CAL MARITIME

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Annual Learning Results
Institution Wide SLO (I): Information Fluency
2013

Prepared by The Institution-Wide Assessment Committee
Point Person: Michele Van Hoeck

Section 1: Annual Report
Section 2: Survey to Faculty on Information Fluency
Section 3: Description of Scoring Rubric
Section 3: Appendices: Data Charts

1. Executive Summary:

In the Academic Year 2012-2013, IWAC conducted an assessment of the institution-wide student learning outcome, Information Fluency. It was decided to assess using artifacts from four courses: GMA 401: Senior Seminar II Research Project; HUM 310: Engineering Ethics; NAU 400: Advanced Maritime Topics; and BUS 301: International Business II Country Research Analysis and Global Marketing. All these courses have a significant research-based assignment, and all majors on campus are required to take one of these courses. Thus, IWAC was able to capture a significant proportion of upperclassmen by targeting these courses. All but one of these courses are taken by a single major predominantly, and thus assessment results for a particular class approximate outcomes for the corresponding program. The exception is HUM310, which is part of the curriculum for three majors: Mechanical Engineering, Marine Engineering Technology, and Facilities Engineering Technology. The capstone projects for the graduate MSTEM program were also assessed during this period.

A 2-question rubric was drafted by IWAC and shared with all Cal Maritime faculty in fall 2012. Faculty were surveyed in spring 2013 regarding their satisfaction with students' levels of information fluency. In summer 2013, IWAC members used the rubric to score research papers from the five courses listed above. IWAC scored 100% of papers from GMA 401, NAU 400, and BUS 301, and scored an approximately 50% data sample from HUM 310 and the MSTEM capstone. The data sample thus included 15 artifacts for GMA 401, 21 for NAU 400, 20 for BUS301, 30 for HUM 310, and 11 for MSTEM. The data generated the following findings:

Results:

1. The aggregated data for both measures of Information Fluency (Location/Evaluation of Sources and Attribution of Sources) indicates that CMA did not meet the benchmark of 70% of undergraduate student work scoring 4 or higher on the rubric (rubric scores range 1-6).
2. Disaggregated by course, only students in GMA401 met the benchmark that 70% of student work score 4 or higher for one measure, Location/Evaluation of Sources. No course met the benchmark that 70% of student work score 4 or higher for Attribution, though GMA401 scored highest with 50% scoring 4 or higher.
3. Overall mean rubric scores, collapsing both measures and disaggregating by undergraduate major, were GSMA 3.14; MET 2.94; ME 2.58; MT 2.02; IBL 1.65.
4. MSTEM capstone projects did not meet the benchmark of 70% of graduate student work scoring 5 or higher on the rubric. Mean overall score was 3.50.

Interpretation of the Results:

1. Higher assessment scores in the GSMA program may be attributable to a) a required 2-unit Information Fluency course in the GSMA curriculum, as well as b) additional research-based writing required in this major. The MET/FET program is the only other program at Cal Maritime which requires the Information Fluency course, and full disaggregated data for this program was not available, so the impact of the credit-based course is inconclusive. But the higher mean score of MET majors compared to ME majors in the same course (HUM 301) suggests taking a credit-based course has some impact on this learning outcome for engineers. This difference in information fluency rubric scores of HUM301 papers has been seen in two previous years of program assessment.

2. For those programs without a credit-based information fluency requirement (IBL, ME, MT), the current model of curriculum-integrated instruction does not appear to be sufficient in achieving the desired learning outcome.

Recommendations:

1. The IWAC recommends the MPM department consider the addition of credit-based information fluency coursework for the IBL major. A one-unit co-curricular course or courses, in which information fluency instruction is combined with discipline-specific content, has been recommended by the Information Fluency Program Coordinator and discussed by the MPM department.

2. For all programs, the IWAC recommends the Information Fluency Program focus additional efforts on providing resources and development opportunities to faculty, particularly related to research assignment design and assessment.

3. Regarding low scores on attribution across all programs, IWAC recommends exploring the adoption of a single citation style across campus.

2. Closing the Loop: Status of Proposed Action Items

	Next Step #1
a) "Next Steps"	Examine results of Report on Information Fluency and address deficiencies.
b) Status of Next Steps	To be completed 7/14

3. What do We Want Students to Learn?

	Evidence #1	Evidence #2
a) IW-SLO	Location and Evaluation of Sources	Citation and Attribution of Sources
b) Learning Criteria: (specific qualities desired in student work)	Student can locate a variety of authoritative and relevant sources of information to address a complex information need.	Student documents use of sources with a consistent citation style. Student integrates outside source material using appropriate paraphrase, summary, and quotation.
c) Standards for Success	Desired standard: 70% of undergraduate students score 4.0 or above on a 6-point rubric (5.0 or better for graduate students). This desired standard should be maintained even when disaggregated by course level and type.	Desired standard: 70% of undergraduate students score 4.0 or above on a 6-point rubric (5.0 or better for graduate students). This desired standard should be maintained even when disaggregated by course level and type.

4. What Evidence do We Use to Assess Their Learning?

	Evidence #1	Evidence #2
a) Evidence: Describe summative evidence you analyze & the size of the sample	Four senior-level courses assigning research papers. Sample size: 97 of 136 population.	Four senior-level courses assigning research papers. Sample size: 97 of 136 population.
b) Assessment Tool/Method	Research papers scored using rubric.	Research papers scored using rubric.
c) Assessment Process	1. IWAC devised rubric and gained approval by all faculty. 2. IWAC collected copies of all student research papers in four targeted courses. 3. IWAC assessed assignments utilizing rubric. 4. Data entered into a database and analyzed.	1. IWAC devised rubric and gained approval by all faculty. 2. IWAC collected copies of all student research papers in four targeted courses. 3. IWAC assessed assignments utilizing rubric. 4. Data entered into a database and analyzed.

