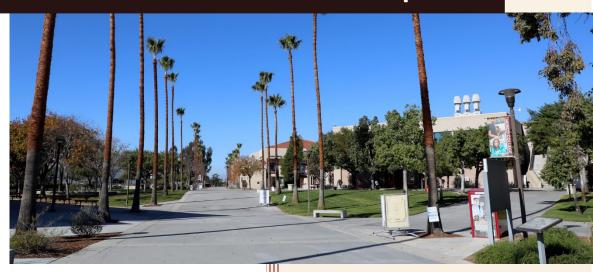
2024

Faculty Impact on Black Student Success Technical Report



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Faculty Variables Influencing Black Student Success

Norco College decided to investigate the factors that influence Black student success based on a statewide Call to Action meeting that occurred in Spring 2020. The various admonitions by speakers in this meeting were moving, but the catalyst for this study came from the assertion that we need to hire Black faculty because Black students do better when they see someone teaching who looks like them. Since data were available to explore whether this assertion was accurate at Norco College, an initial investigation was conducted with Black student enrollments during the fall 2017 through winter 2020 terms. For every enrollment of Black students during this time, various faculty demographics were also identified including ethnicity, gender, courses taught, and PT/FT status.

The initial analysis compared Black student success rates by faculty ethnicity groups. In other words, success rates for Black faculty were compared against all other faculty ethnicity groups and tested for significance. Initially, there were some patterns of success that seemed to indicate that Black faculty were finding higher success rates with Black students than other faculty ethnicity groups (See Table 1).

Table 1. Black Student Success Rate by Faculty Ethnicity

Faculty Ethnicity	Enrollments	Success Rate
Asian (n=60)	681	<mark>57.0%*</mark>
Black (n=37)	804	72.9%
Hispanic (n=97)	1170	63.6%*
Am Indian/Alaskan (n=2)	14	64.3%
2 or more (n=10)	215	<mark>59.5%*</mark>
White (n=282)	5718	<mark>66.1%*</mark>
Unknown (n=1)	3	100.0%
Total (n=489)	8605	65.5%

Comparison Group

After sharing initial results with the college president, an advisory team was assembled with representatives from Student Services, Academic Affairs, the Racial Justice Taskforce, and other necessary employee constituencies (faculty, classified professionals, administration) to review these data. The advisory team listened to the initial outcomes and made suggestions on which factors to consider and provided help with context in interpreting quantitative data. One particular area for inquiry suggested by the advisory team was in comparing gender differences in success rates of Black students and Black faculty. This inquiry resulted in a discovery of one of the most drastic differences of success rates with Black male students, 75.6% and 60.2% with Black Female Faculty and Black Male Faculty, respectively (See Table 2). In addition, it was decided after the initial presentation to the advisory team that other faculty or course-related variables that could be influencing Black student success could be: Umoja, percentage of math or science courses, percentage of courses with FT faculty, and faculty ethnicity.

^{*} indicates value of p<0.01, significant difference from comparison group

Table 2. Comparing Gender Differences in Black Student Success by Gender of Black Faculty

	Black Female Faculty	Black Male Faculty	Total
Black Female Students	76.1%	69.0%	74.0%
Black Male Students	75.6%	60.2%	71.6%
Total	75.9%	65.0%	72.9%

One point of concern through these analyses was though the results were very interesting, they did not answer whether it was the ethnicity of the faculty making the difference or if there were some other mitigating factors, as mentioned above, that influenced this outcome. To more precisely measure the impact or weight of faculty ethnicity on Black student success in light of these other influences, the advisory team suggested the use of a multiple regression analysis. The strength of multiple regression is that it takes each variable that is entered into the analysis, or model, and determines the weight of each variable individually on the outcome. In the current study, the model that was tested using multiple regression included 9 variables in the 2017-2020 dataset of Black student enrollments merged with student and faculty demographics:

