FALL 2022 CORE COMPETENCY ASSESSMENT

OVERVIEW

At MiraCosta College, the concept of Core Competencies refers to over-arching learning outcomes the college expects students to acquire while completing coursework required for a degree, certificate, or transfer. Each semester the college conducts a classroom assessment of student skill acquisition from the faculty perspective, allowing faculty to examine whether students are achieving course learning outcomes tied to specific areas of *competence*. In the Fall 2022 semester, faculty assessed **Creative Thinking**, the capacity to combine ideas and expertise or work in highly imaginative or divergent ways and **Ethical Reasoning and Action**, reasoning about right and wrong human conduct. This report divides the analysis of each competence into separate sections.

EVALUATION METHODOLOGY

Prior to the semester's start, faculty review and confirm an initial coding process that has mapped a particular Core Competency to one or more course learning outcomes. During the semester, faculty volunteers evaluate students' level of competency in a specific area using specified criteria and locally developed rubric. This competency measurement is subsequently merged with student records and analyzed by the Office of Research, Planning, and Institutional Effectiveness (RPIE).

CREATIVE THINKING

Table 1: Creative Thinking Summary

Number of Course Sections	8
Students Rated (Duplicated)	137
Average Rating	2.92

Faculty assessed **Creative Thinking** from 0 to 4 on the following dimensions:

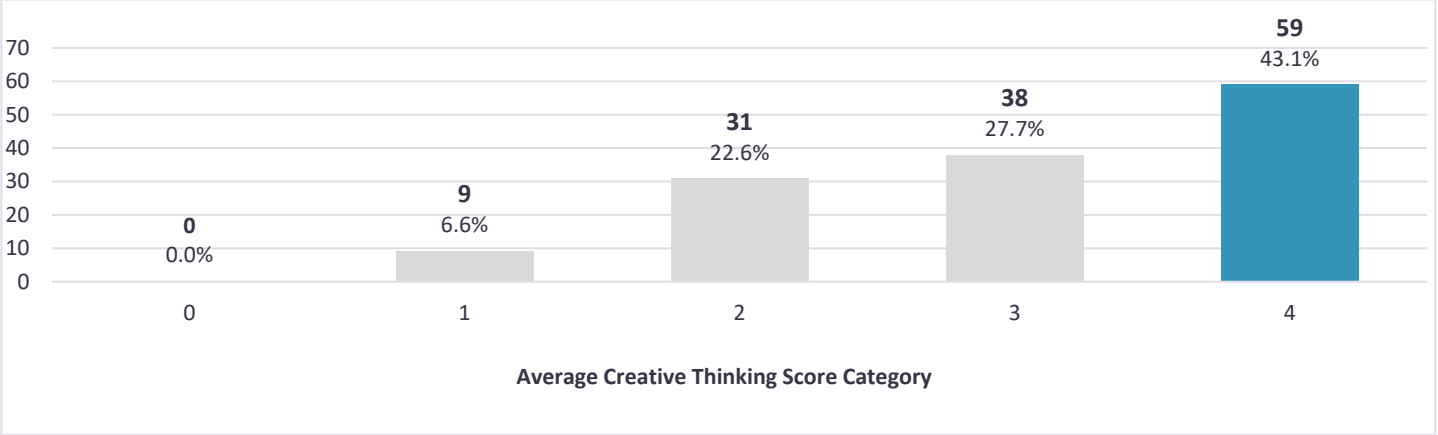
- **Depth of Creative Process**: acquiring strategies and skills within a particular domain
- **Taking Risks**: going beyond the guidelines of the assignment
- **Solving Problems**
- **Embracing Contradictions**: incorporating alternate perspectives
- **Innovative Thinking**: poses unique ideas, claims, questions
- **Connecting, Synthesizing, Transforming Ideas**

- Students receiving a grade of "W" or "EW" were excluded from the analysis.
- A total of 137 duplicated (136 unduplicated[1]) students were included in the evaluation process of this competency in Fall 2022

[1]'Unduplicated students' refers to the number of uniquely identifiable students included in the assessment. In this figure each student counts only once. 'Duplicated students' refers to the number of overall assessments given and may include a uniquely identifiable student more than once.

- Creative Thinking assessment took place in 8 course sections among 7 faculty/instructors
- Students were rated from 0-4 on each dimension according to the developed rubric, with 0 signifying the lowest level of competence
- Creative Thinking scores in this sample were high with approximately seventy percent of assessed students receiving an average rating of "3" or "4"

Figure 1: Number of Students by Creative Thinking Average Score Category



CREATIVE THINKING DIMENSIONS

- Average scores on the dimensions of Creative Thinking ranged from 2.72 to 3.15
- The **Connecting, Synthesizing, and Transforming** dimension of Creative Thinking generated the highest average scores, while **Taking risks** and **Embracing contradictions** generated the lowest average scores.