5. How Well Are They Learning?

a) How are results of student learning presented?	1. Aggregated by course 2. Aggregated by Ethical Awareness and Ethical Perspectives	
b) Achieving Standards: Did your program achieve its standards for success?	Location and Evaluation of Sources No	Citation and Attribution of Sources No
c) Discussion of Results	Location and Evaluation of Sources 1. GSMA major met benchmark. All other majors performed below benchmark. 2. MET major outperformed ME major in same course.	Citation and Attribution of Sources 1. All majors performed below benchmarks. 2. MET major outperformed ME major in same course
d) Participants in Discussing/Reviewing Results	IWAC Committee.	
e) Communication of Results	This report will be housed in the IWAC database and made available through Cal Maritime's Portal Assessment page	

6. Plan for Improvement

	Proposed Change #1	Proposed Change #2
a) Proposed Changes	Additional resources and development offered to faculty by information fluency instructors	Develop a co-curricular or embedded business information literacy course for IBL majors
b) Rationale for Proposed Changes	Information fluency instruction and reinforcement will occur primarily in discipline-based courses, rather than credit-bearing information fluency courses, for most programs.	IBL majors had lowest rubric scores in this assessment cycle.
c) Proposed Completion Date	Fall 2014	Fall 2014
d) Stakeholders Involved	Information fluency instructors	Information fluency instructors and MPM Department
e) Vetting to Stakeholders	Michele Van Hoeck	Michele Van Hoeck
f) Shepherding Changes	Michele Van Hoeck	Michele Van Hoeck
g) Budget Integration	n/a	n/a
h) Anticipated results of implementing change	Improvement in information fluency, both overall and disaggregated.	Improvement in information fluency demonstrated by IBL majors
i) Target Goals	To attain benchmark on next assessment cycle.	To attain benchmark on next assessment cycle.
j) Evidence of effectiveness	Meet 70% benchmark of score of 4 or above on next assessment cycle.	IBL majors meet 70% benchmark of score of 4 or above on next assessment cycle.

7. Reflection on Assessment Process

	Reflection #1	Reflection #2
a) Strengths	Multiple evaluators of evidence.	Representative sample work from all majors.
b) Modifications	Additional communication regarding assessment plan with instructors who will share student work.	

Faculty Survey, April 2013

1. Your department:

Business	3
Culture & Communications	4
Engineering Technology	2
Global Studies & Maritime Affairs	4
Marine Transportation	2
Mechanical Engineering	1
Science and Math	0
Total	16

2. Assignments in my classes that require students locate information (check all that apply):

Research paper	81.25%
Presentation	62.50%
Poster	0%
Case study	0%
Database search exercise	18.75%
Lab report	6.25%
Design report	0%
Annotated bibliography	31.25%

3. Please rate your overall satisfaction with students' demonstration of the following:

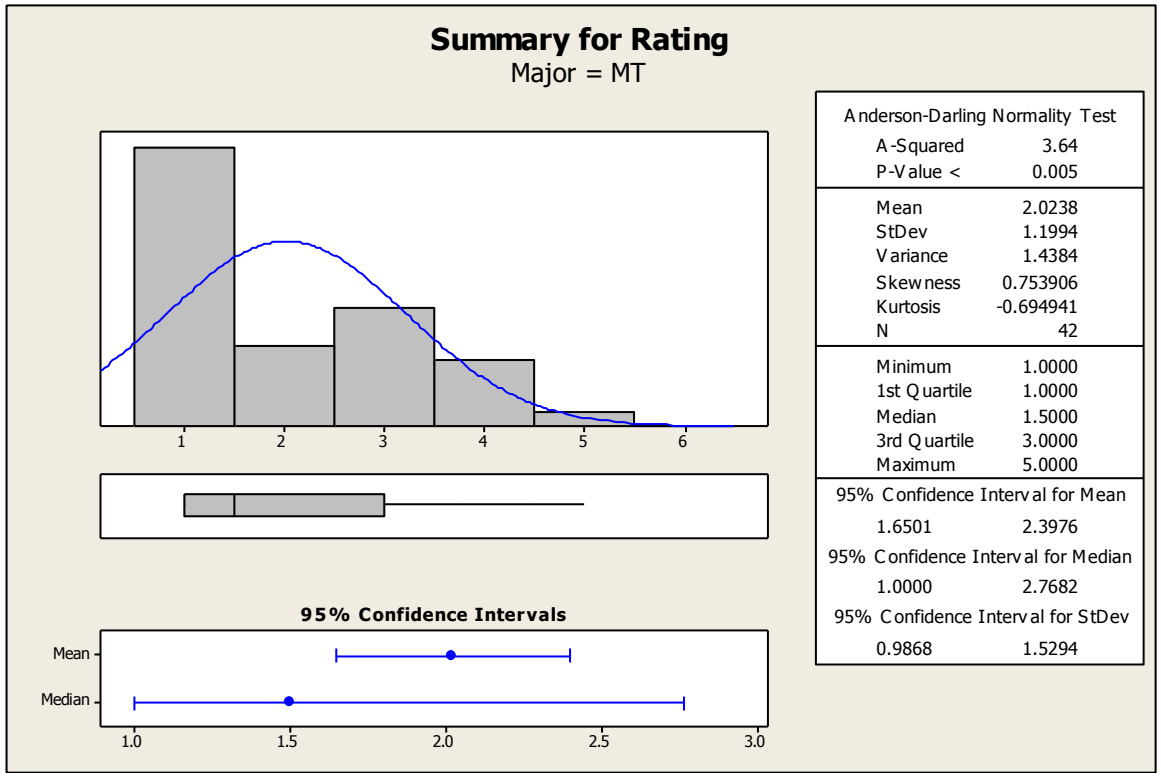
–	Very satisfied (1)	Somewhat satisfied (2)	Somewhat dissatisfied (3)	Very dissatisfied (4)	Average Rating
Select research questions or topics that meet requirements of assignment	31.25% 5	56.25% 9	12.50% 2	0% 0	1.81
Conduct effective searches for information	12.50% 2	50% 8	37.50% 6	0% 0	2.25
Critically evaluate search results and sources	12.50% 2	31.25% 5	50% 8	6.25% 1	2.50
Quote, paraphrase, and summarize effectively	6.25% 1	37.50% 6	43.75% 7	12.50% 2	2.63
Accurately cite and document sources	12.50% 2	31.25% 5	43.75% 7	12.50% 2	2.56

