 3.0 | 3.0 | 2.9 | 2.6 | 20.7 |
| Standard | 0.85 | 0.72 | 0.80 | 0.81 | 0.74 | 0.74 | 1.00 | 4.19 |
| deviation | -0.34 | -0.40 | -0.61 | -0.30 | -0.47 | -0.17 | -0.49 | $-\mathbf{0 . 2 3}$ |
| Skewness | -0.66 | -0.54 | 0.00 | -0.61 | 0.12 | -0.35 | -0.06 | $-\mathbf{0 . 0 4}$ |

Table 2. Descriptive statistics for ENC 0022 common course assessment.


Figure 2. Overall score distribution for ENC 0022 artifacts (fall 2018 term).

|  | Intradutcary <br> Paragraph | Support <br> Paragraphs | Organization | Concuding <br> Paragraph | Grammar | Mecharics | Research |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 28 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| 27 | 3.9 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 3.1 |
| 26 | 3.7 | 4.0 | 3.8 | 4.0 | 3.7 | 3.3 | 3.5 |
| 25 | 4.0 | 3.8 | 3.5 | 3.5 | 3.5 | 3.3 | 3.5 |
| 24 | 3.6 | 3.9 | 3.8 | 3.4 | 3.4 | 3.0 | 2.9 |
| 23 | 3.7 | 3.5 | 3.3 | 3.5 | 2.8 | 3.0 | 3.2 |
| 22 | 3.1 | 3.2 | 3.7 | 3.3 | 3.0 | 3.1 | 2.6 |
| 21 | 3.1 | 3.2 | 3.0 | 2.8 | 3.2 | 3.2 | 2.5 |
| 20 | 2.9 | 3.0 | 3.0 | 2.9 | 3.0 | 3.0 | 2.1 |
| 19 | 2.7 | 3.1 | 2.9 | 2.7 | 2.8 | 2.6 | 2.3 |
| 18 | 2.2 | 3.0 | 2.7 | 2.5 | 2.7 | 2.3 | 2.7 |
| 17 | 2.2 | 2.7 | 2.4 | 2.2 | 2.8 | 2.2 | 2.4 |
| 16 | 2.3 | 3.0 | 2.8 | 2.5 | 1.8 | 1.8 | 2.0 |
| 15 | 1.8 | 2.3 | 2.0 | 2.3 | 2.5 | 2.3 | 2.0 |
| 14 | 1.9 | 2.0 | 2.0 | 2.0 | 1.9 | 2.0 | 2.2 |
| $\leq 13$ | 1.0 | 1.7 | 1.0 | 1.3 | 1.7 | 1.7 | 1.7 |

Figure 3. Colormap of mean scores for each rubric dimension (range: 0-4) based on overall rubric score (combined rubric score of all dimensions, max=28) for ENC 0022. A rubric dimension with hotter colors (reds) means that dimension achievement exceeds the overall score and is an area of strength. An exam section with colder colors (blues) means that section achievement is lower than the overall score and is therefore an area of weakness.

A review of the colormap in Figure 3 above shows that "Introductory Paragraph," "Support Paragraphs," "Organization," and "Concluding Paragraph" exhibit higher achievement at 23/28 or higher compared with "Grammar," "Mechanics," and "Research." For example, at 23/28, the former dimensions range from 3.3/4.0 to 3.7/4.0. By comparison, the latter dimensions range from 2.8/4.0 to 3.2/4.0. From a student performance perspective, strong students are weakest in "Grammar," "Mechanics," and "Research."

A comparison of fall 2018 results with past results is shown in Figure 4 below. Results exhibit several trends. First, all rubric dimensions exhibit a sharp drop in fall 2017 data, likely in response to a truncated term as a result of Hurricane Irma. Second, "Introductory Paragraph," "Support Paragraphs," and "Organization" consistently are the highest scoring dimensions over time. These three dimensions represent the top three scores in 7 of 9 terms. Third, the "Research" dimension exhibits the lowest scores in 5 of 9 terms while "Mechanics" exhibits the lowest in 3 of 9 and "Grammar" in 1 of 9 . And lastly, the "Research" dimension exhibits abnormally variable data in fall 2016 where no other dimension does. The cause is uncertain.


Figure 4. Comparison of mean scores for ENC 0022 through time.

### 2.2 Comparisons by Site, Format, and Student Type

### 2.2.1 Dual Enrollment to non-Dual Enrollment Comparison

ENC 0022 is not offered as a dual enrollment (offsite) course nor is it offered to dual enrollment students onsite and so no comparison study between dual enrollment artifacts and traditional artifacts can be made.

### 2.2.2 Online to Traditional Comparison

ENC 0022 is not offered as an online course and so no comparison study between online artifacts and traditional artifacts can be made.

### 2.2.3 Comparison by Site/Campus

Of the 129 artifacts collected from ENC 0022, 15 originated from the Collier campus, 4 from the Hendry Glades Center, and 110 from the Thomas Edison (Lee) campus. Scores by rubric dimension varied greatly across campuses although sample size at Hendry Glades is limited ( $n=4$ ). A comparison of mean scores by rubric dimension is provided in Table 3.

|  | Introductory <br> Paragraph | Support <br> Paragraphs | Organization | Concluding <br> Paragraph | Grammar | Mechanics | Research |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Collier | 3.1 | 3.0 | 3.3 | 3.2 | 3.1 | 3.0 | 2.9 |
| Hendry Glades | 3.3 | $\mathbf{4 . 0}$ | 3.5 | 3.3 | 3.0 | 3.5 | unreported |
| Thomas Edison | 2.9 | 3.2 | 3.0 | 2.9 | 3.0 | 2.8 | 2.7 |

Table 3. Comparison of mean scores by site for ENC 0022. Bold denotes highest mean score in that dimension among all sites.

