

CSU Maritime Academy – Institution-Wide Assessment Council (IWAC)

AY 2020-21

Annual Learning Results Institution Wide SLO (B): Critical and Creative Thinking



Year 3 Report on ILO B: Critical and Creative Thinking

“Comprehend, analyze, and objectively evaluate information and ideas; approach issues in new and different ways, often through synthesizing or applying information”

OBJECTIVES

- Measure the extent to which Cal Maritime students “comprehend, analyze, and objectively evaluate information and ideas; approach issues in new and different ways, often through synthesizing or applying information”
- Give recommendations for improving assessment efforts.
- Give recommendations (where applicable) for improving program effectiveness.

METHODOLOGY

In the Academic Year 2019-2020, the IWAC conducted an assessment of Institutional Learning Outcome B (ILO-B), Critical and Creative Thinking. Data were requested from all departments and gathered from assessments done by faculty in their courses using two 6-point rubrics: one for Critical Thinking and one for Creative Thinking. The rubrics are in Appendix B.

On the introductory level, artifacts were gathered from four Fall 2019 sections of EGL 220: Critical Thinking.

On the mastery level, artifacts were gathered from multiple major-specific upper division courses. For GSMA, a total of 25 of 31 senior theses were assessed from one section of the senior capstone course – GMA 460. For ME, 30 artifacts were assessed from two sections of ME 492: Project Design I, a senior level course. The ET department committed to providing data for two sections of ENG 470, however, IWAC never received the data.

The committee expected to collect IBL and MT mastery-level data in Spring 2020 (from BUS 301 and BUS 310, respectively), but due to the sudden campus closure and pivot to online modalities during the COVID-19 pandemic, data was not collected.

RESULTS

The benchmark was set for 70% of student artifacts to score 4 or above on a 6-point scale.

Critical Thinking

Introductory

At the introductory level, the benchmark for CRITICAL THINKING was met for at least one dimension in each major.