Information Fluency Rubric

This rubric is designed to assess student work such as papers, reports, presentations, and other projects for the following Institution-Wide SLO:
Define a specific need for information; then locate, access, evaluate and effectively apply the needed information to the problem at hand.

	1 Initial 2	3 Emerging	4 Satisfactory	5 Exemplary 6
Location and Evaluation of Sources	Sources do not contribute to assignment. • No exploration of outside sources or only non-authoritative or tertiary sources • Very limited awareness of universe of evidence which could strengthen argument	Sources lack variety/depth • Over relies on one source or type of source • Uses some non-authoritative or outdated sources	Sources are authoritative • Explores outside sources but missing some important sources • Overall source selection may be one-sided	Sources demonstrate thorough, sophisticated research and evaluation • Uses variety of authoritative sources • Kind and type of source match the goal of the argument • Provides reasoned rationale for use of sources
Citation/Attribution	Use of attribution and citation so poor it is impossible to identify or evaluate sources. • Little or no attribution or citation • Fundamental errors in in-text citation or bibliography	Attribution present but incomplete and incorrect. • Citations frequently missing or incorrect • May cite common knowledge • Sources may be mischaracterized (poor summary/paraphrase)	Attribution present and complete but with some errors or inconsistencies • May overuse quotes	Sources cited consistently and correctly • Bibliography (if required) formatted according to consistent style • Paraphrases, summarizes, and quotes appropriately

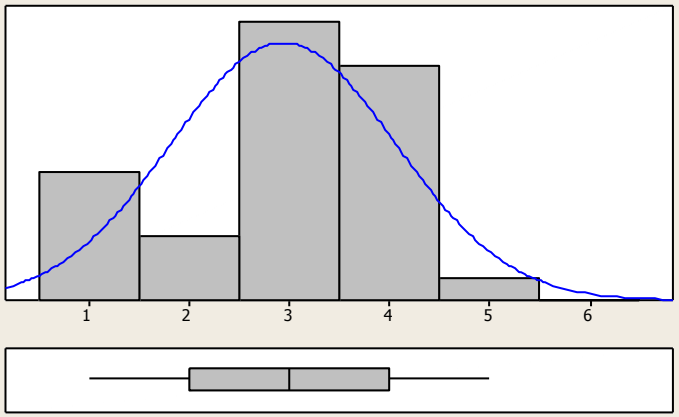
Information Fluency

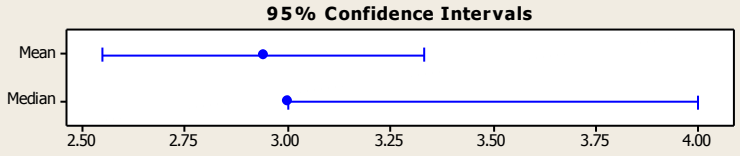


Anderson-Darling Normality Test	
A-Squared	3.64
P-Value <	0.005
Mean	2.0238
StDev	1.1994
Variance	1.4384
Skewness	0.753906
Kurtosis	-0.694941
N	42
Minimum	1.0000
1st Quartile	1.0000
Median	1.5000
3rd Quartile	3.0000
Maximum	5.0000
95% Confidence Interval for Mean	
1.6501	2.3976
95% Confidence Interval for Median	
1.0000	2.7682
95% Confidence Interval for StDev	
0.9868	1.5294