## 3 ENC 1101

### 3.1 Learning Outcomes, Objectives, \& Descriptive Statistics

Using common rubric criterion revised based on assessment results of AY 2016-17 as an assessment method, the FSW English faculty defined two areas of interest for evaluation based on core outcomes for the course. Using two revised common rubric dimensions, the outcomes include:
> SLO 1: Students must incorporate research into their own writing using summary, paraphrase, and direct quotation by composing academic research assignments.

0 (5) Achieves Excellence: The student integrates and explicates relevant and credible sources in his or her academic research through summary, paraphrase, and direct quotation; (4) Exceeds Expectations: The student introduces and explicates relevant and credible sources in his or her academic research through summary, paraphrase, and direct quotation; (3) Meets Expectations: The student introduces and uses some relevant and credible sources in his or her academic research through some summary, paraphrase, and direct quotation; (2) Needs Improvement: The student identifies, but does little to include, relevant and credible sources in his or her academic research through minimal summary, paraphrase, and direct quotation; (1) Does Not Meet Expectations: The student does not include relevant and credible sources in his or her academic research and/or engage in summary, paraphrase, and direct quotation.
> SLO 2: Students must demonstrate the ability to organize, compose, revise, and edit essays with clear thesis statements, coherent, unified paragraphs, and varied sentence structures and length.
o (5) Achieves Excellence: The student develops and engages in a through process of drafting and revision to produce a composition with a clear thesis statement, unified paragraphs, and varied sentence structure and length; (4) Exceeds Expectations: The student develops and engages in a satisfactory process of drafting and revision to produce a composition with a clear thesis statement, unified paragraphs, and varied sentence structure and length; (3) Meets Expectations: The student mostly follows a process of drafting and revision to produce a composition with a thesis statement, unified paragraphs, and some varied sentence structure and length; (2) Needs Improvement: The student does minimal drafting and revision to produce a composition that is lacking in a clear thesis statement and/or unified paragraphs, and some varied sentence structure and length; (1) Does Not Meet Expectations: The student does not engage in drafting and revision and does not produce a composition that has a clear thesis statement, unified paragraphs, and/or varied sentence structure and length.

### 3.1.1 Learning Outcomes \& Objectives

ENC 1101 is scored using a rubric with just two dimensions as listed above and herein referred to as SLO 1 and SLO 2. The English department has identified a target statistic for measurement purposes of measuring the percentage of artifacts scoring a 3 or greater. For the fall 2018 assessment, 1280 artifacts were collected for ENC 1101 from 55 of 60 course sections sampled from 166 course sections offered. The remaining five course sections did not report data. The resultant sample represents $32 \%$ of the population, up from $29 \%$ in fall 2017. SLO 1 achievement is $81 \%$ scoring 3 or greater. SLO 2 achievement is $78 \%$ scoring 3 or greater (Table 4). For a visual comparison of scores by dimension, see Figure 5.

| Rubric Score | SLO 1 | SLO 2 |
| :---: | :---: | :---: |
| \% Meets Expectations or Higher | $\mathbf{8 1 \%}$ | $\mathbf{7 8 \%}$ |
| 5 | $19 \%$ | $19 \%$ |
| 4 | $33 \%$ | $30 \%$ |
| 3 | $29 \%$ | $29 \%$ |
| 2 | $10 \%$ | $11 \%$ |
| 1 | $9 \%$ | $10 \%$ |

Table 4. Percentage of student achievement level by rubric dimension (includes percentage of students scoring in developmental level or higher as per SLO) for ENC 1101.


Figure 5. ENC 1101 distribution of rubric scores by dimension.

### 3.1.2 Descriptive Statistics

Descriptive statistics for ENC 1101 artifacts can be found in Table 5. The distributions of artifact scores for both SLOs are moderately negatively skewed, meaning scores are shifted towards the higher range.

|  | SLO 1 | SLO 2 |
| ---: | :---: | :---: |
| n | 1280 | 1280 |
| Mean | 3.4 | 3.4 |
| Standard deviation | 1.21 | 1.23 |
| Skewness | -0.59 | -0.50 |
| Kurtosis | -0.25 | -0.43 |

Table 5. Descriptive statistics for ENC 1101 common course assessment.

### 3.2 Comparisons by Site, Format, and Student Type

### 3.2.1 Dual Enrollment to non-Dual Enrollment Comparison

During the fall 2018 semester, 172 dual enrollment artifacts were collected in ENC 1101 and 1164 traditional (non-online) artifacts were collected in ENC 1101. A comparison of achievement is provided in Table 6. A graphical representation is provided in Figures 6 and 7. The dual enrollment percentage meeting expectations or higher (Level 3 or higher) is $12 \%$ points higher than the traditional for SLO 1 and $18 \%$ points higher for SLO 2. Both are statistically significant according to a Fisher's Exact Test.

| Rubric Score | Dual <br> Enrollment <br> SLO 1 | Traditional <br> SLO 1 | Dual <br> Enrollment <br> SLO 2 | Traditional <br> SLO 2 |
| :---: | :---: | :---: | :---: | :---: |
| \% Meets Expectations or Higher | $92 \%$ | $80 \%$ | $95 \%$ | $77 \%$ |
| 5 | $12 \%$ | $21 \%$ | $21 \%$ | $20 \%$ |
| 4 | $37 \%$ | $32 \%$ | $27 \%$ | $30 \%$ |
| 3 | $44 \%$ | $27 \%$ | $47 \%$ | $27 \%$ |
| 2 | $6 \%$ | $10 \%$ | $4 \%$ | $12 \%$ |
| 1 | $2 \%$ | $10 \%$ | $1 \%$ | $11 \%$ |

Table 6. Comparison of percentage of student achievement level by rubric dimension by modality.