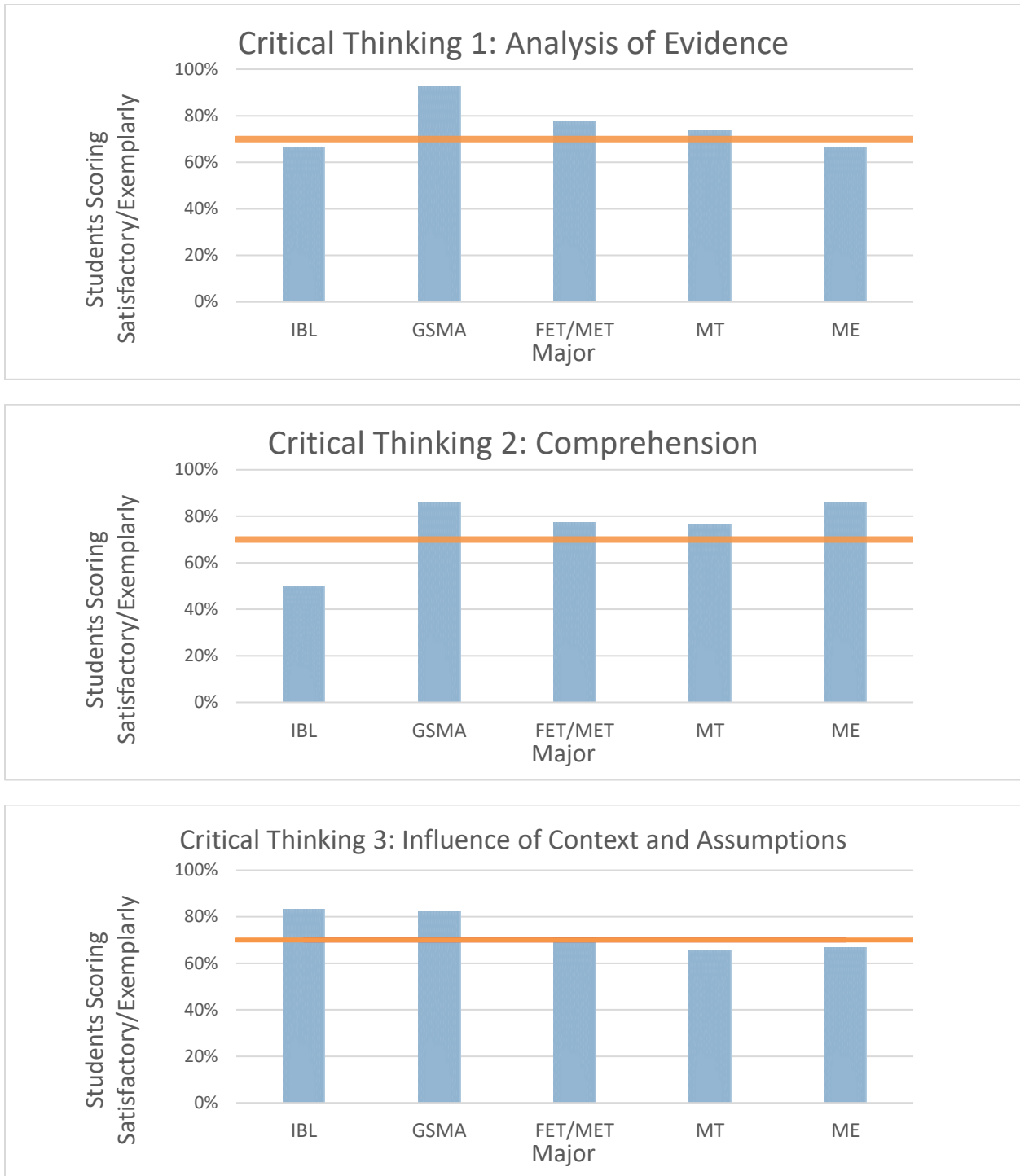


Figure 1. Introductory Level Comparison by Major for Each Dimension of Critical Thinking

Mastery

The mastery level was only assessed in the GSMA and ME majors due to COVID 19 disruptions. The benchmark for CRITICAL THINKING was met for two dimensions in ME and all three in GSMA.