Summary for Rating

Major = MET

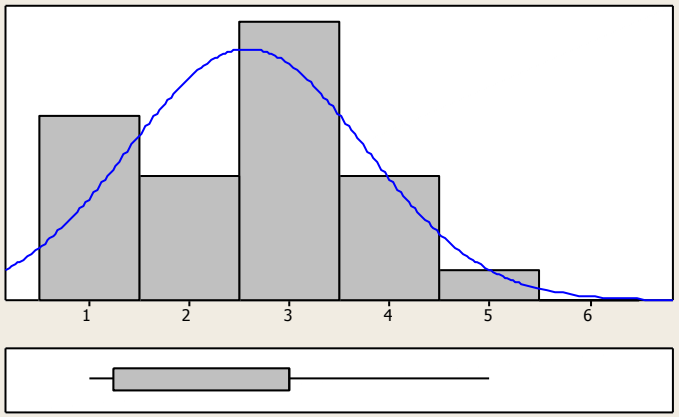


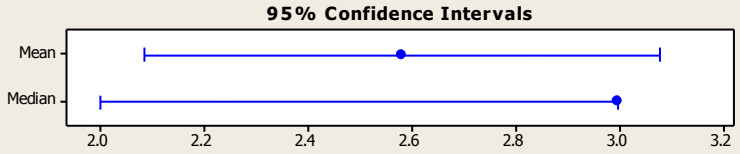


Anderson-Darling Normality Test	
A-Squared	2.06
P-Value <	0.005
Mean	2.9412
StDev	1.1266
Variance	1.2692
Skewness	-0.554002
Kurtosis	-0.600089
N	34
Minimum	1.0000
1st Quartile	2.0000
Median	3.0000
3rd Quartile	4.0000
Maximum	5.0000
95% Confidence Interval for Mean	
2.5481	3.3343
95% Confidence Interval for Median	
3.0000	4.0000
95% Confidence Interval for StDev	
0.9087	1.4829

Summary for Rating

Major = ME

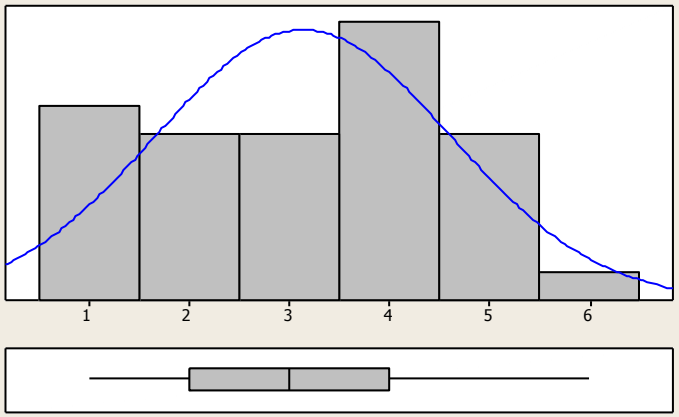


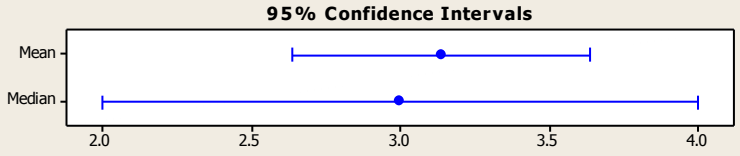


Anderson-Darling Normality Test	
A-Squared	1.06
P-Value	0.007
Mean	2.5833
StDev	1.1765
Variance	1.3841
Skewness	0.044503
Kurtosis	-0.821603
N	24
Minimum	1.0000
1st Quartile	1.2500
Median	3.0000
3rd Quartile	3.0000
Maximum	5.0000
95% Confidence Interval for Mean	
2.0866	3.0801
95% Confidence Interval for Median	
2.0000	3.0000
95% Confidence Interval for StDev	
0.9144	1.6503

Summary for Rating

Major = GSMA

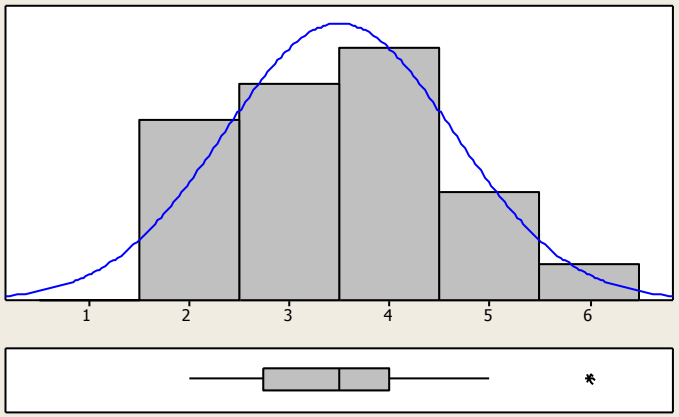


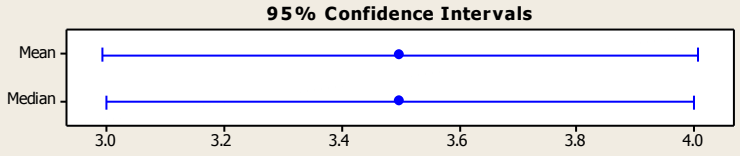


Anderson-Darling Normality Test	
A-Squared	1.18
P-Value <	0.005
Mean	3.1389
StDev	1.4765
Variance	2.1802
Skewness	-0.08355
Kurtosis	-1.12673
N	36
Minimum	1.0000
1st Quartile	2.0000
Median	3.0000
3rd Quartile	4.0000
Maximum	6.0000
95% Confidence Interval for Mean	
2.6393	3.6385
95% Confidence Interval for Median	
2.0000	4.0000
95% Confidence Interval for StDev	
1.1976	1.9260