Figure 6. Comparison of distribution of rubric scores between Dual Enrollment and Traditional course sections for SLO 1: Students must incorporate research into their own writing using summary, paraphrase, and direct quotation by composing academic research assignments.


Figure 7. Comparison of distribution of rubric scores between Dual Enrollment and Traditional course sections for SLO 2: Students must demonstrate the ability to organize, compose, revise, and edit essays with clear thesis statements, coherent, unified paragraphs, and varied sentence structures and length.

### 3.2.2 Online to Traditional Comparison

During the fall 2018 semester, 127 online artifacts were collected in ENC 1101 and 1037 traditional artifacts were collected in ENC 1101. A comparison of achievement is provided in Table 7. A graphical representation is provided in Figures 8 and 9. The online percentage meeting expectations or higher (Level 3 or higher) is 7\% points lower than the traditional for SLO 1 and 1\% points lower for SLO 2. Neither is statistically significant according to a Fisher's Exact Test.

| Rubric Score | Online <br> SLO 1 | Traditional <br> SLO 1 | Online <br> SLO 2 | Traditional <br> SLO 2 |
| :---: | :---: | :---: | :---: | :---: |
| \% Meets Expectations or Higher | $73 \%$ | $80 \%$ | $76 \%$ | $77 \%$ |
| 5 | $13 \%$ | $21 \%$ | $12 \%$ | $20 \%$ |
| 4 | $36 \%$ | $32 \%$ | $34 \%$ | $30 \%$ |
| 3 | $24 \%$ | $27 \%$ | $30 \%$ | $27 \%$ |
| 2 | $14 \%$ | $10 \%$ | $13 \%$ | $12 \%$ |
|  | 1 | $12 \%$ | $10 \%$ | $11 \%$ |

Table 7. Comparison between Online and Traditional course sections of percentage of student achievement level by rubric dimension.


Figure 8. Comparison of distribution of rubric scores between Online and Traditional course sections for SLO 1: Students must incorporate research into their own writing using summary, paraphrase, and direct quotation by composing academic research assignments.


Figure 9. Comparison of distribution of rubric scores between Online and Traditional course sections for SLO 2: Students must demonstrate the ability to organize, compose, revise, and edit essays with clear thesis statements, coherent, unified paragraphs, and varied sentence structures and length.

### 3.2.3 Comparison by Site/Campus

Of the 1280 artifacts collected from ENC 1101, 103 originated from the Charlotte campus, 222 from the Collier campus, 127 from FSW Online, 43 from the Hendry Glades Center,669 from the Thomas Edison (Lee) campus, and 172 from offsite (dual enrollment). A comparison of achievement is provided in Table

8 for SLO 1 and Table 9 for SLO 2. A graphical representation is provided in Figures 10 and 11. For SLO 1, the Hendry Glades Center exhibits the highest percentage meeting expectations or higher (Level 3 or higher) for when comparing onsite locations at 93\%. FSW Online exhibits the lowest at 73\%. For SLO 2, again the Hendry Glades Center exhibits the highest percentage meeting expectations or higher (Level 3 or higher) at $91 \%$. And now, it is the Collier campus that exhibits the lowest at $71 \%$. Based on results of a chi-squared test for independence, achievement across sites for both SLO 1 and SLO 2 are statistically significantly different (SLO $1: \chi^{2}=28.84,5$ d.f., $P=2.49 \times 10^{-5}, S L O 2: \chi^{2}=42.75,5$ d.f., $P=4.15 \times 10^{-8}$ ).

| Rubric Score | Charlotte | Collier | FSW <br> Online | Hendry <br> Glades | Thomas <br> Edison | Offsite <br> (Dual Enrollment) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| \% Meets Expectations or Higher | $\mathbf{8 7 \%}$ | $\mathbf{8 0 \%}$ | $73 \%$ | $\mathbf{9 3 \%}$ | $\mathbf{7 8 \%}$ | $92 \%$ |
|  | 5 | $27 \%$ | $14 \%$ | $13 \%$ | $30 \%$ | $22 \%$ |
| $12 \%$ |  |  |  |  |  |  |
|  | 4 | $34 \%$ | $38 \%$ | $36 \%$ | $47 \%$ | $29 \%$ |

Table 8. Comparison between sites of percentage of student achievement level by rubric dimension for SLO 1.


Figure 10. Comparison of distribution of rubric scores between sites for SLO 1: Students must incorporate research into their own writing using summary, paraphrase, and direct quotation by composing academic research assignments.

| Rubric Score | Charlotte | Collier | FSW <br> Online | Hendry <br> Glades | Thomas <br> Edison | Offsite <br> (Dual Enrollment) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| \% Meets Expectations or Higher | $\mathbf{8 4 \%}$ | $\mathbf{7 1 \%}$ | $\mathbf{7 6 \%}$ | $\mathbf{9 1 \%}$ | $\mathbf{7 7 \%}$ | $\mathbf{9 5 \%}$ |
|  | 5 | $19 \%$ | $14 \%$ | $12 \%$ | $33 \%$ | $21 \%$ |
| 4 | $37 \%$ | $30 \%$ | $34 \%$ | $47 \%$ | $28 \%$ | $27 \%$ |
|  | 4 | $28 \%$ | $26 \%$ | $30 \%$ | $12 \%$ | $27 \%$ |
| 2 | $6 \%$ | $19 \%$ | $13 \%$ | $2 \%$ | $11 \%$ | $47 \%$ |
|  | 2 | $10 \%$ | $10 \%$ | $11 \%$ | $7 \%$ | $12 \%$ |

Table 9. Comparison between sites of percentage of student achievement level by rubric dimension for SLO 2.


