

Sustainability at Dickinson: Interpretations, Attitudes, Engagement, Practices and Literacy

Summary Results from 2018 and 2019 Surveys of
Students, Faculty and Staff

Introduction

Surveys of sustainability interpretations, attitudes, engagement and practices were administered to Dickinson students and employees in spring 2018 and spring 2019. The student survey also includes knowledge questions to assess sustainability literacy of students.

Random samples of 1000 students and 500 employees were invited to participate in the surveys in both years. The samples are representative of the entire populations of students and employees. 195 students responded to the survey in 2018 and 214 in 2019. 128 employees responded in 2018 and 226 responded in 2019. The surveys were administered by Dickinson's Center for Sustainability Education with support from the Office of Institutional Effectiveness.

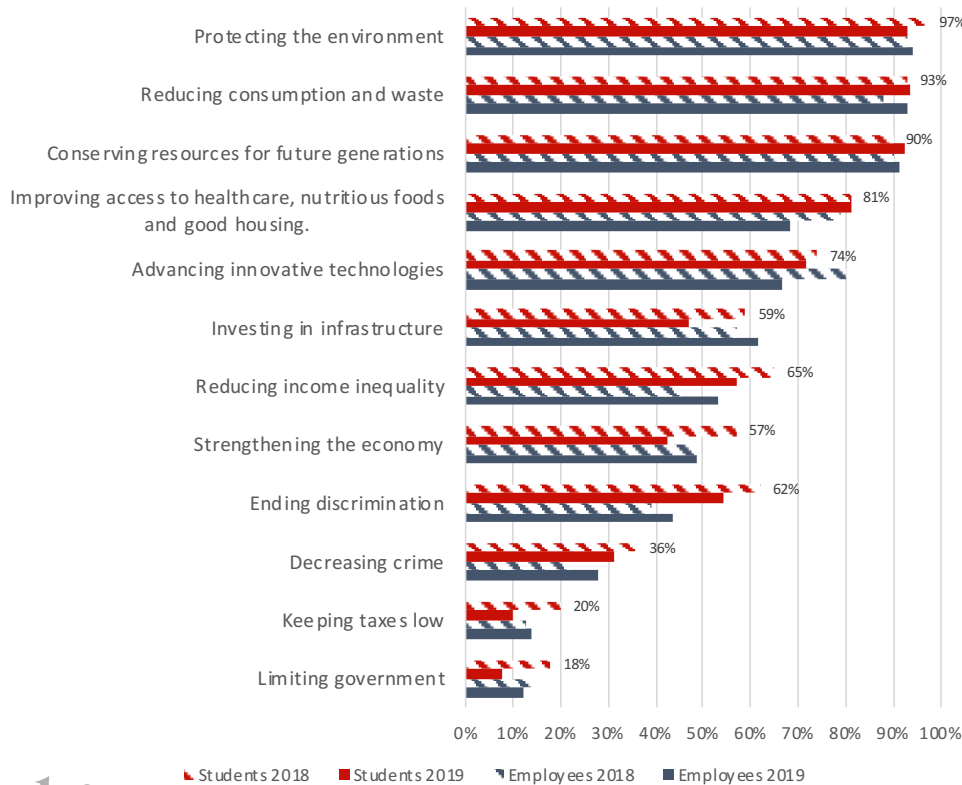
The representative samples of students and employees for 2018 and 2019 provide longitudinal data to measure and compare change in sustainability culture over time among Dickinson's student body and employees. Comparisons are made between 2018 and 2019 and changes are noted between the two years in this report. Because cultural change is a slow process, differences between the two years are not sufficient to draw strong conclusions. However, they do provide initial longitudinal data points against which to benchmark assessments of culture change as future data are accumulated.

Pre- and post assessment of student sustainability literacy is performed by comparing responses across representative samples of sophomore and junior year students. Students' literacy before the junior year is measured and compared to students' literacy at the end of the junior year. The comparison provides an assessment of gains made in sustainability literacy through studies and co-curricular activities from pre- junior year to post junior year. The results indicate measurable improvement in sustainability literacy over the junior year.

Results of the surveys summarized and assessed in this report are intended to be used to evaluate and improve Dickinson's sustainability programs.