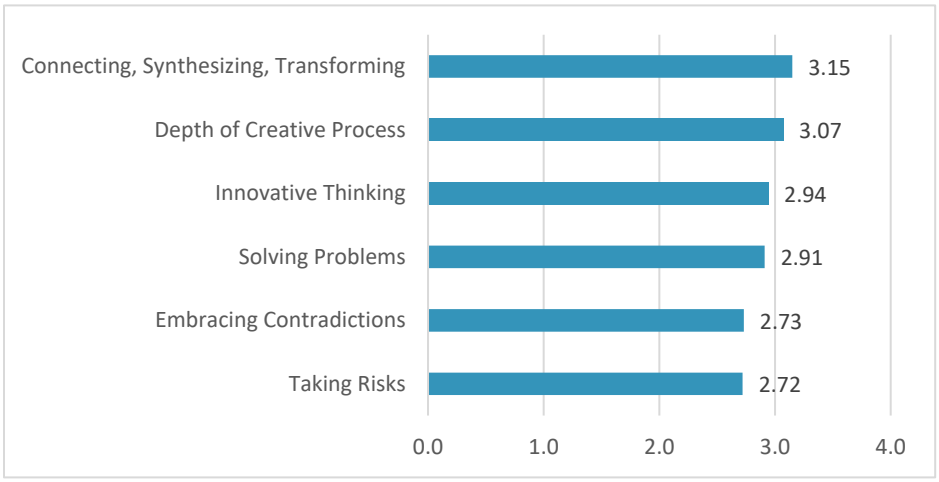


Figure 2: Average Score of each Creative Thinking Rubric Component

CREATIVE THINKING SCORE BY COURSE GRADE

- Rubric scores were compared to students' course grades to examine a potential relationship between variables
- The table suggests a relationship may exist between course grade attainment and **Creative Thinking** scores.
- Small, unequal sample sizes across grade categories impede the ability to statistically evaluate the strength of any potential relationship between these variables.

Table 2: Average Score by Grade Received in Course

Grade Received	n	Average Score
A	75	3.19
B	30	2.97
C/P	22	2.37
D	4	2.29
F/NP	6	1.72

- Average Creative Thinking Scores assessed relative to the grade earned by a student in their assessment course additionally suggested a relationship between course grade and Creative Thinking scores.
- Sixty-one percent of students who earned the grade of "**A**" earned an average Creative Thinking score of "**3**" or "**4**"
- Alternatively, eighty-three percent of students who earned a grade of "**F**" received a score of "**2**" or "**3**"
- While the variability (on average) in Creative Thinking scores between high and low grade categories may indicate a true difference between high and low grade earners in Creative Thinking skills, a sparse number of observations in lower grade categories render it difficult to draw firm conclusions about speculated differences.

Table 3: Average Creative Thinking score category by Grade- Heat Map

	Average Creative Thinking Score Category				
Grade Received	**0**	**1**	**2**	**3**	**4**
A	0.0%	0.0%	21.3%	25.3%	35.8%
B	0.0%	0.0%	16.7%	46.7%	15.0%
C/P	0.0%	27.3%	27.3%	13.6%	16.7%
D	0.0%	25.0%	25.0%	25.0%	0.0%
F/NP	0.0%	33.3%	50.0%	16.7%	0.0%

CREATIVE THINKING DEMOGRAPHIC TABLES & GRAPHS

UNITS ATTAINED

- Creative Thinking scores were highest among students who attained **31-45 units** prior to Fall 2022
- Small, disaggregated samples across unit categories make it difficult to know whether these patterns accurately represent the student population overall
- Initial patterns in average Creative Thinking scores across units attained groups suggest a relationship could exist between student progression[2] and Creative Thinking scores.

[2] Student progression as defined by unit attainment

Table 4: Average Creative Thinking Score by Number of Units Completed Prior to Fall 2022

	n	Average Score
0 Units	22	2.77
1-15 Units	34	2.65
16-30 Units	28	3.10
31-45 Units	23	3.17
45-60 Units	16	3.05
60 + Units	14	2.89

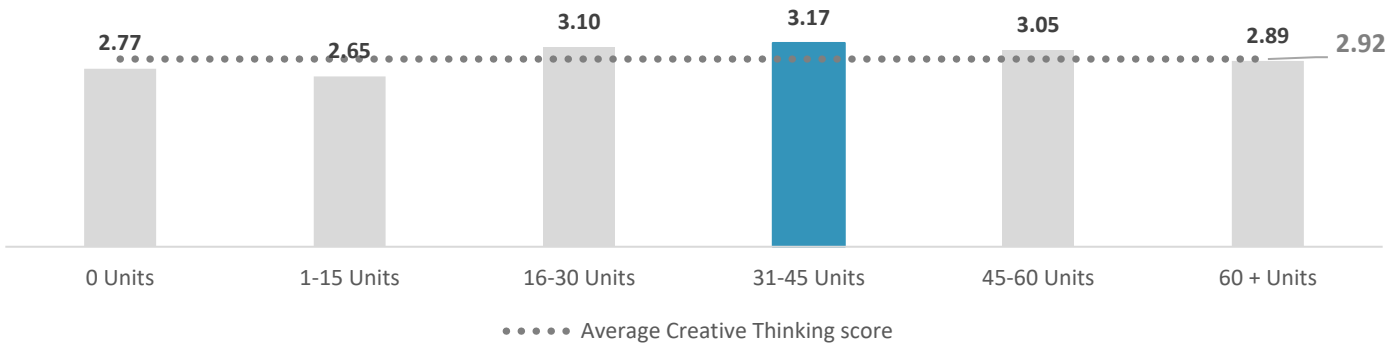


Figure 3: Average Creative Thinking score by Units Completed Prior to Fall 2022

ADMISSION STATUS

- Average Creative Thinking scores were highest among **Continuing students**
- The remaining student types (**Returning, First-time** and **Transfer** students) generated *lower* Creative Thinking scores.
- Initial results among student admit types are indicative of the idea that Creative Thinking might develop as a student progresses in their education, though we can not draw causal conclusions on the basis of self-selected groups
- However, small samples of most student admit types make it difficult to draw substantive conclusions about the potential relationship between Admission status and Creative Thinking or test this it statistically
- In addition there may be a host of underlying motivational and demographic variables at work that are not measured in this data set.