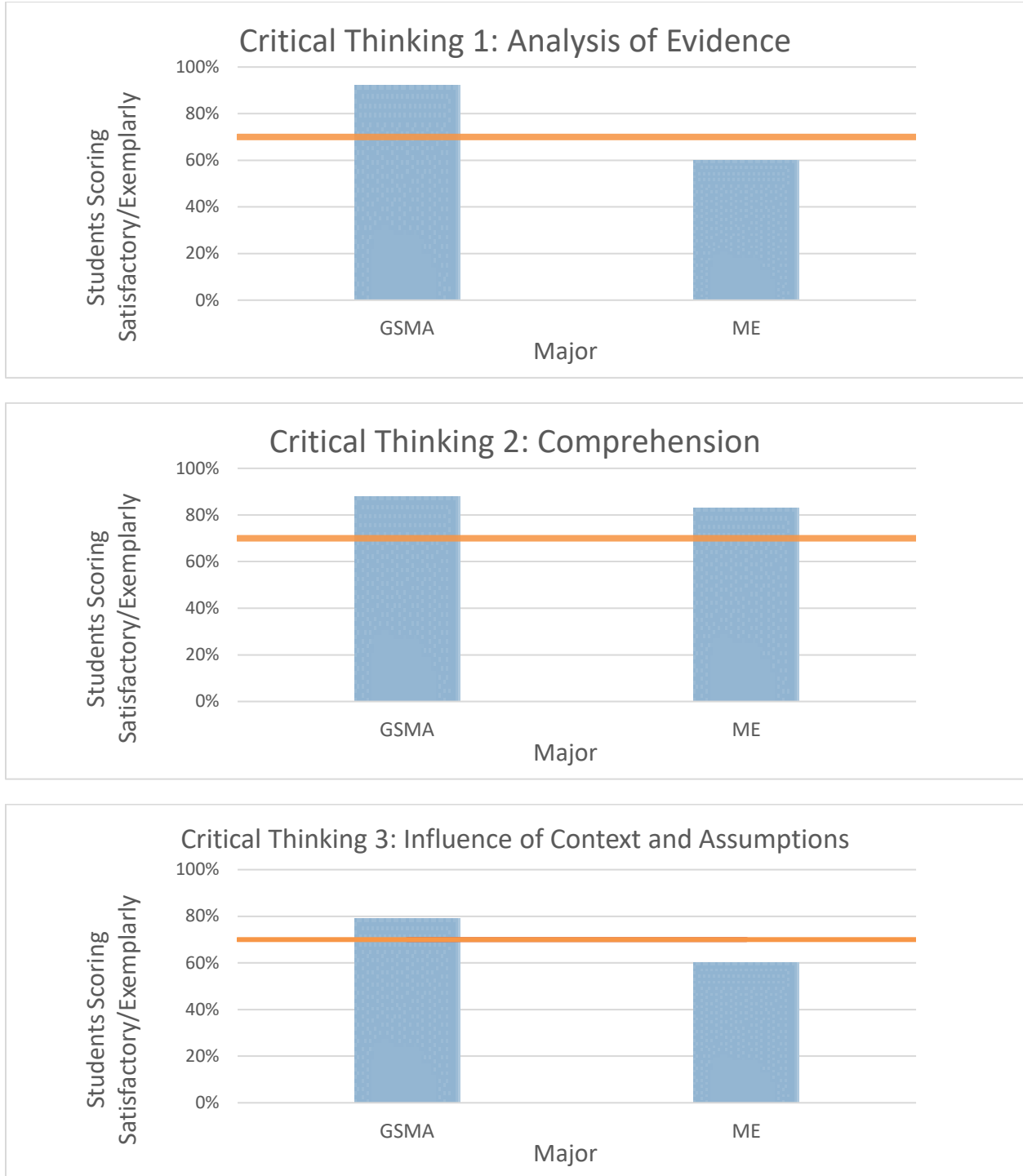


Figure 2. Mastery Level Comparison by Major for Each Dimension of Critical Thinking

Creative Thinking

Introductory

At the introductory level, the benchmark for CREATIVE THINKING was met in both dimensions by GSMA and MT and in one dimension by ME. IBL and FET/MET fell short of the benchmark in both dimensions.