Figure 11. Comparison of distribution of rubric scores between sites for SLO 2: Students must demonstrate the ability to organize, compose, revise, and edit essays with clear thesis statements, coherent, unified paragraphs, and varied sentence structures and length.

## 4 LIT 2000

### 4.1 Learning Outcomes, Objectives, \& Descriptive Statistics

Using common rubric criterion developed prior to the start of AY 2017-2018 as an assessment method, the FSW English faculty defined two areas of interest for evaluation based on core outcomes for the course. Using two revised common rubric dimensions, the outcomes include:
$>$ SLO 1: Students will analyze literary works' exploration of the human condition and the ethical and cultural problems of their time. They will also consider how such issues continue to resonate in the contemporary world.
o (5) Achieves Excellence; (4) Exceeds Expectations; (3) Meets Expectations; (2) Needs Improvement; (1) Does Not Meet Expectations.
> SLO 2: Students must evaluate and interpret literary works from ethical, social, cultural, historical, philosophical, artistic, and/or biographical perspectives.

0 (5) Achieves Excellence; (4) Exceeds Expectations; (3) Meets Expectations; (2) Needs Improvement; (1) Does Not Meet Expectations.

### 4.1.1 Learning Outcomes \& Objectives

LIT 2000 is scored using a rubric with just two dimensions as listed above and herein referred to as SLO 1 and SLO 2. The English department has identified a target statistic for measurement purposes of measuring the percentage of artifacts scoring a 2 or greater. For the fall 2018 assessment, 164 artifacts were collected for LIT 2000 from 8 of 10 course sections sampled from 22 course sections offered. The remaining course sections did not report data. The resultant sample represents $36 \%$ of the population. Both SLOs exhibit the same percentage of artifacts scoring a 2 or greater at $95 \%$ (Table 10). For a visual comparison of scores by dimension, see Figure 12.

| Rubric Score | SLO 1 | SLO 2 |
| :---: | :---: | :---: |
| \% Meets Expectations or Higher | $\mathbf{9 5 \%}$ | $\mathbf{9 5 \%}$ |
| 5 | $28 \%$ | $30 \%$ |
| 4 | $37 \%$ | $42 \%$ |
| 3 | $24 \%$ | $15 \%$ |
| 2 | $6 \%$ | $9 \%$ |
| 1 | $5 \%$ | $5 \%$ |

Table 10. Percentage of student achievement level by rubric dimension (includes percentage of students scoring in developmental level or higher as per SLO) for LIT 2000.


Figure 12. LIT 2000 distribution of rubric scores by dimension.

### 4.1.2 Descriptive Statistics

Descriptive statistics for LIT 2000 artifacts can be found in Table 11. Distribution of artifact scores is moderately negatively skewed, meaning scores are shifted towards the higher range.

|  | SLO 1 | SLO 2 |
| ---: | :---: | :---: |
| n | 164 | 161 |
| Mean | 3.8 | 3.8 |
| Standard deviation | 1.10 | 1.10 |
| Skewness | -0.80 | -0.95 |
| Kurtosis | 0.18 | 0.30 |

Table 11. Descriptive statistics for LIT 2000 common course assessment.

### 4.2 Comparisons by Site, Format, and Student Type

### 4.2.1 Dual Enrollment to non-Dual Enrollment Comparison

No dual enrollment sections were offered during the fall 2018 semester, so no comparison study could be completed.

### 4.2.2 Online to Traditional Comparison

During the fall 2018 semester, 89 online artifacts were collected in LIT 2000 and 76 traditional artifacts were collected in LIT 2000. A comparison of achievement is provided in Table 12. A graphical representation is provided in Figures 13 and 14. The online percentage meeting expectations or higher (Level 2 or higher) is 5\% points higher than the traditional for SLO 1 and 4\% points higher for SLO 2. Neither is statistically significant according to a Fisher's Exact Test.

| Rubric Score | Online <br> SLO 1 | Traditional <br> SLO 1 | Online <br> SLO 2 | Traditional <br> SLO 2 |
| :---: | :---: | :---: | :---: | :---: |
| \% Meets Expectations or Higher | $\mathbf{9 2 \%}$ | $\mathbf{9 7 \%}$ | $\mathbf{9 3 \%}$ | $\mathbf{9 7 \%}$ |
| 5 | $24 \%$ | $37 \%$ | $25 \%$ | $40 \%$ |
| 4 | $40 \%$ | $35 \%$ | $48 \%$ | $37 \%$ |
| 3 | $19 \%$ | $31 \%$ | $16 \%$ | $15 \%$ |
| 2 | $9 \%$ | $3 \%$ | $4 \%$ | $14 \%$ |
| 1 | $8 \%$ | $3 \%$ | $7 \%$ | $3 \%$ |

Table 12. Comparison between Online and Traditional course sections of percentage of student achievement level by rubric dimension.


Figure 13. Comparison rubric scores between Online and Traditional course sections for SLO 1: Students will analyze literary works' exploration of the human condition and the ethical and cultural problems of their time. They will also consider how such issues continue to resonate in the contemporary world.