Table 5: Average Creative Thinking Score by Admission Status

	n	Average Score
First Time Student	15	2.79
Continuing Student	83	3.00
Returning Student	23	2.79
Transfer Student	16	2.80

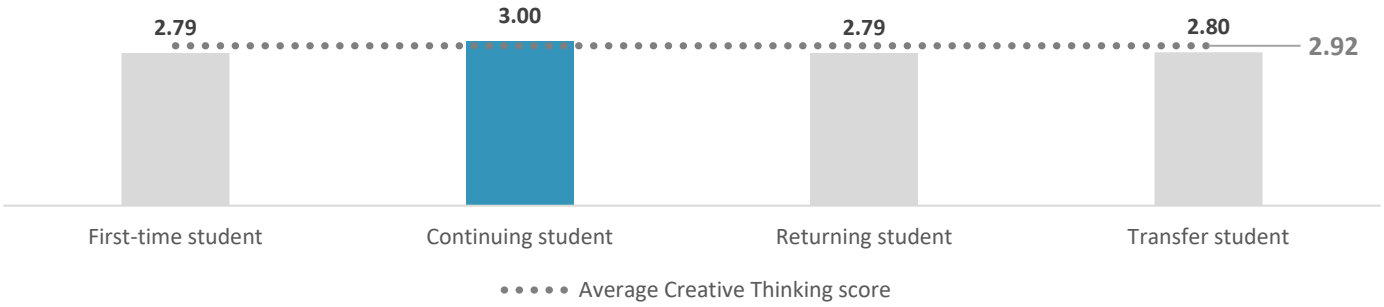


Figure 4: Average Creative Thinking Score Category by Admission Status

AGE

- Among well represented age groups in this sample, **18–24-year-old** students demonstrated the highest Creative Thinking scores
- Overall, Creative Thinking scores do not appear to be related to age or age progression in this sample of students.
- However, small samples of non-traditional age college students make it difficult to ascertain whether these results are representative of MiraCosta students at large, or occurred by chance.

Table 6: Average Creative Thinking Score by Age Category

	n	Average Score
17 and under	1	3.67
18-24	85	3.03
25-30	21	2.44
31-40	20	3.02
41-50	9	2.59
50+ Years Old	1	3.83

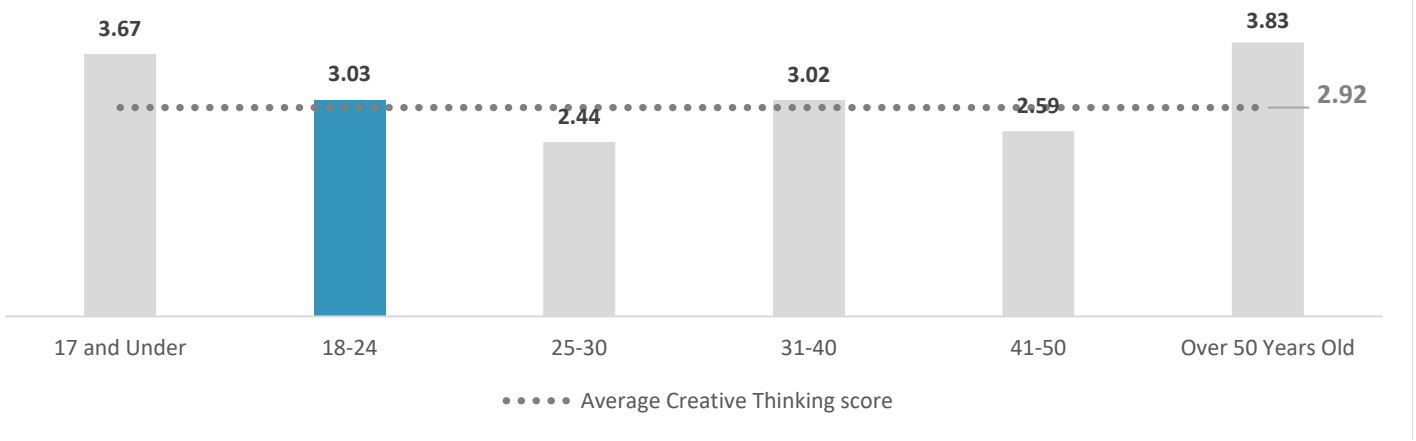


Figure 5: Creative Thinking Score by Age

GENDER

- Creative Thinking scores were highest among **male** students, showing evidence of gender differences
- The large difference in sample sizes between males and females could be a contributing factor in the observed score difference as the larger group is likely more normally distributed and representative of the population at large
- More intersectional demographic analysis with age, ethnicity, and admit type can provide clarity about the pervasiveness of this finding among subgroups of male and female students and whether this effect holds true across all groups.