Interpretations of Sustainability – Environment

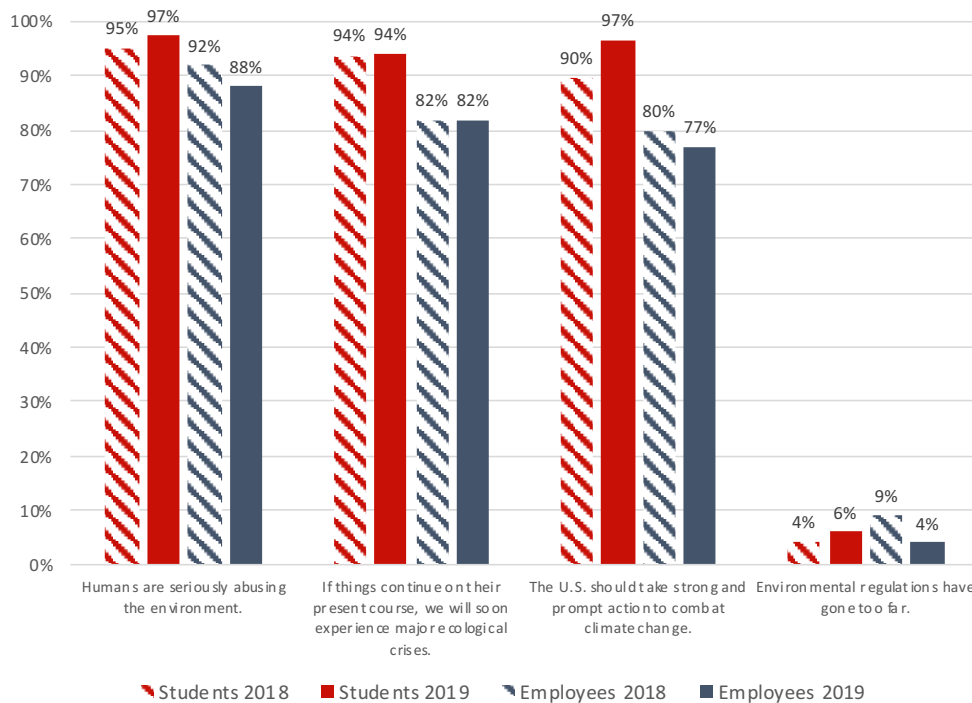
What issues do you associate with creating a sustainable society?



- Issues associated with sustainability are similar among students and employees and across years.
- Very high percentages of students and employees associate environmental protection, resource conservation and reducing consumption with sustainability.
- High percentages associate improving access to health care, nutritious foods and good housing and advancing innovative technologies,
- Significant but lesser percentages associate investing in infrastructure, reducing income inequality, strengthening the economy and ending discrimination with sustainability.

Interpretations of Sustainability – Environment

Percentage agree or strongly agree



Strong majorities of students and employees agree or strongly agree with statements associated with an environmental sustainability world view.

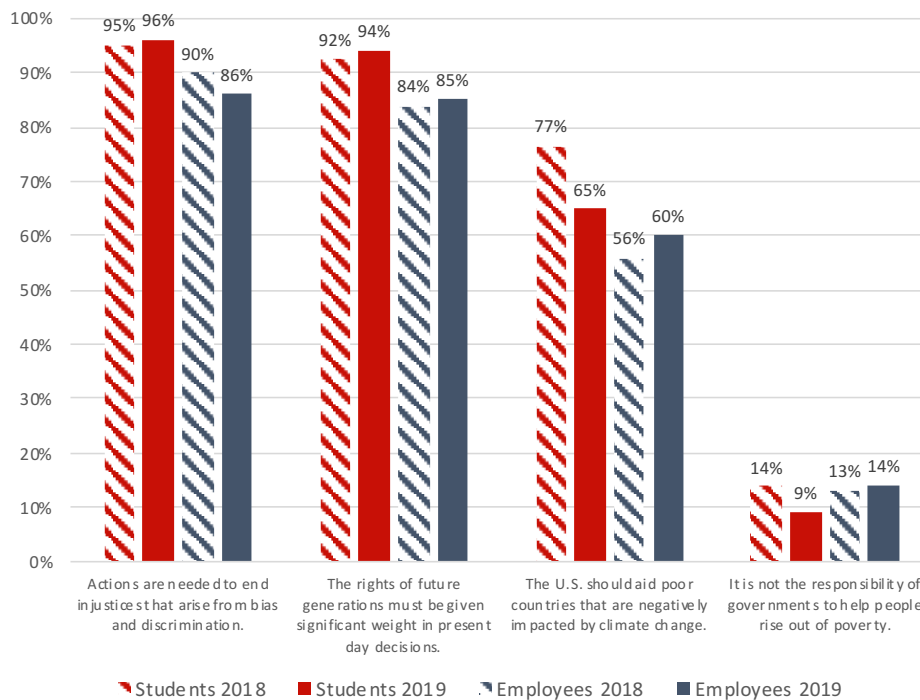
These views are more common among students than employees.

The largest difference is in views on climate change action.

Environmental sustainability views are relatively stable across the years 2018 and 2019.

Interpretations of Sustainability – Social Justice

Percentage agree or strongly agree



Agreement with statements associated with a social sustainability world view are mixed for both students and employees.

High percentages agree with statements about ending injustice and rights of future generations.