- 1. % of Umoja courses
- 2. % of math or science courses
- 3. % of courses taught by FT faculty
- 4. % of courses taught by Asian Faculty
- 5. % of courses taught by African American/Black Faculty
- 6. % of courses taught by Hispanic faculty
- 7. % of courses taught by Native Alaskan/American Indian faculty
- 8. % of courses taught faculty with Two or More Races
- 9. % of courses taught by White faculty

When taking into account, or controlling for, the impact of Umoja, math/science courses, and FT status of faculty, faculty ethnicity (of any group) did not become a significant predictor of Black student success. It should be noted that two significant predictors in this model resulted, and they were:

- 1. % of math or science courses (+)
- 2. % of courses taught by FT faculty (-)

The (+) and (-) symbols indicate the direction of the relationship between the predictor and the outcome. For instance, as the percentage of math or science courses increased for Black students, their success rate increased. Conversely, as the percentage of courses taught by FT faculty increased with Black students, their success rate decreased. Though these were significant predictors in the model, the

model was not strong. This is indicated by the R Square measure which showed that these predictors only accounted for 1.7% of the impact on Black student success as a whole. In other words, over 98% of the influences on the success of Black students were unaccounted for by this model. Two conclusions were derived from these data:

- Faculty ethnicity did NOT have a significant impact on Black student success.
- Focusing on immutable factors, such as faculty demographics and course characteristics does not result in a strong model for predicting Black student success.

Faculty Impact Survey

Given these data and resulting conclusions, the researcher decided to re-examine the data to determine which faculty had the highest success rates with Black students. The following summarizes the 36 faculty members with the highest Black student success (72% success rate or higher):

- Ethnicity 6% Asian, 11% Black, 6% Hispanic, 77% White)
- Departments 11% Arts, Humanities & World Languages, 17% Business, Engineering & Industrial Technology, 8% Communications, 8% Math, 33% Social & Behavioral Sciences, 22% Science & Kinesiology
- Full Time/Part Time Status 61% FT, 39% PT

Though these demographic areas were not always representative of faculty teaching during that time, this may not be a subset that is necessarily representative of all faculty. The area to note is that there was a distribution of high performing faculty over ethnicity, discipline/department, and full-time/part-time status. Since it wasn't readily obvious that any of these demographics could account for the success they were having with Black students, it was decided with input from the advisory group that these faculty should be convened and an inquiry made as to what they thought was making the impact in their classes with Black students.

During Winter 2022, the 36 faculty members were contacted and 24 expressed interest/availability in participating in the Faculty Inquiry Group (FIG). These 24 faculty members were then contacted to participate in the two-hour FIG and thirteen faculty attended the meeting on May 9, 2022. They provided answers to questions surrounding what might be responsible for the high Black student success rates in their classes for the study. The faculty responses fell into three different categories:

- Human Side (Life Experiences): some examples include personal experiences with discrimination, prior experience teaching at high minority, low socioeconomic schools; or professional development training in equity.
- Pedagogy (What happened in the classroom): some examples include flexibility in deadlines, actively reaching out to students who need help, showing kindness to students, relating personal vulnerabilities and authenticity.
- Materials (text, documents, website, etc.): some examples include intentional assignments
 focusing on culture or family history, providing access to texts and resources (OER), incorporating
 music in class.

Fall 2022 FIS

To validate input from the FIG with Black student success, a Faculty Impact Survey was created from the FIG results and the survey items were reviewed and verified as accurate by participating faculty (Appendix A). In Fall 2022, the Faculty Impact Survey (FIS) was distributed after presenting the survey to the Academic Senate. The survey was made available for approximately three weeks toward midsemester and resulted in 59 faculty respondents. The Fall 2022 student enrollments for each FIS respondent were gathered and then limited to Black students. Finally, these Black student enrollments were merged with the faculty's FIS responses which resulted in 271 valid enrollments belonging to 53 faculty (6 FIS respondents were not teaching courses) in the dataset. As Table 3 depicts below, Asian, Black and Hispanic faculty were somewhat underrepresented, whereas Two or more and White faculty were somewhat overrepresented. However, given the sample size, the distribution of respondents approximates the percent in the faculty population and could be generalized to that population. From this merged dataset, faculty responses regarding best practices could be validated against Black students' performance (success rate) in their classes for that semester.