Table 7: Average Creative Thinking Score by Gender

	n	Average Score
Female	89	2.80
Male	46	3.12
Unknown	2	3.67

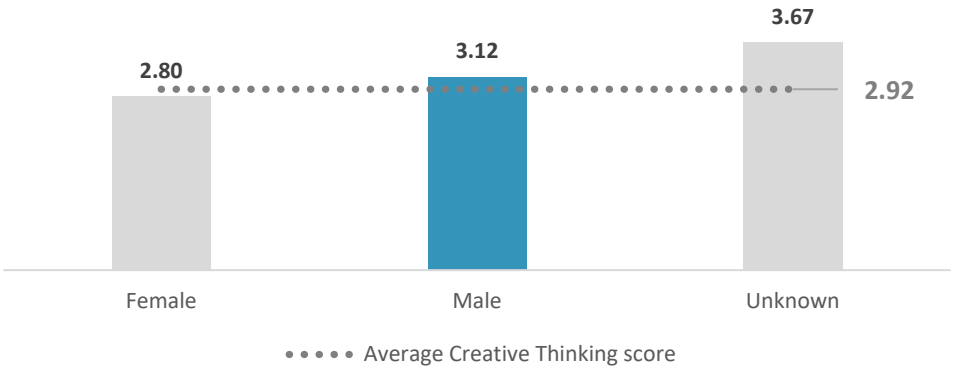


Figure 6: Average Creative Thinking Score by Gender

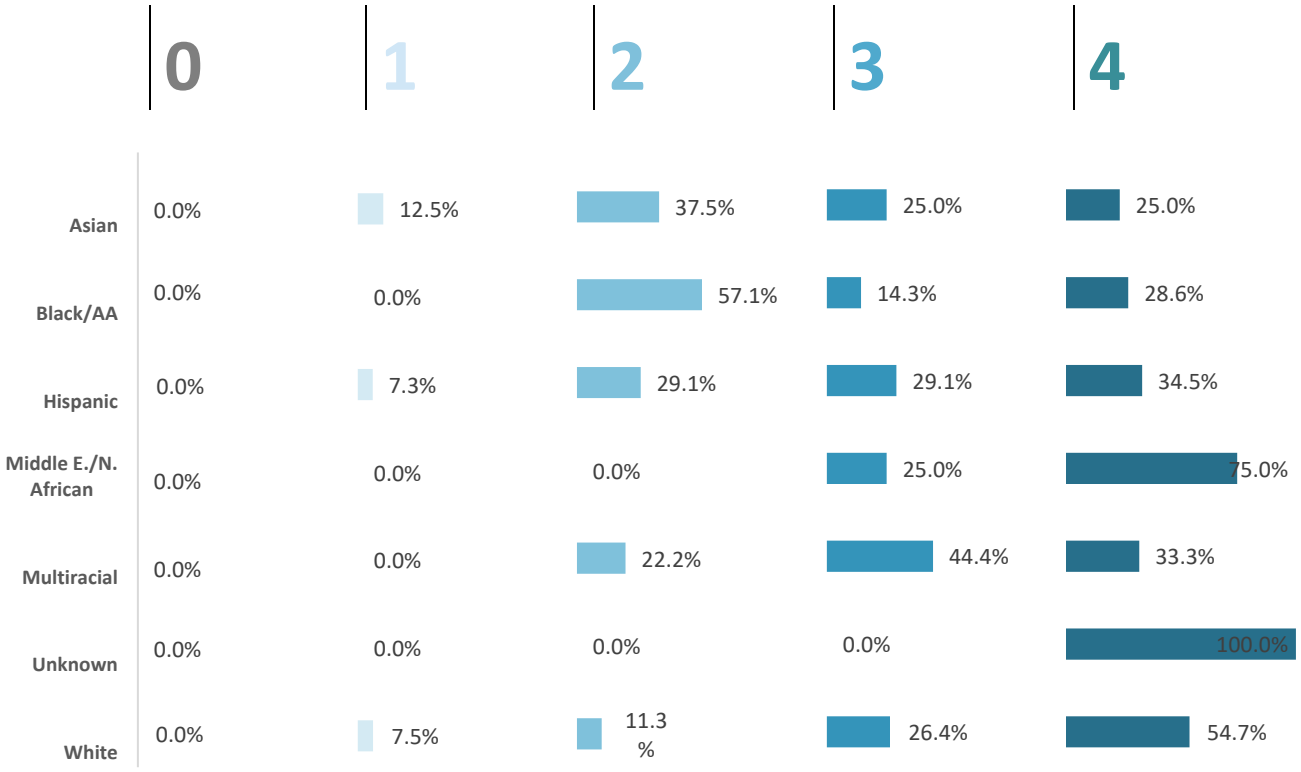
ETHNICITY

- Initial data demonstrates **White students** generated higher Creative Thinking scores on average, than their Latinx counterparts
- Small samples of students from most other ethnic designations make it difficult to draw substantive conclusions about the potential significant differences in Creative Thinking among individuals of varying ethnic backgrounds

Table 8: Average Creative Thinking score by Ethnicity

	n	Average Score
Asian	8	2.44
Black/African American	7	2.76
Latinx	55	2.78
Middle Eastern/North African	4	3.50
Multiracial	9	2.78
Unknown	1	4.00
White	46	3.12

Figure 7: Proportion of average Creative Thinking score category by Ethnicity



The sample for **Creative Thinking** was small, resulting in a reduced ability to make broad-based inferences about the student body as a whole and across demographic variables of interest. The strength of the inferences will increase over time as the college collects more data for this competency.

By comparison, the sample for **Ethical Reasoning & Action** was large in Fall 2022, producing greater confidence that statistics generated by this sample more closely approximate the overall population of MiraCosta College students. The larger sample also provides greater confidence in the analysis of important demographic subgroups when we examine Ethical Reasoning among various Age, Gender, Ethnic and Units attained groupings.

ETHICAL REASONING & ACTION

Table 9: Ethical Reasoning & Action Summary

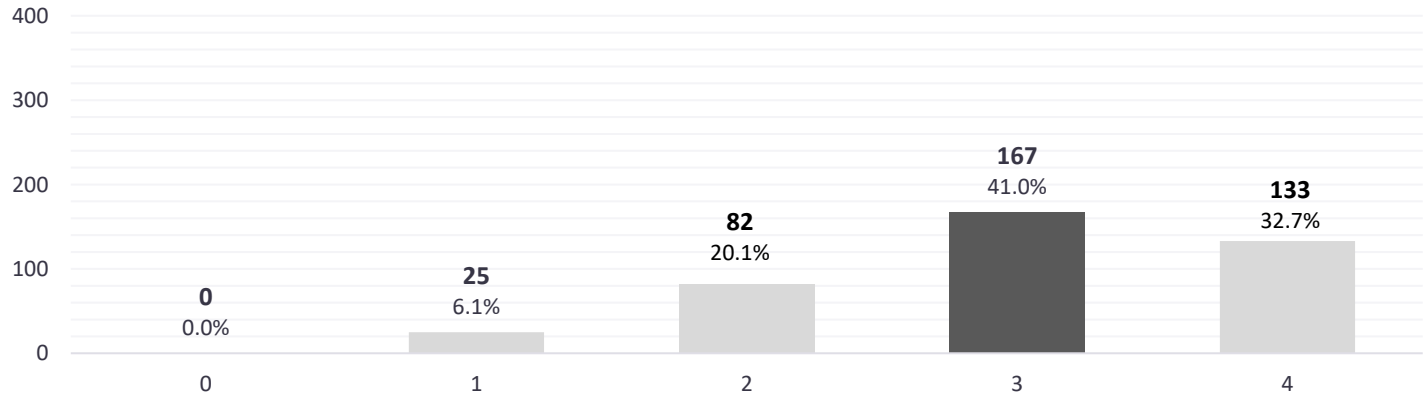
Number of Course Sections	16
Students Rated (Duplicated)	407
Average Rating	2.84