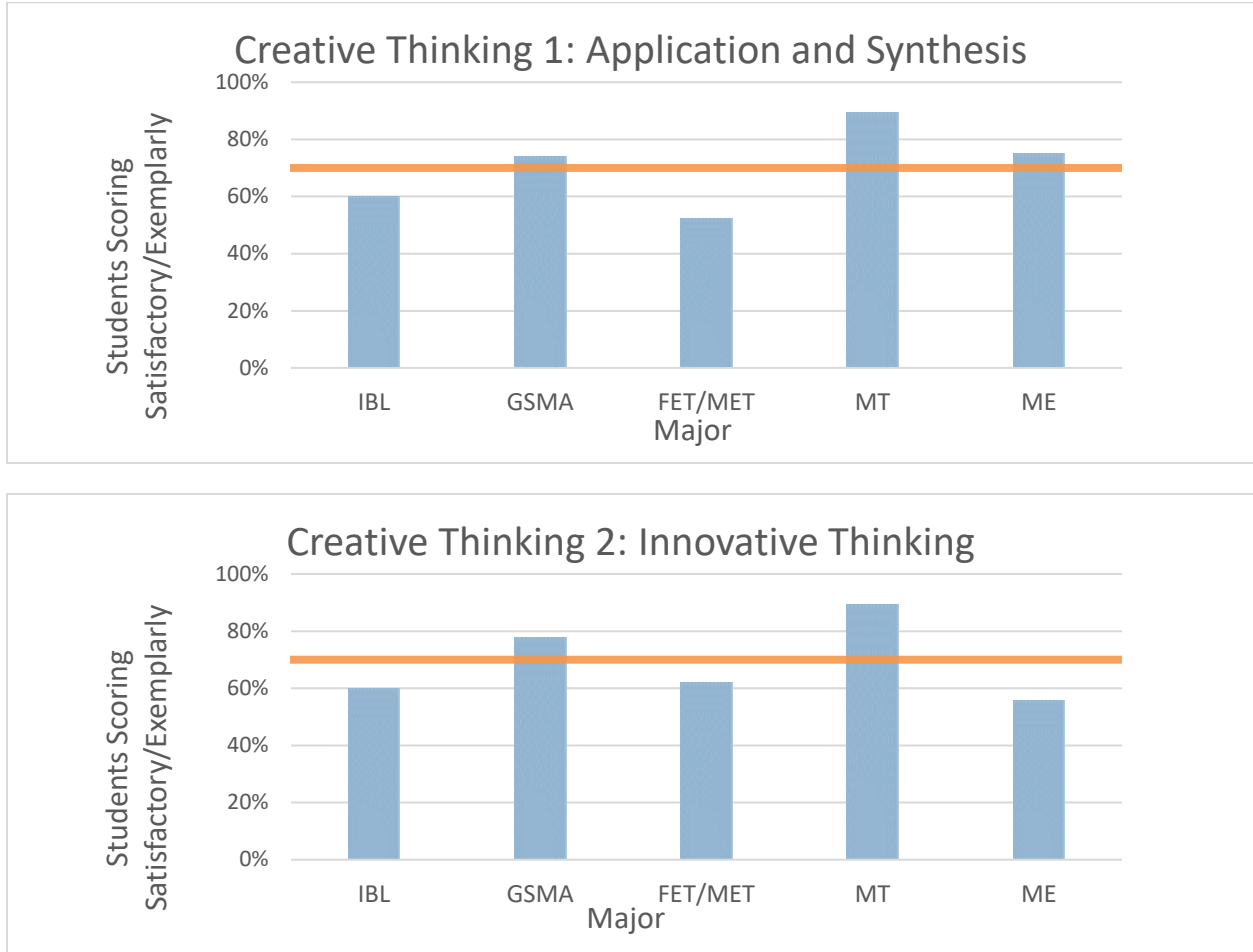


Figure 3. Introductory Level Comparison by Major for Each Dimension of Creative Thinking

Mastery

The mastery level was only assessed in the GSMA and ME majors due to COVID 19 disruptions. The benchmark for CREATIVE THINKING was met for both dimensions in GSMA and one in ME.