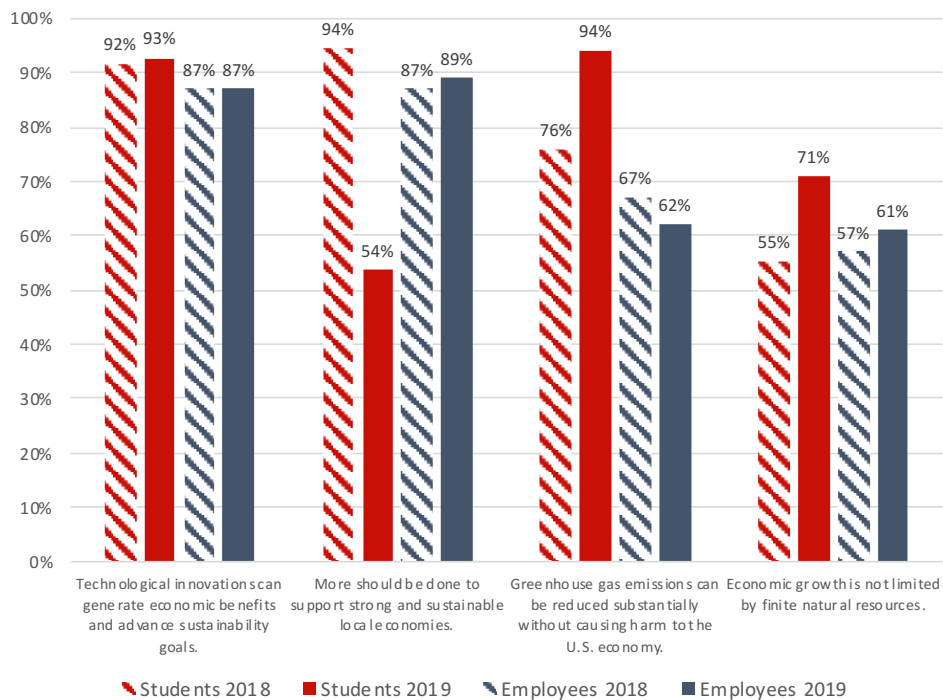
Lesser percentages, but still majorities, favor aiding poor countries impacted by climate change.

Support for aiding poor countries impacted by climate change is greater among students than employees.

Social sustainability views are relatively stable across the years 2018 and 2019.

Interpretations of Sustainability – Economy

Percentage agree or strongly agree



Agreement with statements associated with an economic sustainability world view are mixed for both students and employees.

High percentages agree with statements about technological innovation and supporting local economies.

Majorities think GHG emissions can be reduced without economic harm but vary by 30 points.

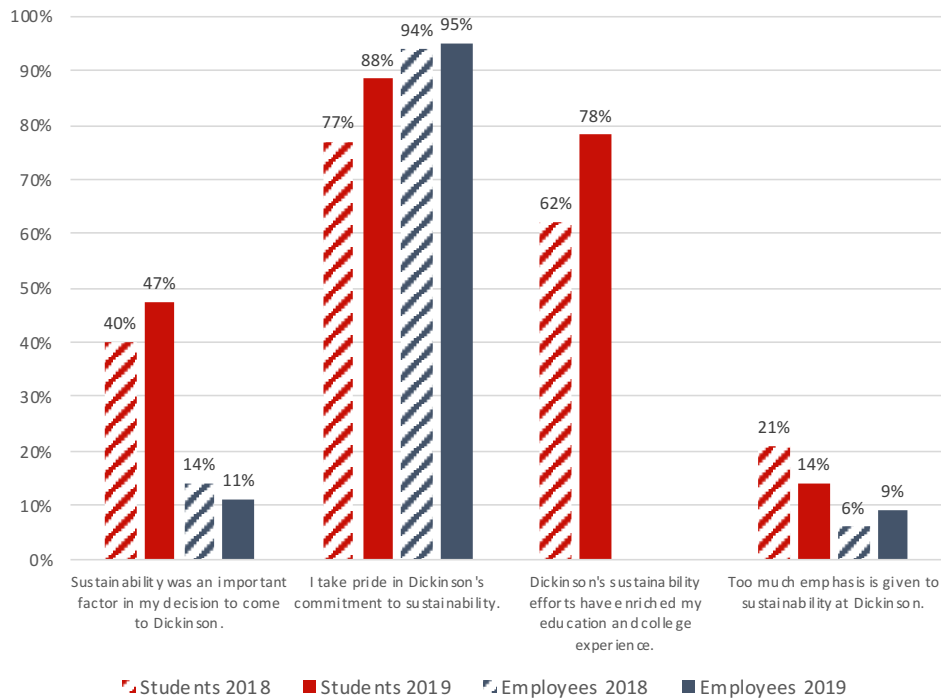
Majorities think finite natural resources are not a limit on economic growth.

Students' economic sustainability views changed from 2018 to 2019:

- Agreement with supporting local economies fell substantially
- Agreement that GHGs can be reduced without economic harm rose
- Agreement that finite natural resources do not limit economic growth rose.

Attitudes Toward Sustainability at Dickinson

Percentage agree or strongly agree



Sustainability was an important factor for coming to Dickinson for 40+% of students.