Faculty assessed students' **Ethical Reasoning & Action** from 0 to 4 along the following dimensions:

- **Ethical Self Awareness**: students' ability to assess their own ethical values and the social context of problems
- **Understanding Ethical Perspectives/Concepts:** students' ability to understand ethical concepts
- **Ethnical Issue Recognition:** students' recognition of ethical issues in a variety of settings
- **Application of Ethical Perspectives/Concepts**: students' ability to describe and analyze positions on ethical issues

- Eleven faculty in 16 different sections participated in the assessment of this Core Competency
- Students receiving a grade of "W" or "EW" or who dropped the course prior to census were excluded from the analysis.
- Students were rated according to a locally developed rubric, from 0-4 on each dimension, with 0 signifying the lowest level of competence
- A total of 407 duplicated (397 unduplicated) [3] students were included in the evaluation process
- The most commonly awarded score was "3"

Figure 8: Number of Students by Average Ethical Reasoning & Action rating



ETHICAL REASONING & ACTION DIMENSIONS

- Average scores on Ethical Reasoning & Action dimensions ranged from 2.79 to 2.92
- Students generated the highest scores on **Ethical Self-Awareness** and generated lowest scores on **Understanding Perspective**.

Figure 9: Average Score of each Ethical Reasoning & Action Dimension

ETHICAL REASONING & ACTION SCORE BY COURSE GRADE

[3] 'Unduplicated students' refers to the number of uniquely identifiable students included in the assessment. In this figure each student counts only once. 'Duplicated students' refers to the number of overall assessments given and may include a uniquely identifiable student more than once.

Table 10: Average Ethical Reasoning & Action Score by Grade Received

Grade Received	Number of Students	Average Score
A	259	2.94
B	92	2.86
C/P	36	2.51
D	9	2.25
F/NP	11	1.86

- Rubric scores were compared with earned course grade to examine the potential relationship between the variables
- The table suggests that as course grades increased, so too did average Ethical Reasoning & Action competency ratings
- It is unknown to what extent this finding is representative of the student population at large, or generalizable, as several faculty-assigned grade categories have a minimal number of observations and the potential to produce spurious findings.

- In examining the distributions of grades across average Ethical Reasoning & Action score categories in the heat map below, there appears to be a linear pattern between competency scores and earned course grade
- Of the students who earned the grade of "**A**," over 77% earn an average score of "**3**" or "**4**"
- About 60% of those earning a grade of "**F**" received a score of "**1**" or "**2**"

Table 11: Average Ethical Reasoning & Action score by Grade- Heat Map

	Average Ethical Reasoning & Action Score Category				
Grade Received	0	1	2	3	4
A	0.0%	3.9%	18.9%	41.7%	35.5%
B	0.0%	5.4%	18.5%	38.0%	38.0%
C/P	0.0%	8.3%	33.3%	44.4%	13.9%
D	0.0%	22.2%	22.2%	44.4%	11.1%
F/NP	0.0%	45.5%	18.2%	36.4%	0.0%

ETHICAL REASONING & ACTION DEMOGRAPHIC TABLES & GRAPHS

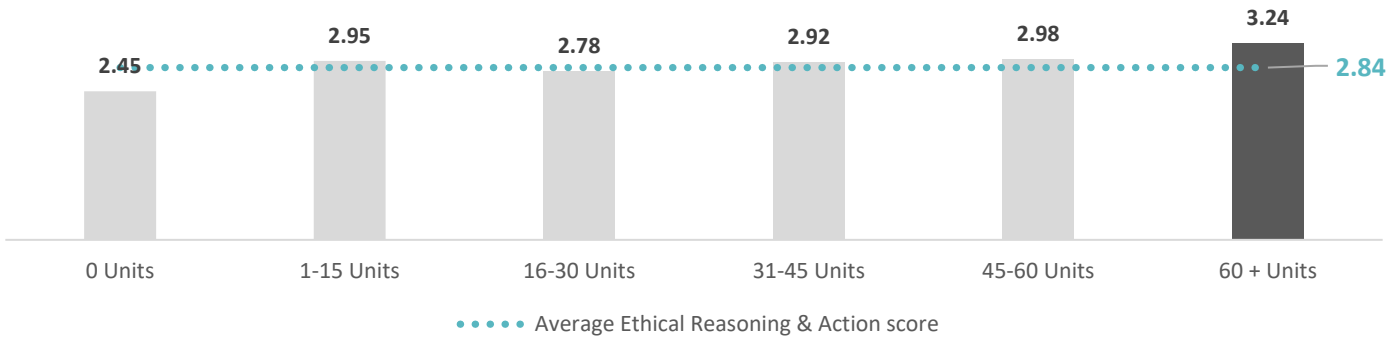
UNITS ATTAINED

- Students with more attained units also tended to generate higher Ethical Reasoning and Action scores[4]
- The highest Ethical Reasoning & Action scores were generated by students who completed **more than 60 units** prior to Fall 2022
- The lowest scores were generated by those with no units attained prior to Fall term.
- While preliminary data for this competence demonstrates a potential relationship may exist between student progression (as defined by accumulated units) and Ethical Reasoning & Action scores, alternative explanations like age, and other motivational and demographic variables not investigated in this report, can't be ruled out as contributing to a pattern of this nature.