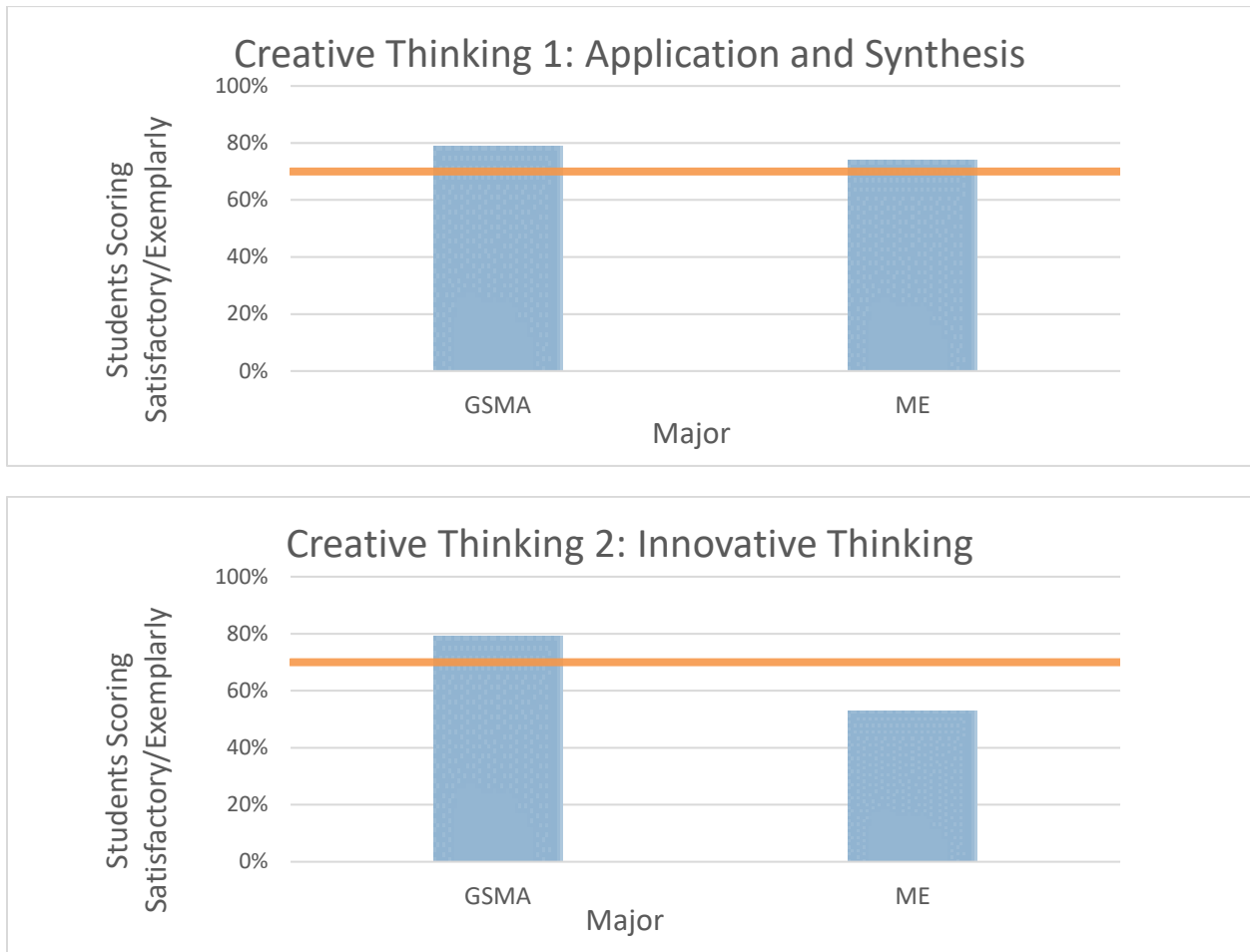


Figure 4. Mastery Level Comparison by Major for Each Dimension of Creative Thinking

At the introductory and mastery levels in CRITICAL THINKING, three dimensions were assessed: "Analysis of Evidence," "Comprehension," and "Influence of Context and Assumptions." The benchmark for CRITICAL THINKING was 70% achieving a score of 4 or greater on a 6 point scale for all three dimensions.

At the introductory level, the benchmark was met in all three dimensions in GSMA and FET/MET, two dimensions in MT, and one dimension in IBL and ME. At the mastery level, the benchmark was met in all three dimensions in GSMA and in one dimension, "Comprehension," in ME.

At the introductory and mastery levels in CREATIVE THINKING, two dimensions were assessed: "Application and Synthesis," and "Innovative Thinking." The benchmark for CREATIVE THINKING was 70% achieving a score of 4 or greater on a 6 point scale for both dimensions.

At the introductory level, the benchmark was met in both dimensions in GSMA and MT, and one dimension in ME. Neither of the benchmarks were met in IBL or FET/MET. At the mastery level, the benchmark was met in both dimensions in GSMA and in one dimension, “Application and Synthesis,” in ME.

From previous report, recommendations applied:

As opposed to the previous assessment cycle, this cycle achieved statistically significant participation. This success was due in part to the specific rubric identification, course identification, identification of faculty teaching each course, mid-semester assessment committee meeting, and integration with rubrics in Brightspace.