Figure 14. Comparison of rubric scores between Online and Traditional course sections for SLO 2: Students must evaluate and interpret literary works from ethical, social, cultural, historical, philosophical, artistic, and/or biographical perspectives.

### 4.2.3 Comparison by Site/Campus

Of the 164 artifacts collected from LIT 2000, 14 from the Charlotte campus, 89 from FSW Online, 7 from the Hendry Glades Center, and 50 from the Thomas Edison (Lee) campus. A comparison of achievement is provided in Table 13 for SLO 1 and Table 14 for SLO 2. A graphical representation is provided in Figures 15 and 16. For SLO 1, the Charlotte campus and Hendry Glades Center exhibit the highest percentage meeting expectations or higher (Level 2 or higher) at 100\%. FSW Online exhibits the lowest at $92 \%$. For SLO 2, again the Charlotte campus and Hendry Glades Center exhibit the highest percentage meeting expectations or higher (Level 2 or higher) at 100\%. And again, FSW Online exhibits the lowest at $93 \%$. Based on results of a chi-squared test for independence, achievement across sites for SLO 1 and SLO 2 are not statistically significantly different (SLO 1: $\chi^{2}=1.748$, 2 d.f., $P=0.417 ; S L O 2: \chi^{2}=0.348,2$ d.f., $\mathrm{P}=0.840$ ).

| Rubric Score | Charlotte | Collier | FSW <br> Online | Hendry <br> Glades | Thomas <br> Edison | Offsite <br> (Dual Enrollment) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| \% Meets Expectations or Higher | $\mathbf{1 0 0 \%}$ | $\sim$ | $\mathbf{9 2 \%}$ | $\mathbf{1 0 0 \%}$ | $\mathbf{9 6 \%}$ | $\sim$ |
|  | 5 | $50 \%$ | $\sim$ | $24 \%$ | $0 \%$ | $34 \%$ |

Table 13. Comparison between sites of percentage of student achievement level by rubric dimension for SLO 1.


Figure 15. Comparison of distribution of rubric scores between sites for SLO 1: Students will analyze literary works' exploration of the human condition and the ethical and cultural problems of their time. They will also consider how such issues continue to resonate in the contemporary world.

| Rubric Score | Charlotte | Collier | FSW <br> Online | Hendry <br> Glades | Thomas <br> Edison | Offsite <br> (Dual Enrollment) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| \% Meets Expectations or Higher | $\mathbf{1 0 0 \%}$ | $\sim$ | $\mathbf{9 3 \%}$ | $\mathbf{1 0 0 \%}$ | $\mathbf{9 6 \%}$ | $\sim$ |
|  | 5 | $64 \%$ | $\sim$ | $25 \%$ | $0 \%$ | $34 \%$ |

Table 14. Comparison between sites of percentage of student achievement level by rubric dimension for SLO 2.


Figure 16. Comparison of distribution of rubric scores between sites for SLO 2: Students must evaluate and interpret literary works from ethical, social, cultural, historical, philosophical, artistic, and/or biographical perspectives.

## 5 CONCLUSIONS

FSW's English Department assessment plan includes three courses: ENC 0022 Writing for College Success, ENC 1101 Composition I, and LIT 2000 Introduction to Literature. Instructors use a common rubric with seven identified rubric dimensions in the case of ENC 0022, an updated rubric in response to the AY 2016-2017 assessment results with two dimensions for ENC 1101, and a two dimension rubric for an initial study of LIT 2000. The assessment plan uses a random sample of $30 \%$ of all course sections offered in ENC 1101 and LIT 2000 and a $100 \%$ collection of ENC 0022 courses. The department has historically used a benchmark of percentage of students scoring 2 or higher in rubric dimensions as a means to measure achievement in the courses.

A drilldown of ENC 0022 results are as follows:

1. For the fall 2018 assessment, 129 artifacts were collected for ENC 0022 from 6 of 9 course sections. The lowest scoring rubric dimension for percentage of artifacts scoring a 2 or greater is Research at $88 \%$. All other dimensions exhibit percentage of $95 \%$ or higher.
2. Distribution of artifact scores is centered on $20 / 28$, and is moderately negatively skewed, meaning scores are shifted towards the upper range.
3. In a study comparing rubric achievement based on overall score, "Introductory Paragraph," "Support Paragraphs," "Organization," and "Concluding Paragraph" exhibit higher achievement at $23 / 28$ or higher compared with "Grammar," "Mechanics," and "Research." For example, at $23 / 28$, the former dimensions range from 3.3/4.0 to 3.7/4.0. By comparison, the latter dimensions range from $2.8 / 4.0$ to $3.2 / 4.0$. From a student performance perspective, strong students are weakest in "Grammar," "Mechanics," and "Research."
4. In a longitudinal study, results exhibit several trends. First, all rubric dimensions exhibit a sharp drop in fall 2017 data, likely in response to a truncated term as a result of Hurricane Irma. Second, "Introductory Paragraph," "Support Paragraphs," and "Organization" consistently are the highest scoring dimensions over time. These three dimensions represent the top three scores in 7 of 9 terms. Third, the "Research" dimension exhibits the lowest scores in 5 of 9 terms while "Mechanics" exhibits the lowest in 3 of 9 and "Grammar" in 1 of 9 . And lastly, the "Research" dimension exhibits abnormally variable data in fall 2016 where no other dimension does. The cause is uncertain.
5. No comparison of dual enrollment to traditional artifacts was completed because no dual enrollment sections of the course were offered.
6. No comparison of online to traditional artifacts was completed because no online sections of the course were offered.
7. In a cross-campus comparison, scores varied greatly across rubric dimensions.