Table 12: Average Ethical Reasoning & Action score by Units Completed

	n	Average Score
0 Units	83	2.45
1-15 Units	101	2.95
16-30 Units	77	2.78
31-45 Units	62	2.92
46-60 Units	49	2.98
More than 60 Units	35	3.24

Figure 10: Average Ethical Reasoning & Action score by Units Completed



ADMISSION STATUS

- In line with the unit attainment data, Ethical Reasoning & Action scores were *lowest* on average among **First-time** students
- **Continuing** students and **Returning** students generated the *highest* Ethical Reasoning & Action scores

[4] Units were attained prior to the course in which students were assessed.

Table 13: Average Ethical Reasoning & Action score by Admission Status

	n	Average Score
High School Student	3	2.58
First Time Student	88	2.59
Continuing Student	239	2.90
Returning Student	32	3.12
Transfer Student	45	2.82

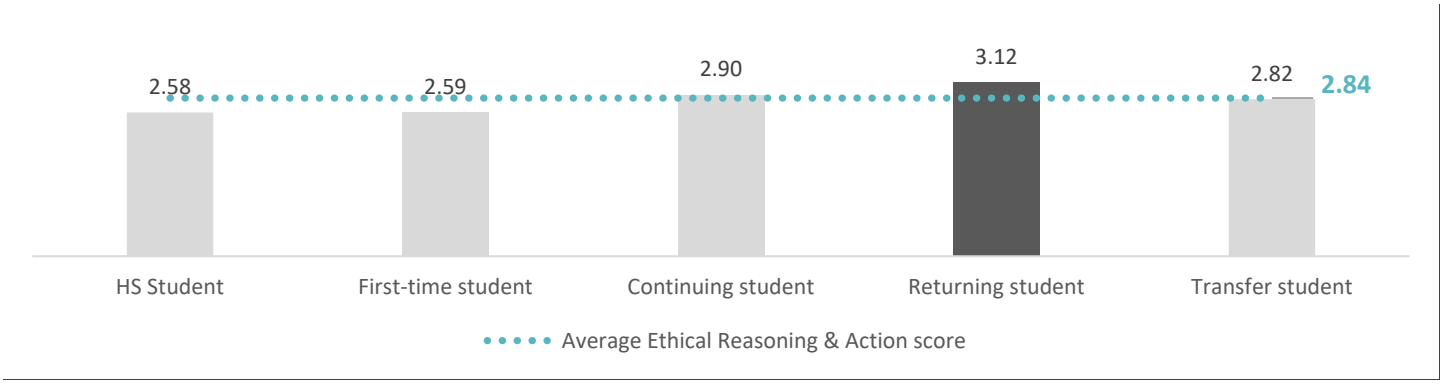


Figure 11: Average Ethical Reasoning & Action score by Admission Status

AGE

- Ethical Reasoning and Action scores appear to increase almost linearly with age
- The highest Ethical Reasoning & Action scores were observed among students **41-50 years old** while traditional-age college students (18-24 years old) generated the lowest scores
- However, comparing unequally sampled age groups renders it difficult to establish the existence of a relationship between Ethical Reasoning & Action scores and age, particularly as there are few observations in non-traditional age categories.
- Furthermore, over 50% of the sample of students of traditional age[5] were also 'Continuing' students.
- As the population of continuing students overlaps greatly with that of traditional age college students it becomes difficult to determine whether any potential relationship between these variables and Ethical reasoning—is the product of one, or both, of these variables.

[5] Traditional-age students are defined as 18-24 years old

Table 14: Average Ethical Reasoning & Action score by Age Group

	n	Average Score
17 and under	3	3.13
18-24	225	2.80
25-30	46	2.87
31-40	27	3.00
41-50	12	3.23
50+ Years Old	10	3.17