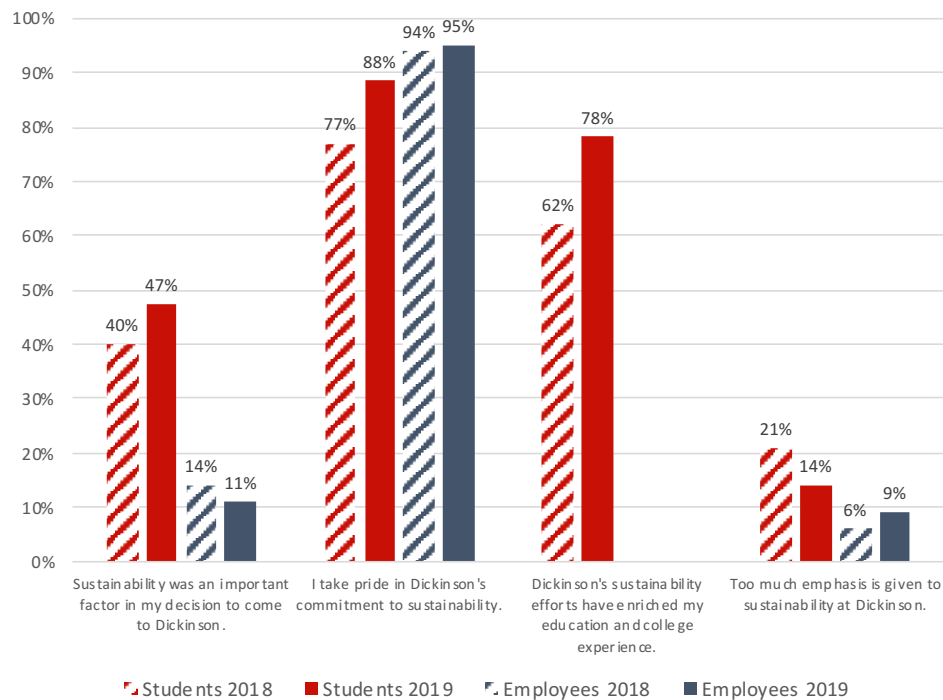
High percentages of students take pride in Dickinson's sustainability commitment; percentages are higher for employees.

62% of students in 2018 and 78% in 2019 agree sustainability has enriched their education and college experience.

A significant minority of students feel too much emphasis is given to sustainability at Dickinson.

Attitudes Toward Sustainability at Dickinson

Percentage agree or strongly agree



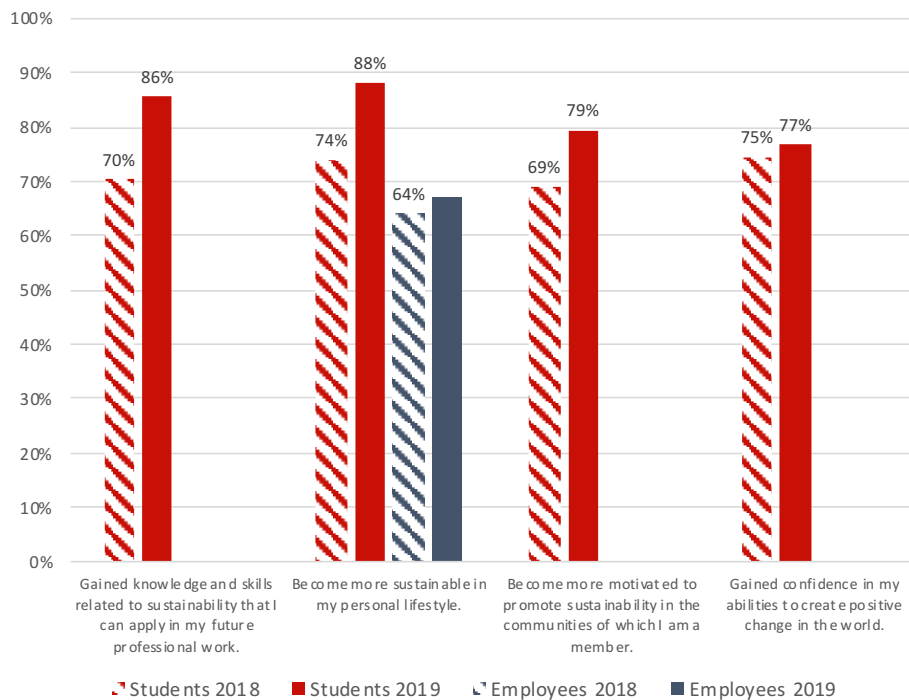
Students became more favorable about sustainability at Dickinson from 2018 to 2019:

- The percentage for whom sustainability was an important factor for coming to Dickinson rose from 40% in 2018 to 47% in 2019.
- The percentage who take pride in Dickinson's sustainability commitment increased from 77 to 88%.
- More students said sustainability enriched their education and college experience, up from 62% to 78%.
- Significant but declining minorities of students feel Dickinson gives too much emphasis to sustainability.

Employees take pride in Dickinson's commitment to sustainability at higher percentages than students

Sustainability Outcomes

Since coming to Dickinson, I have . . . (percentage agree or strongly agree)



High percentages of students agree that, since coming to Dickinson, they have:

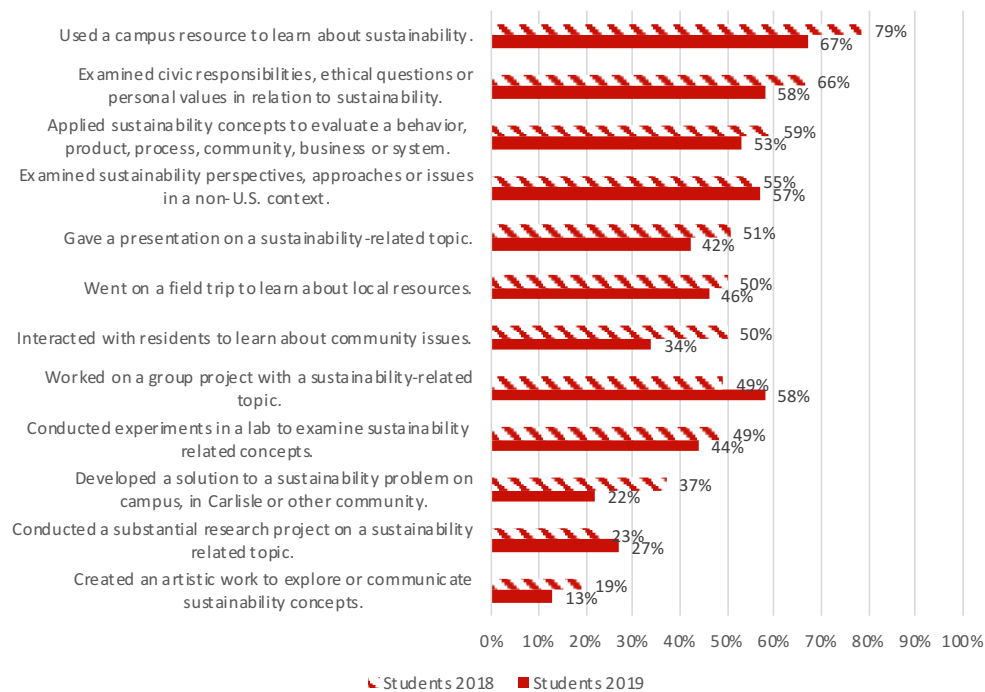
- Gained sustainability knowledge and skills
- Become more sustainable in their lifestyles
- Become more motivated to promote sustainability in their communities
- Gained confidence in abilities to create positive change

The percentages increased from 2018 to 2019.

Nearly two-thirds of employees are more sustainable in their lifestyles since coming to Dickinson.

Academic Engagement with Sustainability

Have you engaged in any of the following activities as part of your academic courses in the past year?



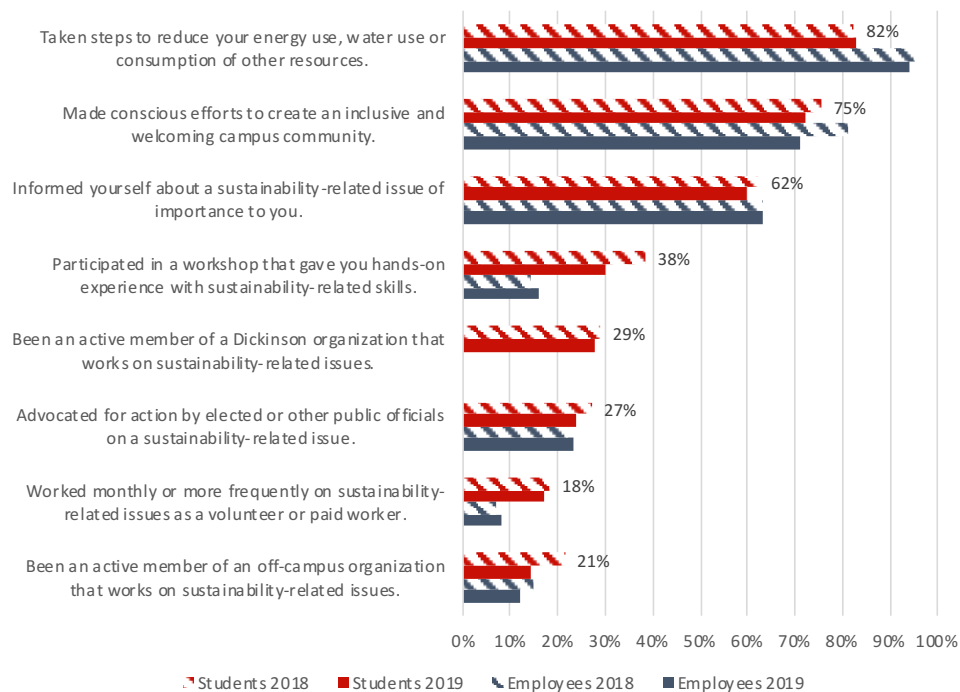
Over 90 percent of students engaged in at least one sustainability learning activity as part of their academic courses in 2018 and 2019.

Most engaged in multiple sustainability learning activities each year.

Percentages who engaged fell slightly from 2018 to 2019 for some activities.

Sustainability Practices

Have you engaged in any of the following activities in the past year?



Over 90 percent of students and faculty engaged in at least one sustainability practice in past year.

Most engaged in more than one.

Reducing resource use, creating an inclusive campus environment and informing oneself about sustainability issues are the most common.