A drilldown of ENC 1101 results are as follows:

1. In a study of SLO 1: Students must incorporate research into their own writing using summary, paraphrase, and direct quotation by composing academic research assignments, $81 \%$ of artifacts meet expectations.
2. In a study of SLO 2: Students must demonstrate the ability to organize, compose, revise, and edit essays with clear thesis statements, coherent, unified paragraphs, and varied sentence structures and length, $78 \%$ of artifacts meet expectations.
3. In a study comparing dual enrollment to traditional (non-online) artifacts, the dual enrollment percentage meeting expectations or higher (Level 3 or higher) is $12 \%$ points higher than the traditional for SLO 1 and $18 \%$ points higher for SLO 2. Both are statistically significant according to a Fisher's Exact Test.
4. In a study comparing online to traditional artifacts, the online percentage meeting expectations or higher (Level 3 or higher) is 7\% points lower than the traditional for SLO 1 and $1 \%$ points lower for SLO 2. Neither is statistically significant according to a Fisher's Exact Test.
5. In a cross-campus comparison, scores varied greatly across rubric dimensions. For SLO 1 , the Hendry Glades Center exhibits the highest percentage meeting expectations or higher (Level 3 or higher) for when comparing onsite locations at $93 \%$. FSW Online exhibits the lowest at $73 \%$. For SLO 2, again the Hendry Glades Center exhibits the highest percentage meeting expectations or higher (Level 3 or higher) at 91\%. And now, it is the Collier campus that exhibits the lowest at $71 \%$. Based on results of a chi-squared test for independence, achievement across sites for both SLO 1 and SLO 2 are statistically significantly different (SLO 1: $\chi^{2}=28.84,5$ d.f., $P=2.49 \times 10^{-5}$, SLO 2: $\chi^{2}=42.75,5$ d.f., $\left.P=4.15 \times 10^{-8}\right)$.

A drilldown of LIT 2000 results are as follows:

1. In a study of SLO 1: Students will analyze literary works' exploration of the human condition and the ethical and cultural problems of their time. They will also consider how such issues continue to resonate in the contemporary world, $95 \%$ of artifacts meet expectations.
2. In a study of SLO 2: Students must evaluate and interpret literary works from ethical, social, cultural, historical, philosophical, artistic, and/or biographical perspectives, $95 \%$ of artifacts meet expectations.
3. No dual enrollment sections were offered during the fall 2018 semester, so no comparison study could be completed.
4. In a study comparing online to traditional artifacts, the online percentage meeting expectations or higher (Level 2 or higher) is 5\% points higher than the traditional for SLO 1 and 4\% points higher for SLO 2. Neither is statistically significant according to a Fisher's Exact Test.
5. In a cross-campus comparison, scores varied greatly across rubric dimensions. For SLO 1, the Charlotte campus and Hendry Glades Center exhibit the highest percentage meeting expectations or higher (Level 2 or higher) at 100\%. FSW Online exhibits the lowest at $92 \%$. For SLO 2, again the Charlotte campus and Hendry Glades Center exhibit the highest percentage meeting expectations or higher (Level 2 or higher) at 100\%. And again, FSW Online exhibits the lowest at $93 \%$. Based on results of a chi-squared test for independence, achievement across sites for SLO 1 and SLO 2 are not statistically significantly different (SLO 1: $\chi^{2}=1.748,2$ d.f., $\mathrm{P}=0.417$; SLO 2: $\chi^{2}=0.348$, 2 d.f., $\mathrm{P}=0.840$ ).

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Section 2

Florida SouthWestern State College's assessment plan includes collection of achievement data to determine the efficacy of the developmental options and to inform course and program improvement. The FSW English Department uses a two-section final exam (written and objective) to test mastery of the subject in ENC 0022 Writing for College Success. The following report details the results for the final exam for ENC 0022 for the fall 2018 term.

The written section of the ENC 0022 final exam, worth $50 \%$ of the overall exam grade, is comprised of six rubric dimensions. They are Main Idea / Topic Sentence, Organization, Detail Sentences, Grammar, Mechanics / Spelling, and Concluding Sentence. Each is scored on a 4-point rubric (4-Above Average, 3Average, 2-Needs Work, 1-Unacceptable). Artifacts from 134 students were reported for fall 2018 with 9 of 9 sections reporting written sections and 6 of 9 reporting objective sections. The mean scores for each rubric dimension are shown in Figure 1. A percentage of artifacts scoring a 3 or better is shown in Figure 2.


Figure 1. ENC 0022 Final Exam written section mean rubric scores for fall 2018.


Figure 2. Percentage of fall 2018 artifacts scored 3 or higher on written section of ENC 0022 final exam.
While 134 artifacts were reported for the written section of the exam, only 82 common artifacts were reported for the objective section. The mean scores for each are reported in Figure 3. Differences in the means between written section and the objective section were tested for significance using a Welch's t-test according to standard methods ${ }^{1,2,3,4}$ and were found to be statistically significantly different $(\mathrm{t}(214)=-2.77, \mathrm{p}=0.006)$. Therefore, we can reject the null hypothesis that the difference in the means of the written and objective sections of the exam is equal to 0 , and we can conclude with $95 \%$ confidence that the differences in scores are not solely due to chance.


Figure 3. Mean scores by exam section and overall score for the fall 2018 ENC 0022 final exam.
Of the 82 common (objective \& written) artifacts collected from the final exam, all but four originated from the compressed learning strategy version of the course. Normally, a comparison of mean scores by learning strategy is shown. Since sample size is limited, no comparison is completed.