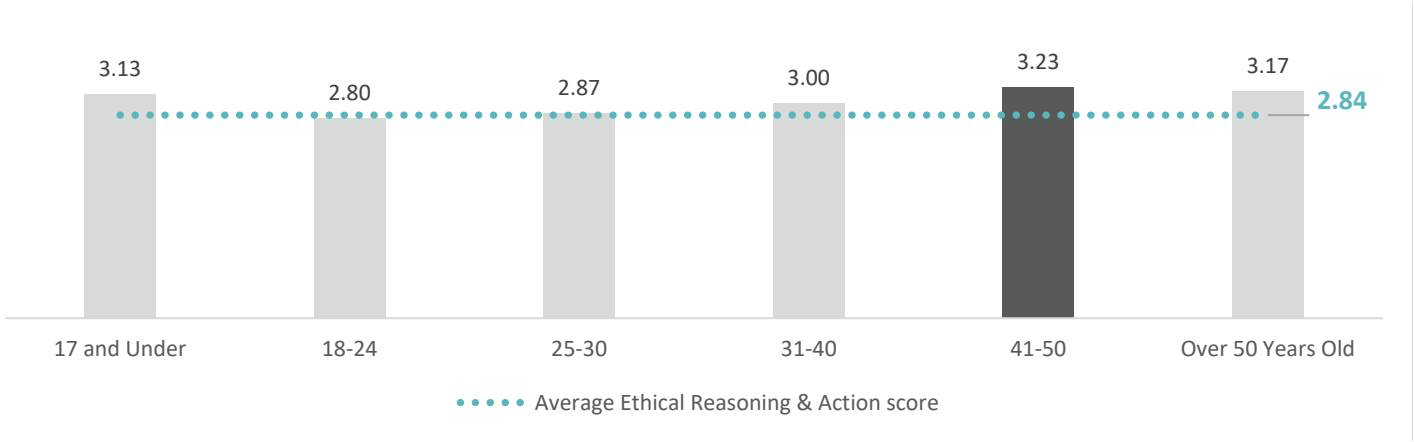


Figure 12: Average Ethical Reasoning & Action score by Age Group

GENDER

- Ethical Reasoning & Action scores were highest among **male students**, demonstrating some evidence of gender differences
- However, 86% of the sample of males for this competency were 18-24 years old, so the influence of age and gender cannot be assessed independently.
- As more data is collected from males of varying ages this potential relationship can be examined in greater detail.

Table 15: Average Ethical Reasoning & Action score by Gender

	n	Average Score
Female	204	2.76
Male	198	2.94
Unknown	5	2.20

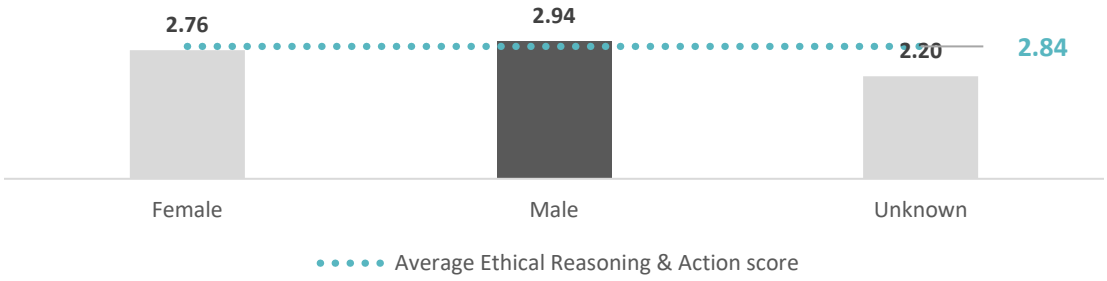


Figure 13: Average Ethical Reasoning & Action score by Gender

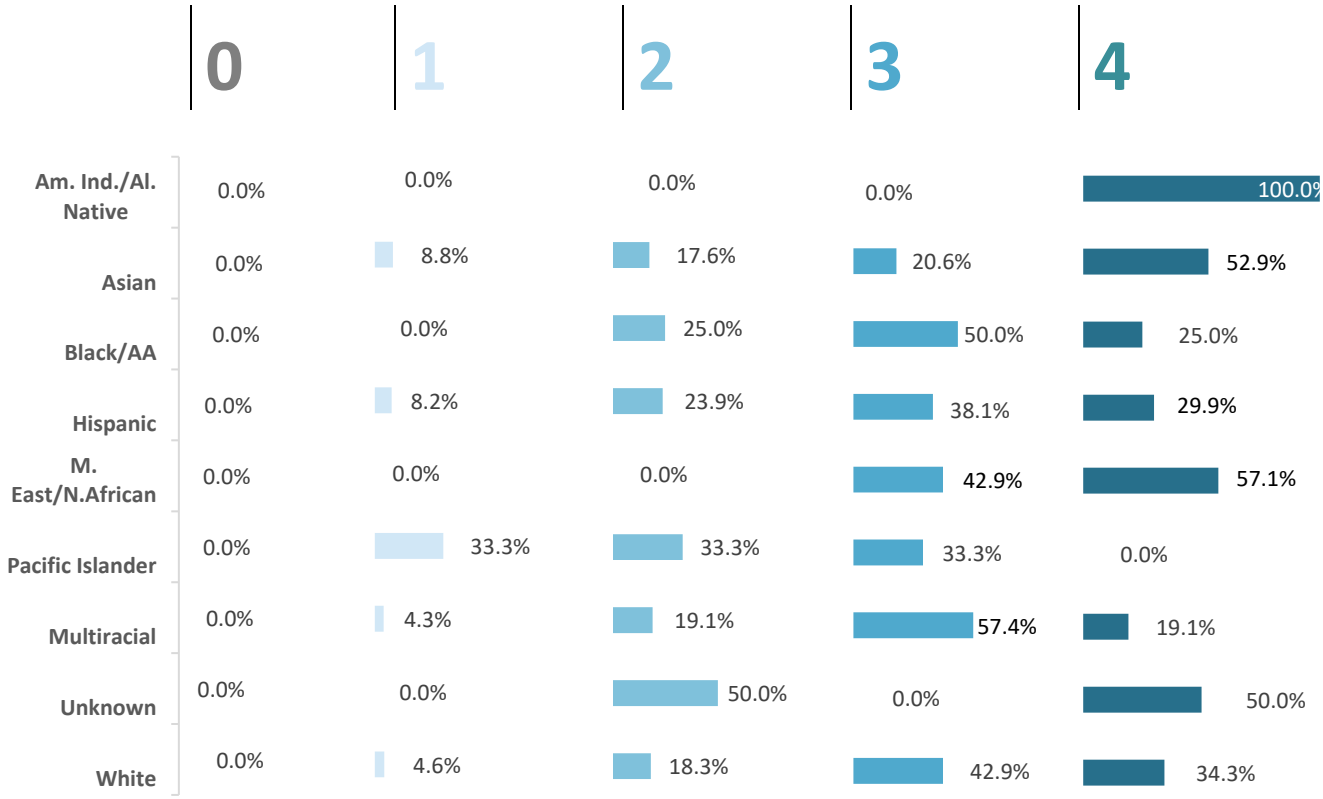
ETHNICITY

- Small sample sizes for most ethnic categories make it difficult to discern meaningful trends from the Ethical Reasoning & Action scores generated by ethnic groups
- Among more robustly represented ethnic groups, White students tended to generate slightly higher Ethical Reasoning & Action scores on average than Latinx students