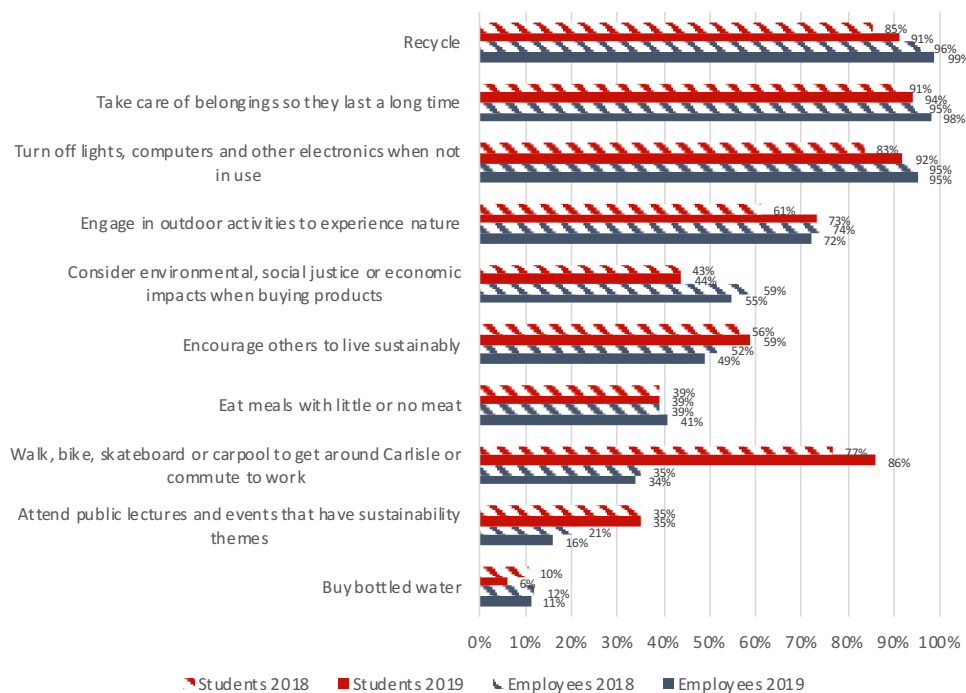
Significant numbers of students were active with campus groups that work on sustainability.

Significant numbers of students and employees advocated for action on sustainability-related issues.

Engagement in sustainable practices are similar between 2018 and 2019.

Sustainability Practices

How often do you engage in the following behaviors? (Percentage responding always, almost always or often)



Students and employees frequently practice sustainable behaviors.

High percentages always, almost always or often:

- Recycle
- Take care of belongings to last
- Engage in outdoor activities
- Consider impacts of purchases
- Encourage others to live sustainably

More than one-third of employees walk, bike or carpool to work.

The frequencies of sustainable practices are similar between 2018 and 2019.

Sustainability Literacy

Students' sustainability literacy is assessed using 12 multiple choice questions on selected concepts and issues. While Dickinson has a requirement for all students to take at least one sustainability related or focused course, there is not a defined sustainability curriculum that all students study.

Students of all academic majors and programs fulfill the sustainability requirement by taking any one of over 100 sustainability courses that are offered by more than 30 of Dickinson's 44 academic programs, which span the arts and humanities, social sciences and physical sciences and are reflective of the highly interdisciplinary and intersectional nature of sustainability.

Consequently, students' academic engagement with sustainability can vary substantially and the 12 knowledge questions do not serve as a tool for assessment of defined learning outcomes. They are intended, instead, as indicators of students' exposure to and knowledge of a small number of selected sustainability concepts and issues. The results can be useful for identifying where gaps may exist in the academic program.

The Sustainability Literacy Questions – And Answers

How has air quality changed on average in the United States since 1990?

Answer - Improved substantially.

How has the percentage of the world's population living in extreme poverty, defined as living on \$1.90 or less:

Answer - Decreased substantially.

How have prices of electricity generated with renewable solar and wind energy changed over the past 30 years?

Answer - Decreased substantially.

If warming of the Earth's climate is to be held below 2oC, the world's annual emissions of carbon dioxide must be:

Answer - Reduced 80 percent or more from the present level by 2100.

The greenhouse effect warms the Earth's climate because greenhouse gases:

Answer - Absorb heat that is radiated from the Earth's surface.

A systems-thinking approach to understanding sustainability problems emphasizes:

Answer - Examining interactions and feedback loops within and between systems.

What does the precautionary principle call for when an activity has the potential to cause substantial harm but the harm is uncertain?

Answer - Take actions to avoid or reduce the potential harm.

A life-cycle analysis of a product assesses the:

Answer - Environmental impacts of the production, transport, use and disposal of the product.

Many economists argue that electricity prices in the U.S. are too low because:

Answer - The prices do not reflect costs of pollution from generating electricity.

How has the gap in incomes between the richest and poorest households in the United States changed over the last 30 years?