A longitudinal study exhibits a varied level of achievement overall. Of nine fall/spring terms tracked, fall 2018 exhibits the lowest overall mean score, though it is insignificant compared with the $7^{\text {th }}$ and $8^{\text {th }}$ ranked mean scores of spring 2017 and fall 2017.


Figure 4. Comparison of ENC 0022 final exam success rates over time. Success rate is achievement at 70\% or higher.
${ }^{1}$ Davis, J.C. 1973. Statistics and Data Analysis in Geology. John Wiley \& Sons, New York, New York, 564 pp.
${ }^{2}$ McDonald, J.H. 2009. Handbook of Biological Statistics (2nd ed.). Sparky House Publishing, Baltimore, Maryland.
${ }^{3}$ Siegel, S. 1956. Nonparametric statistics for the behavior sciences. McGraw-Hill, New York, New York, 312 pp.
${ }^{4}$ Wilkinson, L. 1999. APA Task Force on Statistical Inference. Statistical Methods in Psychology Journals: Guidelines and Explanations. American Psychologist 54 (8), 594-604.

Section 3

Florida SouthWestern State College's assessment plan includes collection of achievement data to determine the efficacy of the developmental options and to inform course and program improvement. The FSW Math Department uses a 38 -question final exam to test mastery of the subject in MAT 0057 Mathematics for College Success. This 38 -question exam was new for spring 2018. Previously a 45question exam was used (last used summer 2017 as fall 2017 assessment was cancelled due to Hurricane Irma). The following report details the results for the final exam for MAT 0057 for the fall 2018 term.

During fall 2018, 26 course sections were run. Of those, 24 sections submitted verified results. In the 24 reporting sections, 305 artifacts from the final exam were collected with all sections originating from the modularized learning strategy version of the course (no compressions sections are offered as a result of determinations made using previous assessment studies). A distribution of the artifact scores can be found in Figure 1. The data exhibit a mode centered on 31/38, mean score of 26.8, down from 27.0 in spring 2018.


Figure 1. MAT 0057 final exam score distribution for fall 2018 ( $n=305$ ).
A comparison of mean scores by learning strategy has historically been a part of this report. However, beginning with AY 2017-2018, all MAT 0057 sections are offered in a modularized format. As a result, comparisons by learning strategy are no longer provided here.

Of the 305 artifacts from the final exam, 17 originated from the Charlotte campus, 60 from the Collier campus, 4 from the Hendry-Glades Center, and 224 from the Thomas Edison (Lee) campus. A comparison of mean scores by campus is shown in Figure 2. Differences in the means between sites are tested for significance using a ANOVA according to standard methods ${ }^{1,2,3,4}$. Results of the ANOVA exhibit no statistically significant difference between sites $[p=0.406]$. Therefore, we cannot reject the null hypothesis that the mean combined rubric scores at each site are equal to each other and we cannot conclude with a $95 \%$ confidence that the differences in scores are not solely due to chance.


Figure 2. Comparison of MAT 0057 Final exam (mastery exam) scores by site.
A longitudinal study of the common course assessment (final exam) success rates is shown in Figure 3. Results exhibit a steady range of success between $55 \%$ and $65 \%$. Note that the large spike in success rates for compressed sections is simply a result of a very small sample size for compressed data as the learning strategy was being phased out.


Figure 3. Comparison of MAT 0057 final exam success rates over time. Success rate is achievement at $70 \%$ or higher. *All sections are modularized beginning Fall 2017.
${ }^{1}$ Davis, J.C. 1973. Statistics and Data Analysis in Geology. John Wiley \& Sons, New York, New York, 564 pp. ${ }^{2} \mathrm{McDonald}$ J.H. 2009. Handbook of Biological Statistics (2nd ed.). Sparky House Publishing, Baltimore, Maryland.
${ }^{3}$ Siegel, S. 1956. Nonparametric statistics for the behavior sciences. McGraw-Hill, New York, New York, 312 pp.
${ }^{4}$ Wilkinson, L. 1999. APA Task Force on Statistical Inference. Statistical Methods in Psychology Journals: Guidelines and Explanations. American Psychologist 54 (8), 594-604.

Section 4

## REA 0019 Mastery Exam Assessment Report - Fall 2018 <br> Author: Joseph F. van Gaalen, Ph.D., Asst. VP, Institutional Research, Assessment \& Effectiveness

Florida SouthWestern State College's assessment plan includes collection of achievement data to determine the efficacy of the developmental options and to inform course and program improvement. The learning outcome: Students will read at a post-secondary level that correlates with college success by the completion of the Developmental Reading sequence, is measured through the comparison of preand post-tests conducted using the Townsend Press College Reading Test as an assessment within REA 0019 Reading for College Success. The following report details the results for Townsend Press College Reading Test for the fall 2018 term.

In a comparison of pre-test to post-test results, the mean scores increased across all rubric criterion as well as the overall score (Figure 1). The difference in the means of the overall score from pre-to-post test scores was tested for significance using a paired means $t$-test according to standard methods ${ }^{1,2,3,4}$. The paired means t-test results indicate a statistically significant improvement from 24.6 to 29.6 $\left(\mathrm{t}(170)=11.65, \mathrm{p}=1.97 \times 10^{-23}\right)$. Therefore, we can reject the null hypothesis that the difference in the means of the overall scores of the pre- and post-test scores is equal to 0 , and we can conclude this with a $95 \%$ confidence that the differences in scores are not solely due to chance. A distribution of overall scores from pre-to-post test can be found in Figure 2.