IWAC notified instructors well in advance of the semester that their classes were identified for data collection, and provided rubrics, ongoing support, and monitoring. IWAC members discussed the assessment and the assignments used with each instructor, ensuring the artifacts that were assessed aligned with the ILO rubrics.

Also following recommendations from the previous report, the objectives of CRITICAL THINKING and CREATIVE THINKING were assessed separately.

RECOMMENDATIONS

Assessment Efforts

The following recommendations are meant to address the assessment process and should be implemented by IWAC.

- IWAC should continue to identify courses and instructors which will conduct assessment prior to the start of the data collection semester
- Data collection should continue through rubrics in Brightspace
- IWAC should ensure that all courses identified have individual projects to assess. Group projects were difficult to apply to the rubrics and should be avoided
- To ensure continuity between cycles, norming sessions should be held

Program Effectiveness

The following recommendations are meant to address the findings in each program and should be reviewed by each department.

- GSMA: Since GSMA students were the only program to meet all of the benchmarks, the department should identify where and how these outcomes are taught in the

curriculum. These findings can be used to inform other departments efforts to improve their curriculum

- ME: Since ME students met some of the benchmarks, the department should identify where and how these outcomes are taught in the curriculum. These findings can inform additional or revised instruction.
- ET, MT, IBL: Because artifacts could not be collected for these three departments (due to the COVID-19 pandemic), the departments should continue to identify where and how these outcomes are taught in the curriculum to prepare for data collection in the next cycle

APPENDIX A: SUMMARY OF DATA

Introductory Level

Critical Thinking 1: Analysis of Evidence						
Major	IBL	GSMA	FET/MET	MT	ME	
% Met/Exceeded	67%	93%	77%	74%	67%	
Number Met/Exceeded	4	26	17	28	24	
Total Artifacts Collected	6	28	22	38	36	
Gender	M	F				
% Met/Exceeded	72%	100%				
Number Met/Exceeded	84	15				
Total Artifacts Collected	117	15				
Ethnicity	Asian	Black	Hisp	Two +	Unknown	White
% Met/Exceeded	75%	N/A	75%	86%	78%	73%
Number Met/Exceeded	6	0	18	12	7	56
Total Artifacts Collected	8	0	24	14	9	77
Institution Wide						
% Met/Exceeded	75%					
Number Met/Exceeded	99					
Total Artifacts Collected	132					

Critical Thinking 2: Comprehension						
Major	IBL	GSMA	FET/MET	MT	ME	
% Met/Exceeded	50%	86%	77%	76%	86%	
Number Met/Exceeded	3	24	17	29	31	
Total Artifacts Collected	6	28	22	38	36	
Gender	M	F				
% Met/Exceeded	77%	93%				
Number Met/Exceeded	90	14				
Total Artifacts Collected	117	15				
Ethnicity	Asian	Black	Hisp	Two +	Unknown	White
% Met/Exceeded	75%	N/A	71%	86%	89%	79%
Number Met/Exceeded	6	0	17	12	8	61
Total Artifacts Collected	8	0	24	14	9	77
Institution Wide						
% Met/Exceeded	79%					
Number Met/Exceeded	104					
Total Artifacts Collected	132					

Critical Thinking 3: Influence of Context and Assumptions						
Major	IBL	GSMA	FET/MET	MT	ME	
% Met/Exceeded	83%	82%	71%	66%	67%	
Number Met/Exceeded	5	23	15	25	24	
Total Artifacts Collected	6	28	21	38	36	
Gender	M	F				
% Met/Exceeded	67%	93%				
Number Met/Exceeded	78	14				
Total Artifacts Collected	117	15				
Ethnicity	Asian	Black	Hisp	Two +	Unknown	White
% Met/Exceeded	63%	N/A	75%	71%	89%	66%
Number Met/Exceeded	5	0	18	10	8	51
Total Artifacts Collected	8	0	24	14	9	77
Institution Wide						
% Met/Exceeded	70%					
Number Met/Exceeded	92					
Total Artifacts Collected	132					