Table 3. Faculty Respondents' Ethnicity 2022

Ethnicity	Number of Responses	Percent of Responses	Percent in Faculty
Asian	3	6%	11%
Black	3	6%	8%
Hispanic	11	21%	28%
Two+	2	4%	2%
White	34	64%	50%

With a survey of this type, it is important to explore whether larger factors exist that may explain Black student success rather than simply looking at each survey item in isolation. In essence, these factors may tie together multiple survey items and bring deeper understanding conceptually to what may improve Black student success. To do this, Exploratory Factor Analysis was employed on all thirty items in the FIS. The result was a three-factor solution that accounted for 50.1% of the variance. It is important to understand that factor analysis addresses how well items "hang together", so these factors are measures of between-variables correlation, not with Black student success. The three factors that resulted are displayed in Table 4 below.

The next step in determining whether these factors were important to Black student success was to include them with the original nine variables of the multiple regression analysis. The variables in this model were:

- 1. % of Umoja courses
- 2. % of math or science courses
- 3. % of courses taught by FT faculty
- 4. % of courses taught by Asian Faculty
- 5. % of courses taught by African American/Black Faculty
- 6. % of courses taught by Hispanic faculty
- 7. % of courses taught by Native Alaskan/American Indian faculty
- 8. % of courses taught faculty with Two or More Races

- 9. % of courses taught by White faculty
- 10. Caring Environment Factor Score
- 11. Intentional Assignments Factor Score
- 12. Grading Factor Score

Table 4. Results of Factor Analysis for Faculty Impact Survey

Factor	Variance	Number of Items	Examples of Items
Caring Environment	31.6%	8	It is important to create a caring environment in the classroom; It is important that students view me as a kind professor.
Intentional Assignments	9.9%	10	I incorporate intentional assignments focusing on sharing students' culture and family history; I play music either before or during class to set a welcoming environment.
Grading	8.6%	6	I think it is ok to drop students' lowest scores in determining their final grade; I think tracking student performance by race/ethnicity is important.

Incorporating these factors with the original variables including faculty ethnicity, math/science, and full-time/part-time status into multiple regression resulted in one variable of significance: Intentional Assignments Factor Score (-). The complicating aspect of this significant predictor is the direction of the relationship indicated by the minus sign (-). This means that there was a tendency for Black Student success rate to increase as the Intentional Assignments score decreased. The model with the three factors became stronger (R-squared = 5.3%) than the original model (R-squared=1.7%). However, the significance of the overall model was at 0.195 which was far outside the standard significance p-value of 0.05. Primarily due to this, it was decided that using factors for predicting Black student success was not effective. One possible explanation for the model's ineffectiveness could be that factors, by virtue of the fact that one score is now explaining between 6-11 individual variables, are somewhat "heavy" variables and may not be as responsive as the individual FIS items as variables.

Finally, the researchers created a model predicting Black student success using all 30 FIS items individually along with faculty ethnicity, math/science, and full-time/part-time status. Results of this multiple regression analysis were significant (p value = 0.042) and showed the following significant predictor variables:

- 1. "I set high expectations for all students in my class" (-); (Unstandardized B = -0.387).
- 2. "It is important that students show accountability in my classroom" (+); (Unstandardized B = 0.531)

One of the encouraging aspects of this model was the large increase in predictive power (R-squared) over the previous 3-Factor regression, 20.1% versus 5.3%, respectively. A challenge in this model is interpreting the relationship of the two significant variables with Black student success:

- As high expectations (scores) in faculty increased, Black student success (rates) decreased, and
- As the importance of accountability (scores) in faculty increased, Black student success (rates) increased.

One point to highlight at this phase of the study was the use of listwise deletion versus pairwise deletion of missing values in the regression analysis. Using listwise deletion resulted a model comprised of 227 Black student enrollments because only faculty who had answered the FIS in its entirety were included. However, using pairwise deletion resulted in a model comprised of an N that ranged from 255 to 271 since values were included for predictor variables if they were not missing. There was a warning in SPSS regarding pairwise deletion, but the researchers decided the gain in useable data was worth the risk.