Answer - Increased

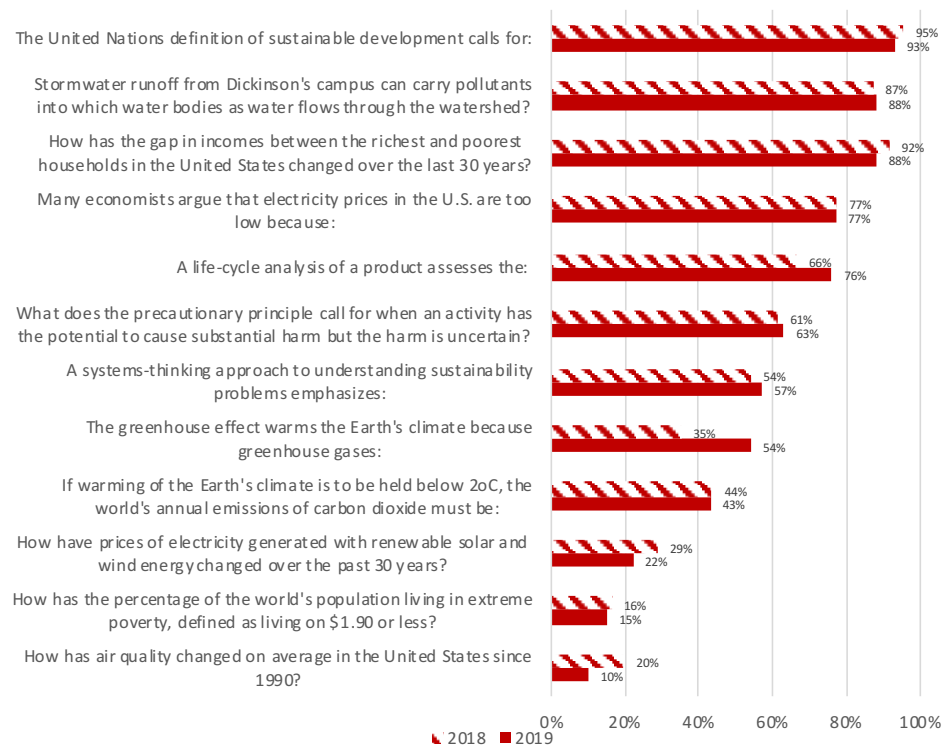
Stormwater runoff from Dickinson's campus can carry pollutants into which water bodies as water flows through the watershed?

Answer - Letort Spring Run, Conodoguinet Creek, Susquehanna River and Chesapeake Bay.

The United Nations definition of sustainable development calls for:

Answer - Meeting the needs of the present without compromising the ability of future generations to meet their own needs.

Sustainability Literacy – All Students, 2018 & 2019



Percentage answering correctly

Percentages of correct answers are mostly stable across the two years, with a notable increase in understanding of the greenhouse effect from 2018 to 2019.

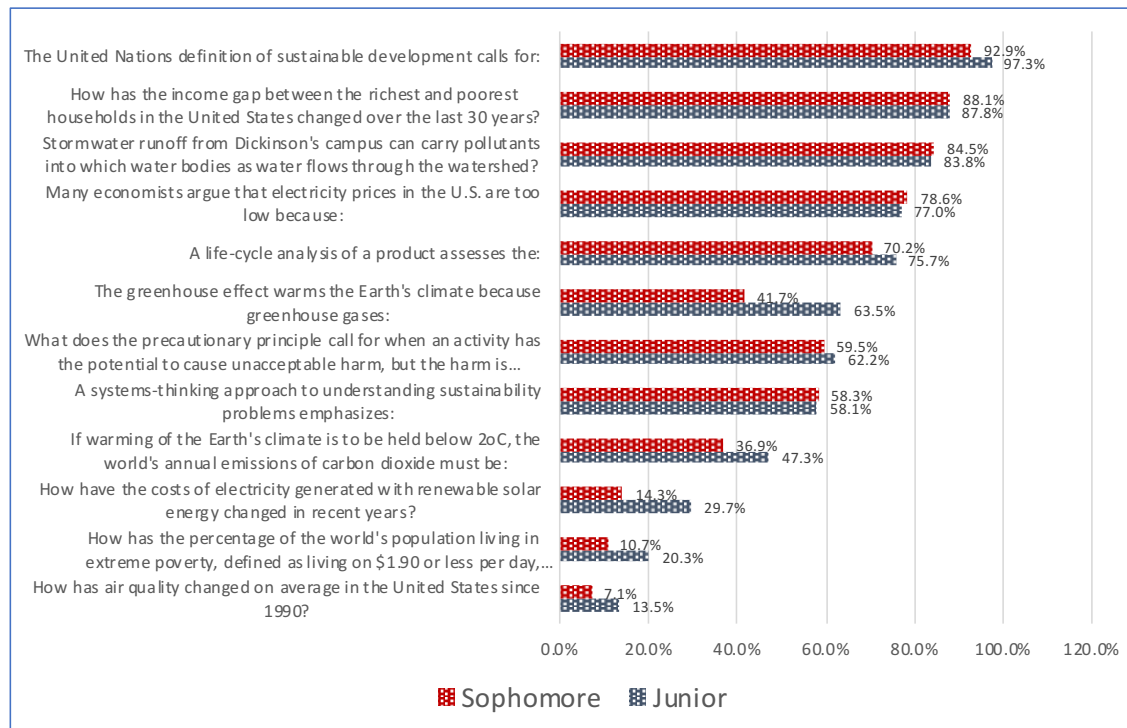
High percentages of students correctly answered questions about the UN definition of sustainable development, changes in income gap in the US, and runoff in our local watershed.

Majorities of students correctly answered questions about pricing externalities, life-cycle analysis, the precautionary principle, and systems thinking.