Figure 1. Comparison of pre- (aqua) and post-test (purple) achievement for the Townsend Press College Reading Test (serving as the course mastery exam) conducted during the fall 2018 semester in REA 0019 courses. MI: Main Idea ( 9 points), VC: Vocabulary ( 4 points), SD: Supporting Details ( 8 points), R: Relationships ( 6 points), I: Inferences ( 7 points), F/O: Fact/Opinion ( 3 points), and $\mathrm{P} / \mathrm{T}$ : Purpose/Tone ( 3 points) for a total of 40 possible points.


Figure 2. Distribution of pre- (aqua) and post-test (purple) scores for the Townsend Press College Reading Test (serving as the course mastery exam) conducted during the fall 2018 semester in REA 0019 courses.

A comparison of pre-test to post-test results as a function of learning strategy (modularized, compressed, and contextualized) is shown in Figure 3. The mean scores of all learning strategies increased from pre-to-post tests ranging from $+4.6 / 40$ points in compressed sections to $+5.5 / 40$ points in contextualized sections. These improvements are an increase of $12-14$ percentage points. Each comparison study was tested for significance using a paired means t-test according to standard methods ${ }^{1,2,3,4}$. The paired means $t$-test results indicate a statistically significant improvement for all learning strategies.


Figure 3. Comparison of pre- (aqua) and post-test (purple) achievement conducted during the fall 2018 semester in REA 0019 courses based on enrollment in a modularized, compressed, or contextualized course.

A comparison of exam success rates for pre-test and post-test according to learning strategy exhibits substantial improvement across all strategies. Based on results of a Fisher's Exact Test for independence, all learning strategies have statistically significantly higher rates of passing scores in the post-test than in the pre-test. Results of the Fisher's Exact Test for each learning strategy as well as success rates are shown in Table 1.

|  | Modularized | Compressed | Contextualized | Overall |
| ---: | :---: | :---: | :---: | :---: |
| Pre-Test | $42.9 \%$ | $37.7 \%$ | $32.0 \%$ | $\mathbf{3 9 . 2 \%}$ |
| Post-Test | $75.3 \%$ | $65.2 \%$ | $76.0 \%$ | $\mathbf{7 1 . 5 \%}$ |
| $P$ | $7.18 \times 10^{-5}$ | $2.05 \times 10^{-3}$ | $4.06 \times 10^{-3}$ | $\mathbf{1 . 7 6 \times 1 0}$ |

Table 1. Pre-test/Post-test success rates (achievement at 70\% or higher) by learning strategy for fall 2018.

A longitudinal study of success rates on this assessment is provided in Table 2 and Figure 4. Overall success rates range from $57 \%$ to $79 \%$. The lowest success rates of each academic year consistently occur during the spring term.

| $-\quad-\quad$ Modularized | Compressed | Contextualized | Overall |  |
| ---: | :---: | :---: | :---: | :---: |
| Spring 2015 | $57 \%$ | $79 \%$ | $*$ | $\mathbf{7 3 \%}$ |
| Summer 2015 | $67 \%$ | $*$ | $*$ | $\mathbf{6 8 \%}$ |
| Fall 2015 | $72 \%$ | $66 \%$ | $65 \%$ | $\mathbf{6 9 \%}$ |
| Spring 2016 | $59 \%$ | $54 \%$ | $57 \%$ | $\mathbf{5 7 \%}$ |
| Summer 2016 | $*$ | $62 \%$ | $*$ | $\mathbf{6 2 \%}$ |
| Fall 2016 | $83 \%$ | $72 \%$ | $78 \%$ | $\mathbf{7 6 \%}$ |
| Spring 2017 | $*$ | $71 \%$ | $83 \%$ | $\mathbf{7 2 \%}$ |
| Summer 2017 | $*$ | $81 \%$ | $*$ | $\mathbf{8 1 \%}$ |
| Fall 2017 | $81 \%$ | $81 \%$ | $75 \%$ | $\mathbf{7 9 \%}$ |
| Spring 2018 | $*$ | $71 \%$ | $58 \%$ | $\mathbf{6 8 \%}$ |
| Summer 2018 | $*$ | $83 \%$ | $*$ | $\mathbf{8 3 \%}$ |
| Fall 2018 | $75 \%$ | $65 \%$ | $76 \%$ | $\mathbf{7 2 \%}$ |

Table 2. Longitudinal study of post-test success rates (achievement at $70 \%$ or higher) using the present assessment (Townshend Press College Reading Test). *Denotes no sections of the strategy offered.


Figure 4. Common course assessment success rates over time by learning strategy. Note that Fall '14 utilized a different common course assessment which did not map well with course outcomes and so results are excluded here.

A paired comparison was also completed to gauge improvement in a case-by-case basis. In that study, $84 \%$ of students exhibit at least some improvement from pre-to-post test (Figure 5). Of those, 59\% of students exhibit improvement of greater than or equal to $10 \%$ (4 point or more increase on the 40-point test). The most recent six terms exhibit greater than or equal to $10 \%$ improvement rates of $42 \%, 50 \%$, $49 \%, 30 \%, 43 \%$, and $40 \%$.


Figure 5. Comparison of the change in individual students' paired tests from pre-test to their post-test counterpart for fall 2018.
${ }^{1}$ Davis, J.C. 1973. Statistics and Data Analysis in Geology. John Wiley \& Sons, New York, New York, 564 pp. ${ }^{2}$ McDonald, J.H. 2009. Handbook of Biological Statistics (2nd ed.). Sparky House Publishing, Baltimore, Maryland. ${ }^{3}$ Siegel, S. 1956. Nonparametric statistics for the behavior sciences. McGraw-Hill, New York, New York, 312 pp.
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