Creative Thinking 1: Application and Synthesis						
Major	IBL	GSMA	FET/MET	MT	ME	
% Met/Exceeded	60%	74%	52%	89%	75%	
Number Met/Exceeded	3	20	11	17	3	
Total Artifacts Collected	5	27	21	19	4	
Gender	M	F				
% Met/Exceeded	66%	83%				
Number Met/Exceeded	44	10				
Total Artifacts Collected	67	12				
Ethnicity	Asian	Black	Hisp	Two +	Unknown	White
% Met/Exceeded	75%	N/A	71%	56%	100%	66%
Number Met/Exceeded	3	0	12	5	5	29
Total Artifacts Collected	4	0	17	9	5	44
Institution Wide						
% Met/Exceeded	68%					
Number Met/Exceeded	54					
Total Artifacts Collected	79					

Creative Thinking 2: Innovative Thinking						
Major	IBL	GSMA	FET/MET	MT	ME	
% Met/Exceeded	60%	78%	62%	89%	56%	
Number Met/Exceeded	3	21	13	17	19	
Total Artifacts Collected	5	27	21	19	34	
Gender	M	F				
% Met/Exceeded	66%	73%				
Number Met/Exceeded	62	11				
Total Artifacts Collected	94	15				
Ethnicity	Asian	Black	Hisp	Two +	Unknown	White
% Met/Exceeded	71%	N/A	62%	62%	100%	66%
Number Met/Exceeded	5	0	13	8	7	40
Total Artifacts Collected	7	0	21	13	7	61
Institution Wide						
% Met/Exceeded	67%					
Number Met/Exceeded	73					
Total Artifacts Collected	109					

Mastery Level

Critical Thinking 1: Analysis of Evidence						
Major	IBL	GSMA	FET/MET	MT	ME	
% Met/Exceeded	N/A	92%	N/A	N/A	60%	
Number Met/Exceeded	0	22	0	0	18	
Total Artifacts Collected	0	24	0	0	30	
Gender	M	F	N/A			
% Met/Exceeded	69%	100%				
Number Met/Exceeded	31	9				
Total Artifacts Collected	45	9				
Ethnicity	Asian	Black	Hisp	Two +	Unknown	White
% Met/Exceeded	75%	N/A	92%	67%	67%	69%
Number Met/Exceeded	3	0	11	4	2	20
Total Artifacts Collected	4	0	12	6	3	29
Institution Wide						
% Met/Exceeded	74%					
Number Met/Exceeded	40					
Total Artifacts Collected	54					

Critical Thinking 2: Comprehension						
Major	IBL	GSMA	FET/MET	MT	ME	
% Met/Exceeded	N/A	88%	N/A	N/A	83%	
Number Met/Exceeded	0	21	0	0	25	
Total Artifacts Collected	0	24	0	0	30	
Gender	M	F				
% Met/Exceeded	84%	89%				
Number Met/Exceeded	38	8				
Total Artifacts Collected	45	9				
Ethnicity	Asian	Black	Hisp	Two +	Unknown	White
% Met/Exceeded	100%	N/A	83%	83%	100%	83%
Number Met/Exceeded	4	0	10	5	3	24
Total Artifacts Collected	4	0	12	6	3	29
Institution Wide						
% Met/Exceeded	85%					
Number Met/Exceeded	46					
Total Artifacts Collected	54					

Critical Thinking 3: Influence of Context and Assumptions						
Major	IBL	GSMA	FET/MET	MT	ME	
% Met/Exceeded	N/A	79%	N/A	N/A	60%	
Number Met/Exceeded	0	19	0	0	18	
Total Artifacts Collected	0	24	0	0	30	
Gender	M	F				
% Met/Exceeded	64%	89%				
Number Met/Exceeded	29	8				
Total Artifacts Collected	45	9				
Ethnicity	Asian	Black	Hisp	Two +	Unknown	White
% Met/Exceeded	75%	N/A	83%	33%	100%	66%
Number Met/Exceeded	3	0	10	2	3	19
Total Artifacts Collected	4	0	12	6	3	29
Institution Wide						
% Met/Exceeded	69%					
Number Met/Exceeded	37					
Total Artifacts Collected	54					