These results were presented to the faculty senate and other venues for faculty input, and rich discussion ensued after each presentation. An interesting interpretation emerged from the discussions which helped clarify these challenging relationships. The theme that explained the two significant variables was that the High Expectations item had a sole focus on the instructor, whereas the Accountability item focused on a student-centered approach. Although this is a preliminary idea, it should be explored in more depth in successive administrations of the FIS.

Fall 2023 FIS

The second administration of the FIS was in Fall 2023 and resulted in 66 faculty responses. Connecting all faculty responses with Black student enrollments in their classes resulted in 349 enrollments in the dataset. Employing the effective model from Fall 2022, the same regression analysis was conducted, with the exception of listwise deletion instead of pairwise deletion.

The results showed that the model was significant (p-value = 0.006), accounted for 18.3% of the variance in Black student success (R square), and showed the following four predictor variables:

	Table 5. Predictor Variables	, Relationship to Black Student Succ	ess. and Beta Values for FIS 2023
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Predictor	Relationship to Success	Beta
"I have pursued training on issues related to anti-racism, equity, diversity, and inclusion."	Positive	0.295
"It is important to celebrate students and connect on a personal level."	Inverse	-0.35
"I incorporate service learning or internship-like experiences in my classes."	Inverse	-0.255
"I play music either before or during class to set a welcoming environment."	Positive	0.093

As with the results from Fall 2022, the FIS 2023 has some likewise perplexing relationships with Black student success. The two predictors that have a positive relationship are fairly straightforward. As faculty rated these two items higher, Black student success went up. It is the predictors with inverse relationships to success that are more challenging to interpret:

- As faculty rated the importance of celebrating students higher, the lower Black success went in their classes.
- As faculty incorporated service learning or internship (ratings) higher, the lower Black success went in their classes.

2022 & 2023 FIS Combined

To increase the power of the dataset and identify possible longitudinal predictors of Black student success over multiple terms, it was decided that the 2022 and 2023 FIS datasets should be combined.

There were no changes to the FIS from one year to the next, and the methodology stayed the same in calculated variables so the merging of these two datasets posed no foreseeable threats. Using the same predictive model (30 FIS Items, Faculty Ethnicity, Math/Science, and FT/PT status), multiple regression was run on the combined dataset. Resulting output from the analysis showed that the model was significant (p-value = 0.004) and predicted 11.3% of the variance in Black student success. One significant predictor resulted from the combined dataset which was the item, "I strive to be welcoming to all students in my classes" (*Beta* value=0.547, p=0.026). Since the Beta is positive, this relationship indicates that as faculty rated this item higher, Black student success went higher. And this is a relationship that occurred only when combining both years of data. Please see Table 6 for a summary of all predictors in all models and their relationship to Black student success.

Table 6. Significant Predictors and Relationships in Fall 2022, Fall 2023, and Both Years Combined

SIGNIFICANT PREDICTORS	Fall 2022	Fall 2023	Combined
"I set high expectations for all students in my class."	-		
"It is important that students show accountability in my	+		
classroom." (+)			
"I have pursued training on issues related to anti-racism, equity,		+	
diversity, and inclusion."			
"It is important to celebrate students and connect on a personal		-	
level."			
"I incorporate service learning or internship-like experiences in my		-	
classes."			
"I play music either before or during class to set a welcoming environment."		+	
"I strive to be welcoming to all students in my classes."			+

As is apparent in Table 6, significant predictors are changing in the different years, and when combined. This was a surprising development and is difficult to interpret apart from two obvious conclusions, 1) What impacts Black student varies from term to term, 2) Welcoming environment seems to be emerging as a consistent predictor over multiple terms of data & FIS administrations. Plans are to administer the FIS in Fall 2024, and possibly future terms. Hopefully, with three or more administrations of the FIS and subsequent analysis using the predictive model, one or more of these variables will emerge as a stable predictor of Black student success. Then, once that is corroborated, it will be necessary to integrate these predictors into pedagogical and curricular areas with the hope that these strategic and data-based changes will impact this ongoing challenge to higher education.