Table 16: Average Ethical Reasoning & Action score by Ethnicity

	n	Average Score
American Indian/Alaska Native	1	3.50
Asian	34	3.01
Black/African American	4	2.69
Hispanic	134	2.77
Middle Eastern/N. African	7	3.32
Pacific Islander	3	1.75
Multiracial	47	2.81
Unknown	2	2.88
White	175	2.87

Figure 14: Average Ethical Reasoning & Action score category by Ethnicity



SUMMARY

In Fall 2022, students assessed in core competency evaluation generated **Creative Thinking** scores (Mode score = 4) and **Ethical Reasoning & Action** scores (Mode score = 3) that tended to be above average, relative to the expected minimum criterion score of 2. In other words, MiraCosta College students assessed in these areas tended to perform better than the expectation of the college in both areas, particularly in **Creative Thinking.**

Competency attainment in both areas had a relatively linear relation to **course grades**, as average competency scores for **Creative Thinking** and **Ethical Reasoning & Action** tended to increase incrementally with gains in academic success. However, there was less variability in Creative Thinking scores between higher and lower grade categories. The lack of variability may be the consequence of a small sample for this competency, particularly as there are a small number of observations in lower grade categories (D & F). The sparse number of low grades in Ethical Reasoning & Action is also problematic as we do not know the extent to which this accurately represents the population of D & F grade earners in this group. As the college gathers more data from students about Creative Thinking and Ethical Reasoning & Action it will be easier to establish or disconfirm a relationship between academic achievement and student performance for these Core Competencies.

Core Competency scores were also examined across several potentially relevant demographic characteristics like ethnicity, gender, age, and student admit type. White and Latinx students were shown to perform similarly on Ethical

Reasoning & Action, while White students generated higher Creative Thinking scores than Latinx students.[6] White students outperformed Latinx students on Creative thinking across every demographic intersection between ethnicity and demographic variables observed in this report[7] *except* when examining **ethnicity** and **course grade**. Creative Thinking scores for **Latinx**, **A** (M = 3.22, n = 27) and **B** (M = 2.92, n = 11) students were more similar to those of **White**, **A** (M = 3.26, n = 32) and **B** (M = 3.33, n = 11) students. Grades from C to F showed the largest disparities with Latinx students ($M_{C\text{-}F}$ = 1.77, n = 14) earning vastly lower Creative Thinking scores than White students ($M_{C\text{-}F}$ = 2.43, n = 10) who earned similar course grades. The number of observations in lower grade categories is very sparse but this is preliminary evidence that the largest disparities in Ethical Reasoning & Action scores based on ethnicity may occur most among our most vulnerable Latinx students[8]. However, data collection needs to be expanded among these populations as observations in lower grade categories were minimal for both groups.

Continuing students generated the highest Creative Thinking scores while **Returning** students generated the highest Ethical Reasoning & Action scores. Additionally, Creative Thinking and Ethical Reasoning & Action scores were highest among more experienced students. For both competencies **First-time students** generated the lowest scores[9]. This may speak to a relationship between educational progression and the attainment of these competencies, but more data collection is necessary, particularly for Creative Thinking, to establish relationships between academic progress and competency achievement.

Age did not appear to be related to **Creative Thinking** scores, while older students (31+) generated the highest **Ethical Reasoning & Action** scores. However, nearly 80% of Ethical Reasoning & Action competency data collection occurred among 18-24 year olds, making it difficult to adequately compare this large variable group to other small groups with fewer observations. As more data is collected from older student groups for these competencies, more reliable inferences can be drawn about potential relationships between age and Creative Thinking or Ethical Reasoning competency attainment.

Finally, there appear to be gender differences in both sets of data, as males scored higher on both **Creative Thinking** and **Ethical Reasoning & Action**, than their female counterparts. For **Creative Thinking** the observed gender differences may be an artifact of the unequal sample sizes--- nearly twice as many females were sampled compared to males. More intersectional analysis can be performed on this data when additional data is collected in the future. Further disaggregation of the small sample groups will not yield any valuable insights as these findings may occur purely by chance.

For **Ethical Reasoning & Action** the observed gender differences may be the result of an oversampling of 18-24 year olds for the male demographic. Roughly, 80 percent of the sample for this competency emanated from traditional age college students making it difficult to disentangle the singular influence of gender over age. The observed gender differences could also be the result of or an interaction between variables, like gender and ethnicity or gender and age as different **Ethical Reasoning & Action** competency score patterns emerged among different subsets of male students. Latinx males (M = 2.79, n = 65) and females (M = 2.74, n = 68) earned nearly equivalent **Ethical Reasoning & Action** scores, while White males (M = 2.96, n = 92) were observed to outperform White females (M = 2.76, n = 81) on this competency. Furthermore college-age males (18-24; M = 2.92) outperformed college-age females (18-24; M = 2.67), while older students tended to have similar mean scores for this competency. However, samples of older students were nominal making it difficult to ascertain if these data accurately represent older student populations. More data will need

[6] Only Latinx and White samples are compared due to robust sampling n >10

[7] Age, gender, units accumulated, admit type. It must be noted that intersectional groups were small and likely not normally distributed.

[8] Vulnerable as defined by earning a low course grade for the term

[9] Among well-represented admit type groups n >15

to be collected in the future to clarify the nature of any gender differences in Ethical Reasoning and Action among MiraCosta College students.