Academic Challenge
2015 National Survey of Student Engagement

In spring 2015, we asked first-year and senior students at Case Western Reserve University (CWRU) to participate in the *National Survey of Student Engagement* (NSSE). The survey was administered by the Indiana University Center for Postsecondary Research in conjunction with CWRU's Office of Planning and Institutional Research. It is a follow-up to the NSSE which was administered to first-year students and seniors in spring 2012. Of 1,269[1] potential first-year participants, 26% (n=329)[2] submitted responses. Of 840[3] potential senior year participants, 28% (n=232)[4] submitted responses. Their results are compared to students from a comparison group of universities[5]. This report provides information about how students respond to academic challenge that is typical of the college experience.

Engagement Indicators

The NSSE comprises ten Engagement Indicators (EI's). These EI's are summary measures based on sets of NSSE questions examining key dimensions of student engagement. As summary measures, the EI's are scored. Each EI is scored on a 60-point scale. To produce an EI score, the response set for each item is converted to a 60-point scale (e.g., Never = 0; Sometimes = 20; Often = 40; Very often = 60) and the rescaled items are averaged. Thus, a score of zero means that a student responded at the bottom of the scale for every item in the EI, while a score of 60 indicates responses at the top of the scale of every item.

The EI's are organized within four broad themes: Academic Challenge, Learning with Peers, Experiences with Faculty, and Campus Environment. The *Academic Challenge* theme, the focus of this report, comprises four EI's: Higher-Order Learning, Reflective and Integrative Learning, Learning Strategies, and Quantitative Reasoning. Each of these EI's, in turn, comprises of three to seven items on the survey instrument. The full distribution for EI's and individual items is available on the IR website at: http://www.case.edu/ir/reportssurveyresults/. All significant differences also include a measure of

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[1] First-year population n=1,269: Women=575 (45%), Men=694 (55%); Caucasian=628 (50%), Asian=268 (21%), Black=62 (5%), Hispanic=81 (6%), Multiracial=64 (5%), Unknown=20 (2%), International=146 (12%)

[2] Sample n=329: Women=176 (53%), Men=153 (47%); Caucasian=168 (51%), Asian=65 (20%), Black=14 (4%), Hispanic=19 (6%), Multiracial=16 (5%), Unknown=3 (1%), International=44 (13%)

[3] Senior year population n=840: Women=383 (46%), Men=440 (52%); Caucasian=460 (55%), Asian=158 (19%), Black=21 (3%), Hispanic=30 (4%), Multiracial=26 (3%), Unknown=72 (9%), International=55 (7%)

[4] Sample n=232: Women=106 (46%), Men=118 (51%); Caucasian=136 (59%), Asian=36 (16%), Black=3 (1%), Hispanic=6 (3%), Multiracial=10 (4%), Unknown=18 (8%), International=15 (7%)

[5] Association of American Universities (AAU) comparison group: Boston University, Georgia Institute of Technology, Indiana University Bloomington, Rutgers University-New Brunswick/Piscataway, Stony Brook University, University at Buffalo-State University of New York, University of Arizona, University of Illinois at Urbana-Champaign, University of Maryland, University of Missouri-Columbia, University of Oregon, University of Wisconsin-Madison