Effect of Course Modality

One question to begin exploring is whether this model is affected by course modality, face-to-face versus fully online. For the combined data set, the modality of enrollments by Black students is shown in Table 7 below.

Table 7. Black Student Enrollments in Combined Dataset by Modality

Modality	Count	Percent
Face-to-Face	173	27.9
Hybrid	64	10.3
Online	383	61.8
Total	620	100.0

Clearly, the majority of enrollments are in online courses as has been the trend at Norco College since transitioning to remote education due to Covid. To address whether the model is more applicable to one modality or the other, regression analyses were applied to face-to-face and online courses, separately. Results showed that the model did not show significance for face-to-face courses (p-value=0.782). However, for online courses the model was significant (p-value=0.02) and predicted 15.1% of the variance. There was one predictor in this model which was the item, "When it appears that a student is having trouble in class, I pull them aside individually to ask if they need help" (Beta Value=0.111, p-value=.023). As indicated by the sign associated with the Beta Value, the relationship between this item and Black student success is positive.

Returning to the original assertion that began this study, "Black students seem to do better when they see someone who looks like them teaching their classes", the data from the predictive models in this study do not support this assertion. As pointed out in Table 1, though Black faculty showed a clear trend of higher success rates over most other faculty ethnicity groups, faculty ethnicity was not shown to be a predictor by any of the multiple regression analyses involved in this study. To determine if Black faculty rated the various significant FIS items higher than other faculty ethnicity groups, a t-test of independent groups was conducted comparing Black faculty versus non-Black faculty on these item ratings. Only in the Fall 2022 FIS were Black faculty found to have significantly higher ratings than non-Black faculty on their mean response scores. The Fall 2023 & Combined datasets did not show this same significance between faculty ethnicity groups on the significant predictors. However, any generalizations to these results should be regarded as very tenuous since the number of Black faculty who responded to the FIS was quite small (2022-3, 2023-2 & Combined-5) . That Black faculty's in-classroom behavior or attitudes may significantly influence Black student success is a possibility but would need to be corroborated by further FIS administrations and follow up analyses once the response number reaches a level of confidence for generalizability.

Limits to this study should be acknowledged. As mentioned above, the low number of Black faculty, and faculty in general should be acknowledged as a potential issue for consideration. Although the enrollment data for these Black faculty met minimal criteria to be subjected to these various analyses, there would be a benefit in administering the FIS in future terms so that these numbers could increase and establish confidence in the predictors. Also, as with any survey research, there could be a potential bias in the sample of faculty who responded to the FIS being that it was voluntary participation. In review of the list of faculty responding to the survey, it was clear that these faculty were more likely to be active and involved in institutional issues. Another potential concern is the R-squared of the three regression models that included the 30 FIS from 2022, 2023, and combined. The 2022, 2023, and combined models displayed a decrease in R-squared at 20.3%, 18.3%, and 11.3% which was a unanticipated trend given the increase in enrollments. However, according to Ozili (2023), a model with an R-squared between 10 percent and 50 percent is acceptable in social science research when some of the explanatory variables are significant. All FIS regression models meet this criterion, so they should purportedly be acceptable for predicting Black student success.

In summary, the following conclusions were taken from this study:

- Positive predictors of Black student success in faculty are: Students Showing Accountability,
 Pursuing Training in DEIA, Playing Music In Class, and (especially) Striving to Be Welcoming to All Students (since it is from larger dataset).
- Inverse predictors of Black student success in faculty are: Setting High Expectations, Celebrating Students, and Incorporating Service Learning/Internship Experiences.
- Faculty ethnicity (% of enrollments taught) was not shown to be a predictor of Black student success in any of the predictive models.

Since there will be successive administrations of the FIS, the research team will continue monitoring the predictors within a single term and from the combined dataset. Hopefully, trends will begin to emerge as the dataset grows with each future FIS survey administration.