Summary for Rating

Major = GRAD





Anderson-Darling Normality Test	
A-Squared	0.80
P-Value	0.033

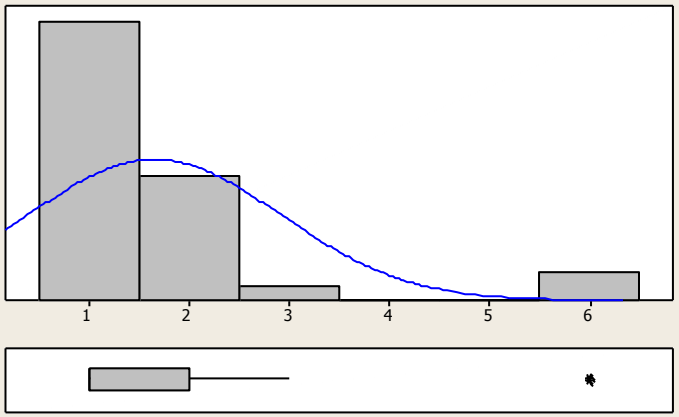
Mean	3.5000
StDev	1.1443
Variance	1.3095
Skewness	0.314591
Kurtosis	-0.509627
N	22

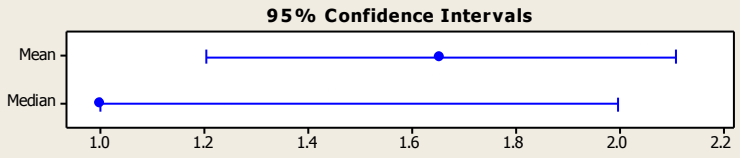
Minimum	2.0000
1st Quartile	2.7500
Median	3.5000
3rd Quartile	4.0000
Maximum	6.0000

95% Confidence Interval for Mean	
2.9926	4.0074
95% Confidence Interval for Median	
3.0000	4.0000
95% Confidence Interval for StDev	
0.8804	1.6353

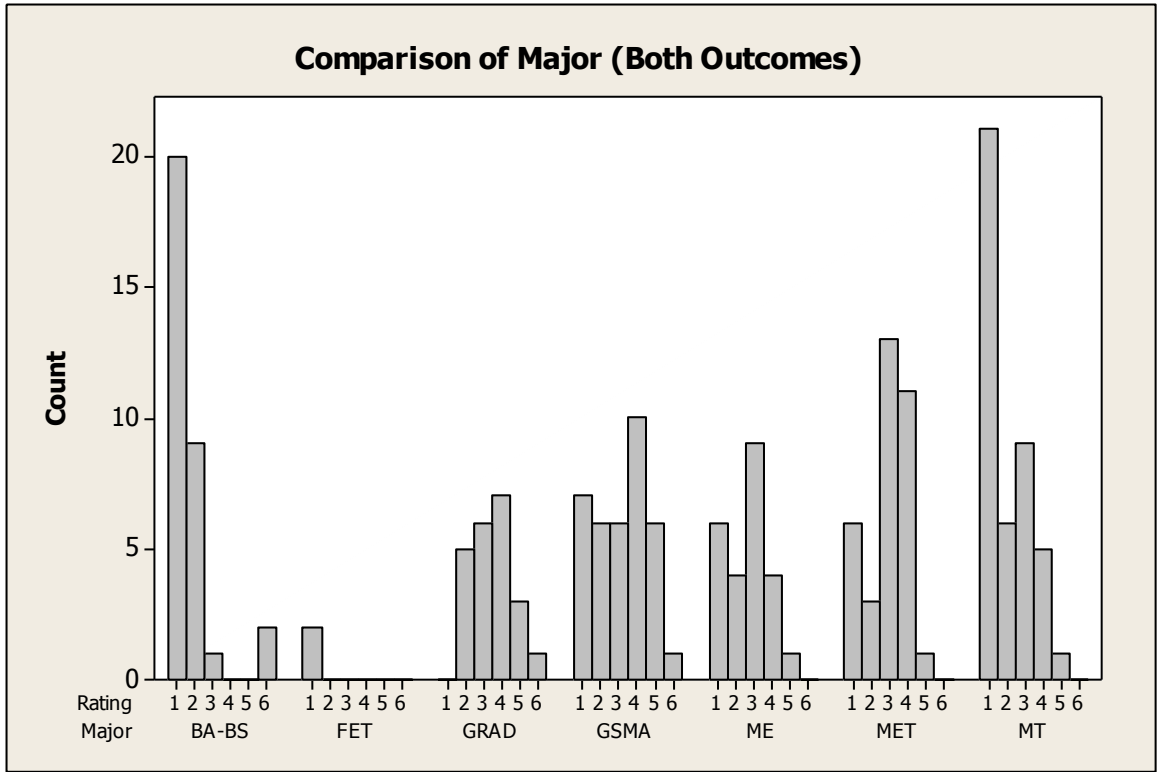
Summary for Rating

Major = BA-BS





Anderson-Darling Normality Test	
A-Squared	5.28
P-Value <	0.005
Mean	1.6563
StDev	1.2600
Variance	1.5877
Skewness	2.77008
Kurtosis	7.85589
N	32
Minimum	1.0000
1st Quartile	1.0000
Median	1.0000
3rd Quartile	2.0000
Maximum	6.0000
95% Confidence Interval for Mean	
1.2020	2.1105
95% Confidence Interval for Median	
1.0000	2.0000
95% Confidence Interval for StDev	
1.0102	1.6752