Creative Thinking 1: Application and Synthesis						
Major	IBL	GSMA	FET/MET	MT	ME	
% Met/Exceeded	N/A	79%	N/A	N/A	73%	
Number Met/Exceeded	0	19	0	0	22	
Total Artifacts Collected	0	24	0	0	30	
Gender	M	F				
% Met/Exceeded	73%	89%				
Number Met/Exceeded	33	8				
Total Artifacts Collected	45	9				
Ethnicity	Asian	Black	Hisp	Two +	Unknown	White
% Met/Exceeded	75%	N/A	83%	50%	100%	76%
Number Met/Exceeded	3	0	10	3	3	22
Total Artifacts Collected	4	0	12	6	3	29
Institution Wide						
% Met/Exceeded	76%					
Number Met/Exceeded	41					
Total Artifacts Collected	54					

Creative Thinking 2: Innovative Thinking						
Major	IBL	GSMA	FET/MET	MT	ME	
% Met/Exceeded	N/A	79%	N/A	N/A	53%	
Number Met/Exceeded	0	19	0	0	16	
Total Artifacts Collected	0	24	0	0	30	
Gender	M	F				
% Met/Exceeded	64%	67%				
Number Met/Exceeded	29	6				
Total Artifacts Collected	45	9				
Ethnicity	Asian	Black	Hisp	Two +	Unknown	White
% Met/Exceeded	75%	N/A	67%	50%	100%	62%
Number Met/Exceeded	3	0	8	3	3	18
Total Artifacts Collected	4	0	12	6	3	29
Institution Wide						
% Met/Exceeded	65%					
Number Met/Exceeded	35					
Total Artifacts Collected	54					

APPENDIX B: CRITICAL AND CREATIVE THINKING RUBRICS

These rubrics were designed to assess student work such as papers, reports, presentations, and other projects for the following CSU Maritime Institution-Wide SLO B: Critical and Creative Thinking: Comprehend, analyze, and objectively evaluate information and ideas; approach issues in new and different ways, often through synthesizing or applying information

CREATIVE THINKING RUBRIC

Approach issues in new and different ways, often through synthesizing or applying information.

	Developing		Emerging		Mastering	
	1	2	3	4	5	6
Innovative Thinking <i>Novelty or uniqueness (of idea, claim, question, form, etc.)</i>	Reformulates a collection of available ideas.	Experiments with creating a novel or unique idea, question, format, or product.		Creates a novel or unique idea, question, format, or product.	Extends a novel or unique idea, question, format, or product to create new knowledge or knowledge that crosses boundaries.	
Application and Synthesis	Recognizes existing connections among ideas or solutions.	Connects ideas or solutions in novel ways.		Synthesizes ideas or solutions into a coherent whole.	Transforms ideas or solutions into entirely new forms.	

CRITICAL THINKING RUBRIC

Comprehend, analyze and objectively evaluate information and ideas.

	1	2	3	4	5	6
	Developing		Emerging		Mastering	
Comprehension	Issue/problem to be considered critically is stated without clarification or description.		Issue/problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/or backgrounds unknown.		Issue/problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	
Analysis of Evidence	Information is taken from source(s) without any interpretation/evaluation. Conclusion not supported by findings.		Information is taken from source(s) with some interpretation/evaluation, but not enough to develop a coherent analysis or synthesis. Overly general conclusion.		Information is taken from source(s) with enough interpretation/evaluation to develop a coherent analysis or synthesis. conclusion arises specifically from and responds specifically to the inquiry findings.	
Influence of context and assumptions	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.		Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).		Identifies own and others' assumptions and several relevant contexts when presenting a position.	
					Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	