Next steps for this study would be to begin applying these preliminary findings to pedagogy, especially Welcoming Environment since it emerged from the combined dataset. In particular, an increased emphasis on creating a welcoming environment could be promoted to faculty with a focus on giving the students the agency to demonstrate this. Before this is communicated for pedagogical inclusion, this study will be communicated at many forums and feedback from these presentations may also provide additional direction for application in the classroom and beyond.

REFERENCES

Ozili, Peterson K. (2023). The acceptable R-Square in empirical modelling for social science research.

MPRA Paper No. 115769.

Appendix A – Faculty Impact Survey & Results

In general, please indicate your agreement with the following statements.

Strongly Agree (5), Agree (4), Slightly Agree (3), Slightly Disagree (2), Disagree (1), Strongly Disagree (0)

- 1. I think tracking student performance by race/ethnicity is important.
- 2. I have pursued training on issues related to anti-racism, equity, diversity, and inclusion.
- 3. I have had frequent contact (at least daily) with people from underrepresented backgrounds as part of my personal or professional history.
- 4. I strive to be welcoming to all students in my classes.
- 5. It is important that students view me as a kind professor.
- 6. It is important to me to celebrate students and connect at a personal level.
- 7. I take into consideration the possibility of students' traumatic experiences in and out of the academic setting, especially with historically minoritized students.
- 8. When it appears that a student is having trouble in class, I pull them aside individually to ask if they need help.
- 9. It is important to create a caring environment in the classroom.
- 10. It is important to value individuals in the classroom.
- 11. I think all students have the potential to be successful in my class.
- 12. I set high expectations for all students in my class.
- 13. It is important to emphasize planning with students who take my class.
- 14. It is important that students show accountability in my classroom.
- 15. Collaborative assignments/group work are valuable learning tools in my class.
- 16. I am proactive about regularly contacting each student, especially historically marginalized students.
- 17. If someone provides an explanation for why they are late with an assignment, I tend to believe they are telling the truth.
- 18. I think it is ok to drop students' lowest scores in determining their final grade.
- 19. Tests tend to be the most heavily weighted portions of a student's grade in my class.
- 20. I value students' knowledge and resilience, especially with historically minoritized students.
- 21. Scores should always be lowered if students submit late work.
- 22. I attempt to remember students' names in all of my classes by early in the term.
- 23. I am very responsive to emails related to my classes.
- 24. Flexibility in deadlines is not a good practice in the classroom.

Please indicate how often you engage in the following.

(Always, Often, Sometimes, Rarely, Never)

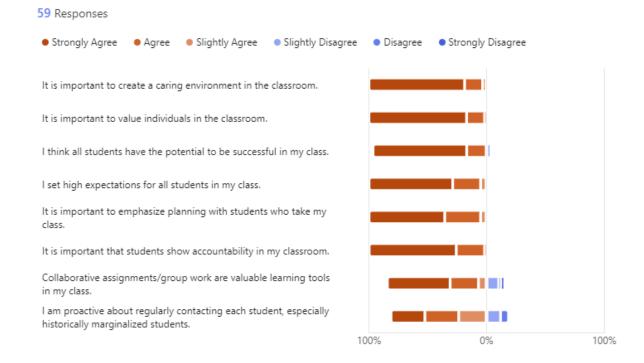
- 1. I use personal stories from my life and students' lives in class.
- 2. I look for opportunities to let students know I am proud of their accomplishments.
- 3. I incorporate intentional assignments focusing on sharing students' culture and family history.
- 4. I incorporate service learning or internship-like experiences in my classes.
- 5. I use low-cost textbooks and course materials.
- 6. I play music either before or during class to set a welcoming environment.