Comparison of Major (Both Outcomes)
Count
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10
15
20
Rating
Major
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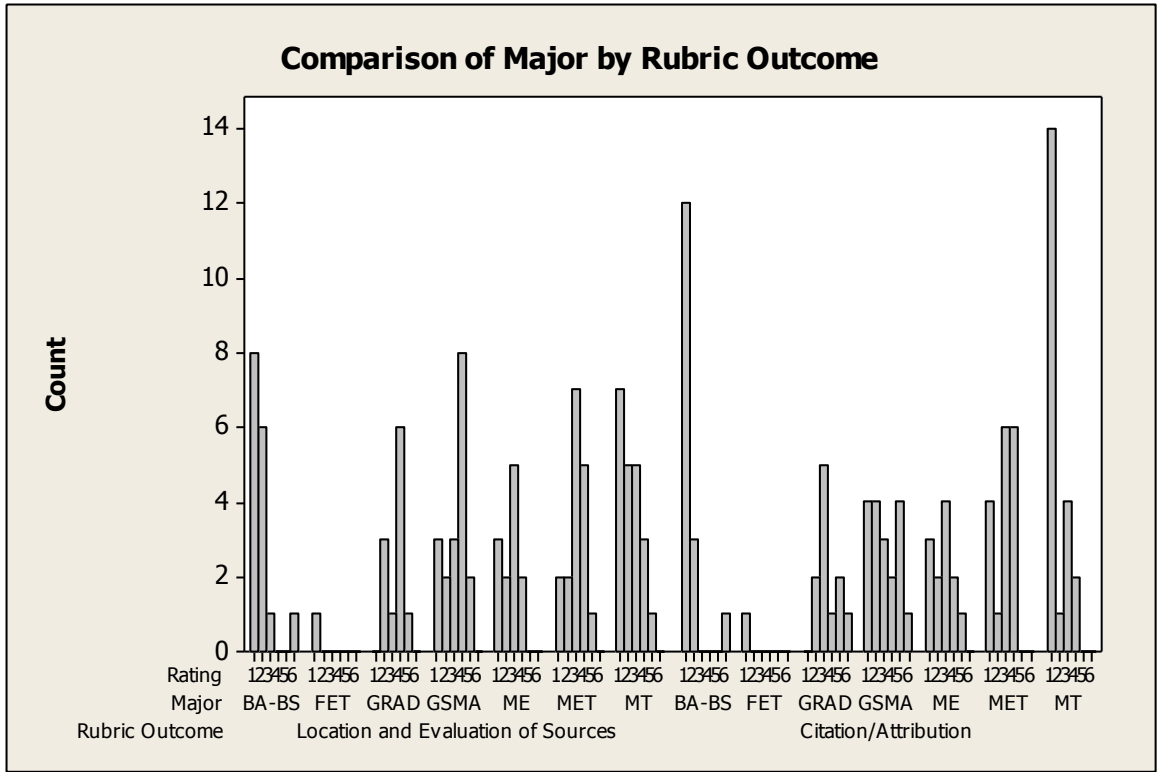
BA-BS
FET
GRAD
GSMA
ME
MET
MT


Comparison of Major by Rubric Outcome
Count
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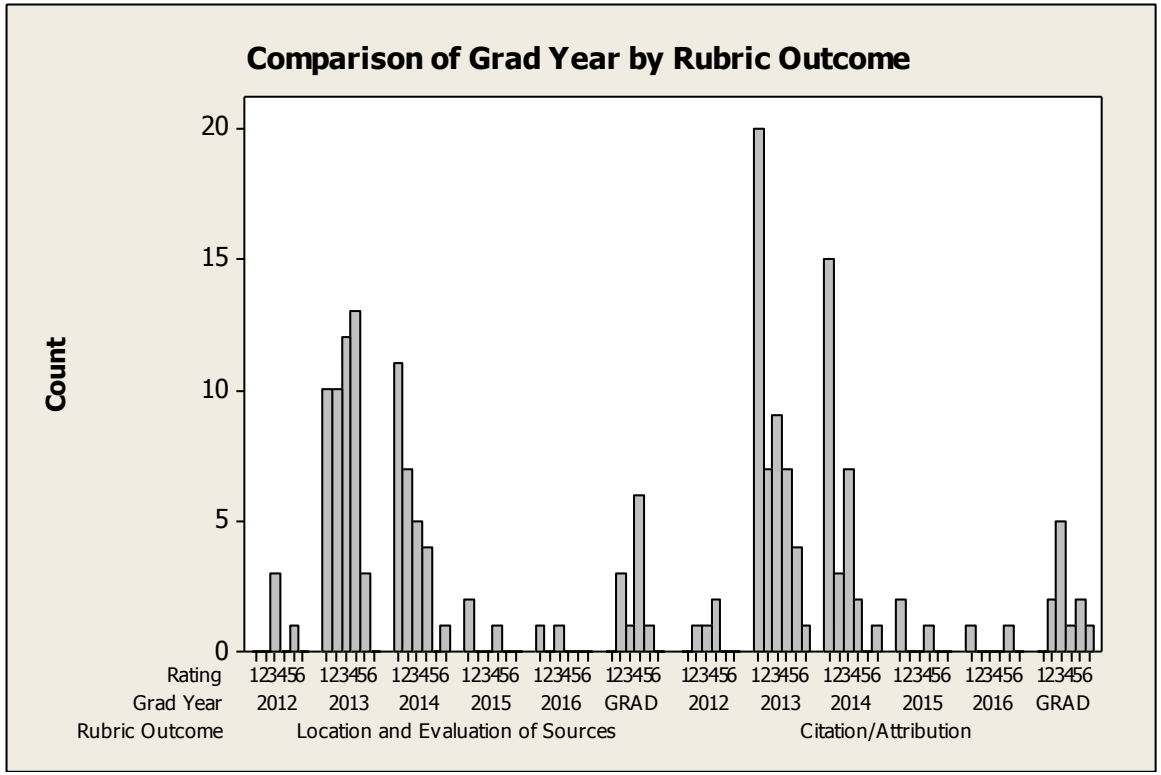
2
4
6
8
10
12
14
Rating 123456 123456 123456 123456 123456 123456 123456 123456 123456 123456 123456 123456 123456 123456
Major BA-BS FET GRAD GSMA ME MET MT BA-BS FET GRAD GSMA ME MET MT
Rubric Outcome Location and Evaluation of Sources Citation/Attribution