Knowledge about greenhouse effect and emission reductions needed to limit warming below 2°C is not sufficiently robust!

Low percentages of students are aware U.S air quality has improved substantially or that the percentage of world population living in extreme poverty has fallen substantially.

Sustainability Literacy – Before and at End of Junior Year



Percentage answering correctly

Comparisons by class year provides an assessment of changes in sustainability literacy from before and at the end of the junior year.

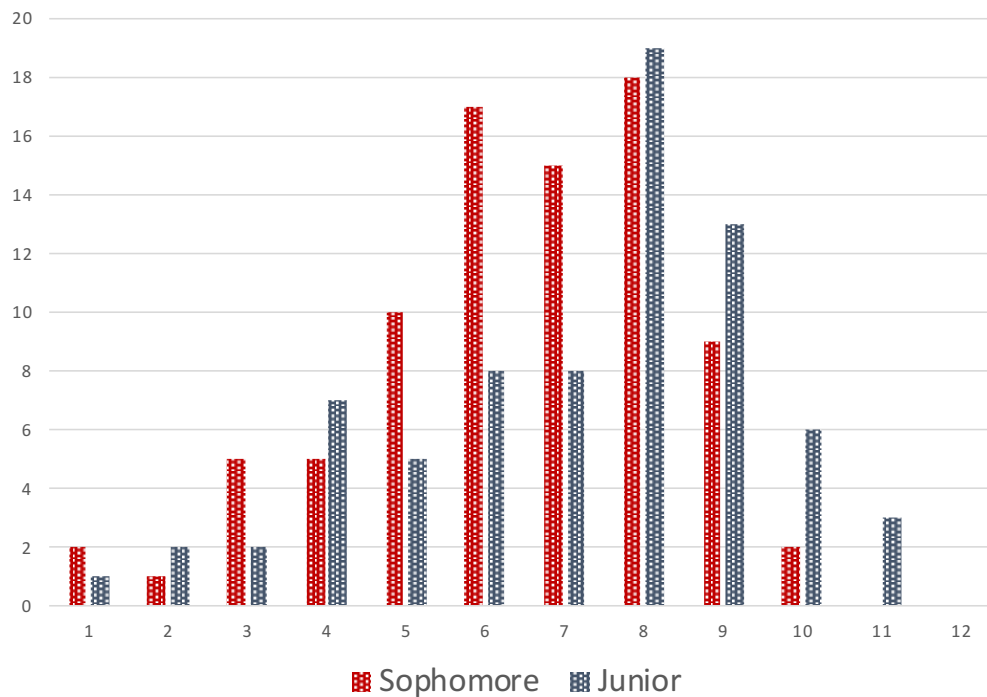
Percentages of correct answers are similar across juniors and sophomores for questions about the UN definition of sustainable development, changes in income gap in the US, runoff in our local watershed, precautionary principle and systems thinking.

Juniors display stronger understanding of the greenhouse effect than sophomores.

Juniors also display greater, though still low, awareness of trends in renewable energy costs, global poverty and air quality.

Sustainability Literacy – Before and at End of Junior Year

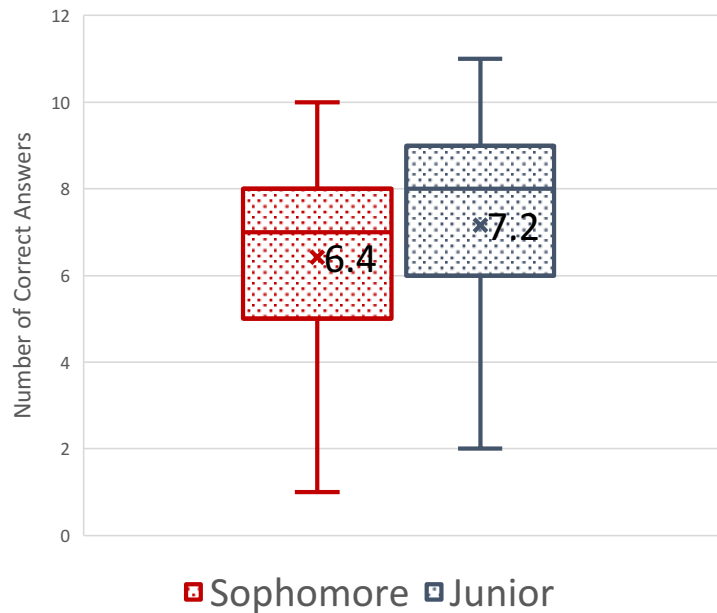
Frequency distributions of number of correct answers



Juniors typically answered more questions correctly than sophomores.

Results suggest that students add to their sustainability literacy over the junior year of studies and co-curricular experiences.

Sustainability Knowledge – Before and at End of Junior Year



The mean, median and mode for number of correct answers are higher for juniors than sophomores

The higher mean for juniors is statistically significant.

$p = 0.017$, one-tailed

| | Sophomores | Juniors |
|--------|------------|---------|
| Mean | 6.4 | 7.2 |
| Median | 7.0 | 8.0 |
| Mode | 8.0 | 8.0 |