Fall 2022 Results

1. In general, please indicate your agreement with the following statements.

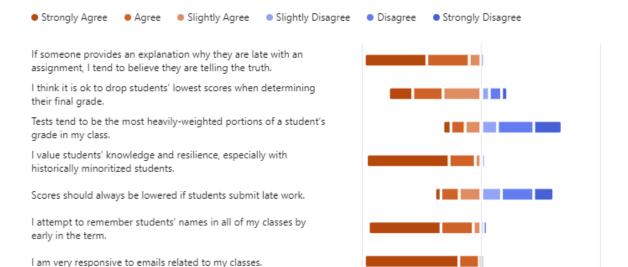
59 Responses • Strongly Agree • Agree • Slightly Agree • Slightly Disagree Disagree Strongly Disagree I think tracking student performance by race/ethnicity is important. I have pursued training on issues related to anti-racism, equity, diversity, and inclusion. I have had frequent contact (at least daily) with people from underrepresented backgrounds as part of my personal or... I strive to be welcoming to all students in my classes. It is important that students view me as a kind professor. It is important to celebrate students and connect on a personal I take into consideration the possibility of students' traumatic experiences in or out of the academic setting, especially with... When it appears that a student is having trouble in class, I pull them aside individually to ask if they need help. 100% 0% 100%

2. In general, please indicate your agreement with the following statements.



3. In general, please indicate your agreement with the following statements.

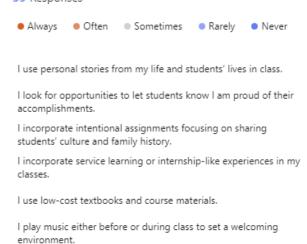
59 Responses

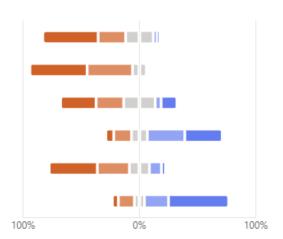


4. Please indicate how often you engage in the following.

Flexibility in deadlines is not a good practice in the classroom.

59 Responses





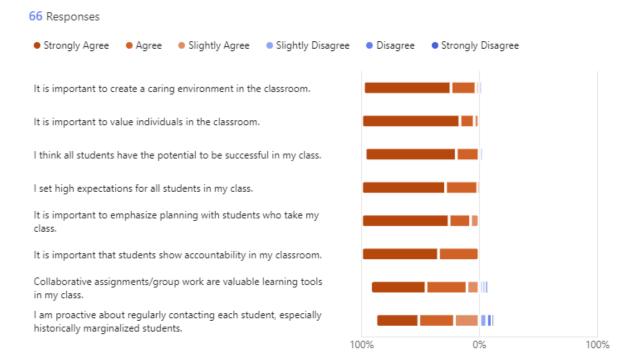
100%

Fall 2023 Results

1. In general, please indicate your agreement with the following statements.

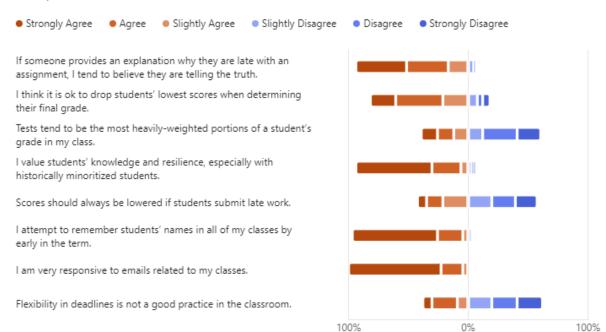
66 Responses Strongly Agree Slightly Agree Slightly Disagree Strongly Disagree Agree Disagree I think tracking student performance by race/ethnicity is I have pursued training on issues related to anti-racism, equity, diversity, and inclusion. I have had frequent contact (at least daily) with people from underrepresented backgrounds as part of my personal or... I strive to be welcoming to all students in my classes. It is important that students view me as a kind professor. It is important to celebrate students and connect on a personal I take into consideration the possibility of students' traumatic experiences in or out of the academic setting, especially with... When it appears that a student is having trouble in class, I pull them aside individually to ask if they need help. 100% 0% 100%

In general, please indicate your agreement with the following statements.



3. In general, please indicate your agreement with the following statements.

66 Responses



4. Please indicate how often you engage in the following.

66 Responses