Comparison of Grad Year by Rubric Outcome
Count
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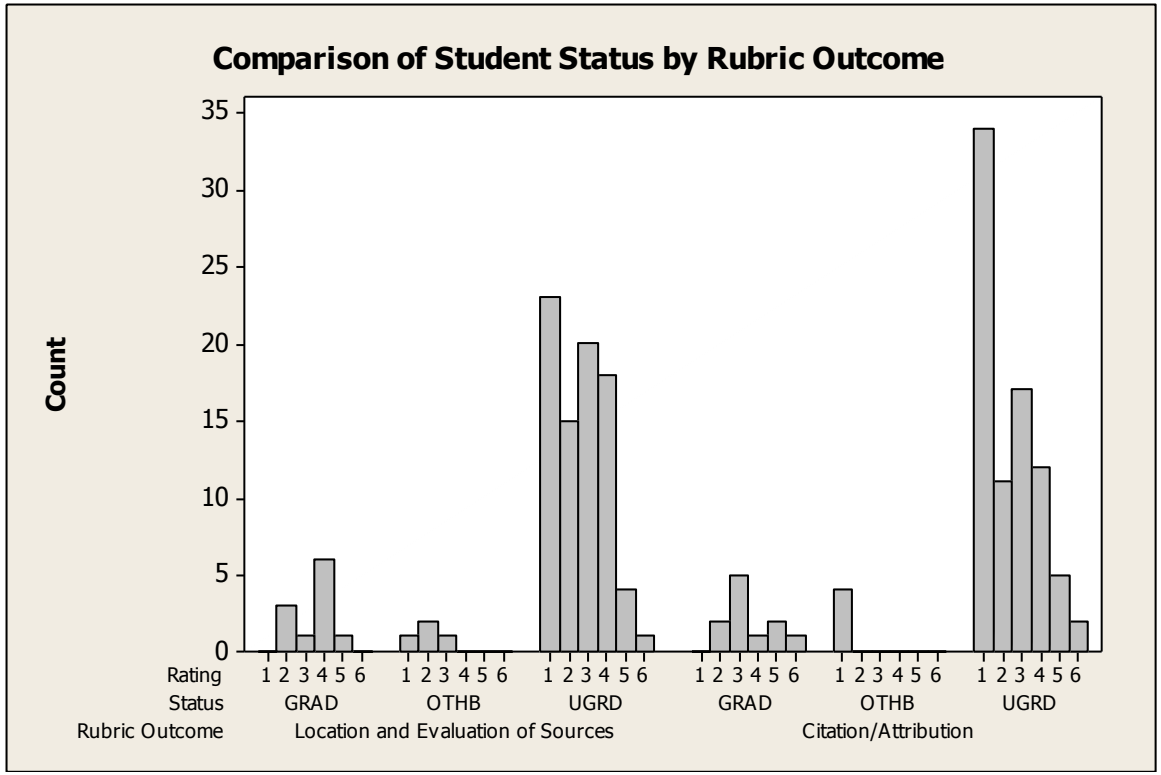
15
10
5
0
Rating 123456 123456 123456 123456 123456 123456 123456 123456 123456 123456 123456 123456
Grad Year 2012 2013 2014 2015 2016 GRAD 2012 2013 2014 2015 2016 GRAD
Rubric Outcome Location and Evaluation of Sources Citation/Attribution


Comparison of Student Status by Rubric Outcome
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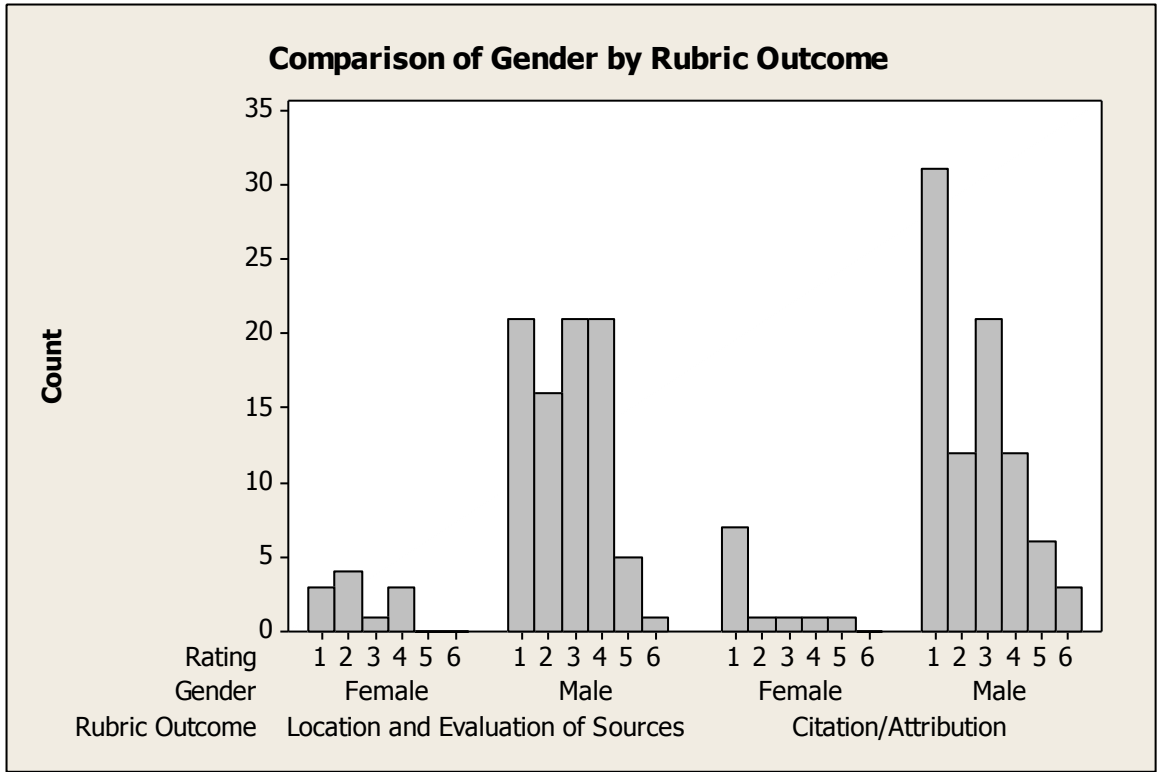
35
30
25
20
15
10
5
0
Rating 1 2 3 4 5 6 1 2 3 4 5 6 1 2 3 4 5 6 1 2 3 4 5 6 1 2 3 4 5 6 1 2 3 4 5 6
Status GRAD OTHB UGRD GRAD OTHB UGRD
Rubric Outcome Location and Evaluation of Sources Citation/Attribution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Count
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Rating
Gender
Rubric Outcome
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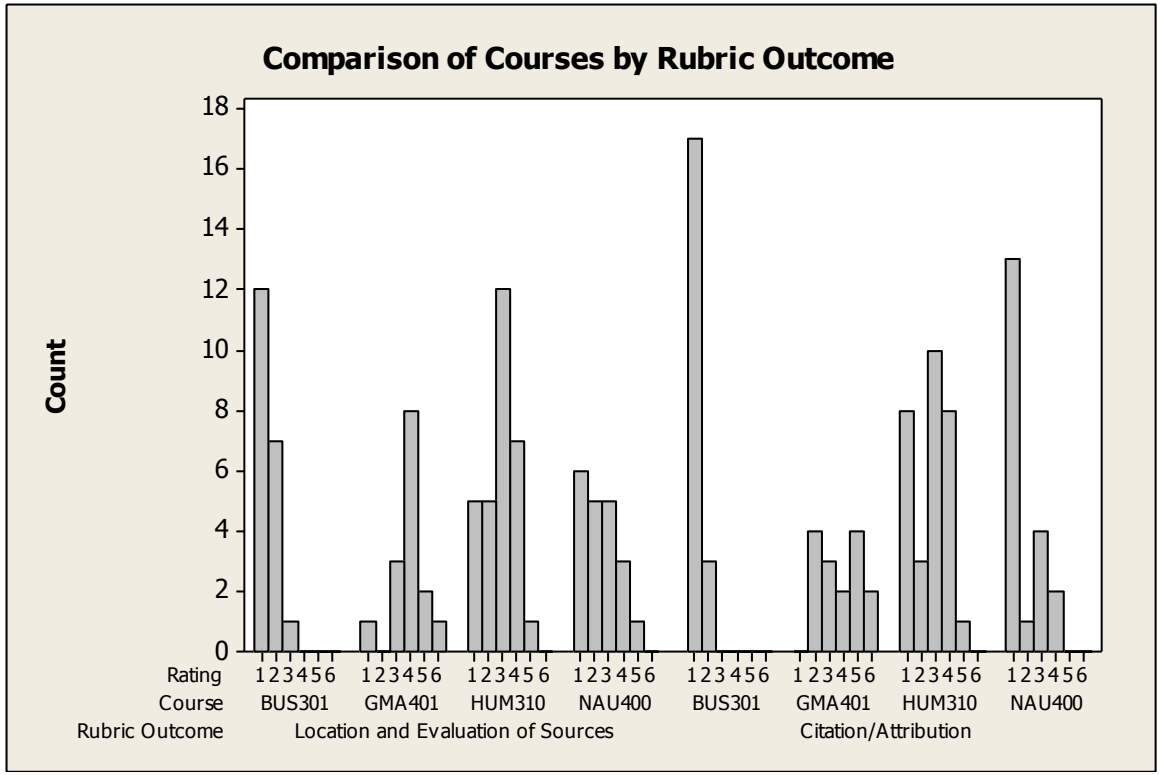
Female
Male
Location and Evaluation of Sources
Citation/Attribution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Count
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4
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10
12
14
16
18
Rating 1 2 3 4 5 6 1 2 3 4 5 6 1 2 3 4 5 6 1 2 3 4 5 6 1 2 3 4 5 6 1 2 3 4 5 6 1 2 3 4 5 6 1 2 3 4 5 6
Course BUS301 GMA401 HUM310 NAU400 BUS301 GMA401 HUM310 NAU400
Rubric Outcome Location and Evaluation of Sources Citation/Attribution