effect size, Cohen's *d*. Effect size allows us to estimate the size of the differences between two means and indicates the practical importance of an observed difference[6].
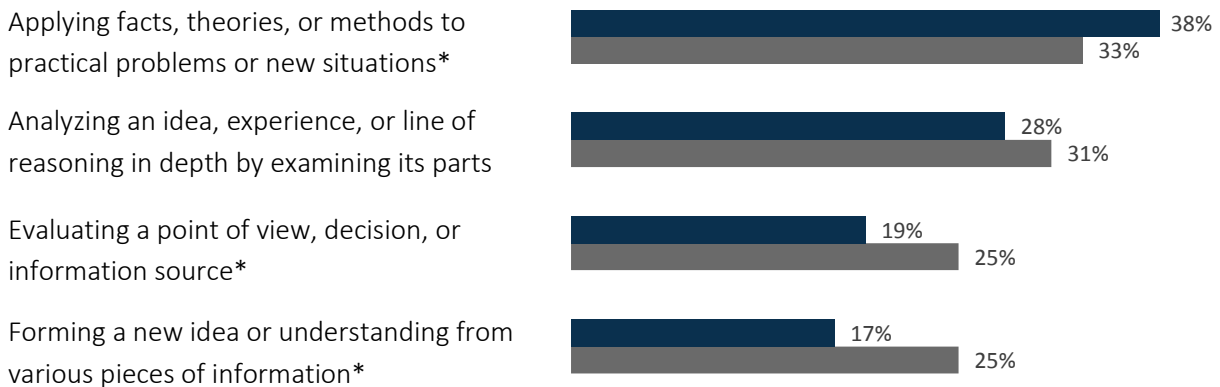
First-Year Students

Higher-Order Learning - First-Years

The *Higher-Order Learning* EI is a measure of the extent to which students' coursework emphasizes challenging cognitive tasks such as application, analysis, judgment, and synthesis. There was no meaningful difference between CWRU first-year students and the comparison group in higher-order learning; (M=39, SD=12.1) vs. (M=39, SD=13.5). Following is a breakdown of the individual items and CWRU's responses relative to the comparison group. The percentages represent the frequency with which students indicated "very much".

Higher-Order Learning (First-Years)

Coursework over the last year has emphasized:

Applying facts, theories, or methods to practical problems or new situations*
- CWRU: 38%
- Comparison Group: 33%

Analyzing an idea, experience, or line of reasoning in depth by examining its parts
- CWRU: 28%
- Comparison Group: 31%

Evaluating a point of view, decision, or information source*
- CWRU: 19%
- Comparison Group: 25%

Forming a new idea or understanding from various pieces of information*
- CWRU: 17%
- Comparison Group: 25%

■ CWRU   ■ Comparison Group

*Slight differences: applying facts, theories, or methods (*d*=0.16), evaluating a point of view, decision, or information source (*d*=-0.12), forming a new idea or understanding from existing information (*d*=-0.16)

Though there was no meaningful difference between CWRU first-year students and the comparison group in higher-order learning, there was one item on which CWRU first-year students performed slightly better than the comparison group: "applying facts, theories, or methods to practical problems or new situations"; 38% vs. 33%; (M=3.19, SD=0.75) vs. (M=3.06, SD=0.80); d=0.16, p<.01.

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[6] The effect size is the size of the difference between two means. Cohen's d values were interpreted according to the criteria used by the Indiana University Center for Postsecondary Research: small ~ .1, medium ~ .3, large ~ .5, very large ~ .7. These benchmark criteria were applied unilaterally to both Engagement Indicators and individual items for simplicity.

However, as shown in the chart above, CWRU first-year students scored slightly lower on:

- Evaluating a point of view, decision, or information source: 19% vs. 25%; (M=2.75, SD=0.81) vs. (M=2.85, SD=0.86); d=-0.12, p<.05
- Forming a new idea or understanding from various pieces of information: 17% vs. 25%; (M=2.74, SD=0.81) vs. (M=2.87, SD=0.85); d=-0.16, p<.01
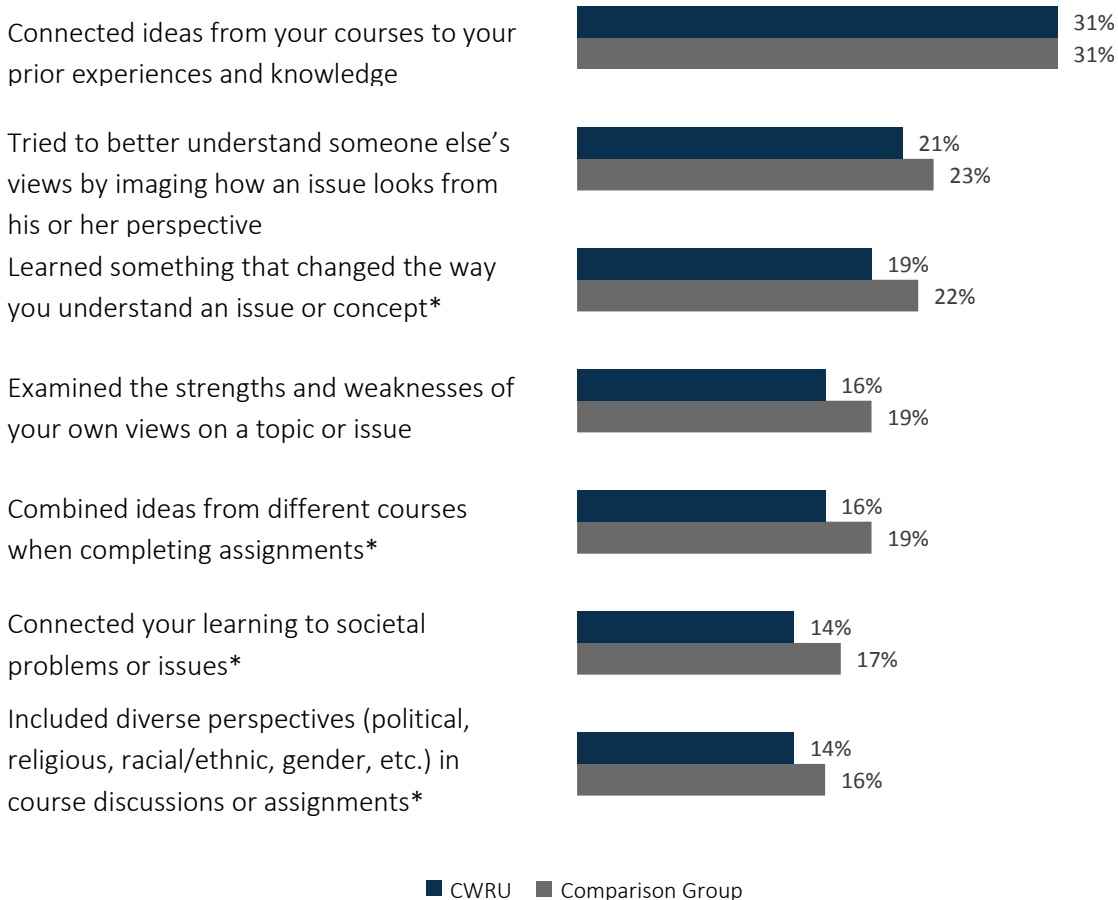
Reflective and Integrative Learning - First-Years

The *Reflective and Integrative Learning* EI is a measure of the extent to which students make connections between ideas and/or experiences and appreciate diverse perspectives. CWRU first-year students scored slightly lower on reflective and integrative learning; (M=34, SD=12.3) vs. (M=35, SD=12.5); d=-0.12, p<.05.

Following is a breakdown of the individual items and CWRU's responses relative to the comparison group. The percentages represent the frequency with which students indicated "very often".

Reflective and Integrative Learning (First-Years)

Very often:

Item	CWRU	Comparison Group
Connected ideas from your courses to your prior experiences and knowledge	31%	31%
Tried to better understand someone else's views by imaging how an issue looks from his or her perspective	21%	23%
Learned something that changed the way you understand an issue or concept*	19%	22%
Examined the strengths and weaknesses of your own views on a topic or issue	16%	19%
Combined ideas from different courses when completing assignments*	16%	19%
Connected your learning to societal problems or issues*	14%	17%
Included diverse perspectives (political, religious, racial/ethnic, gender, etc.) in course discussions or assignments*	14%	16%

■ CWRU ■ Comparison Group

*Slight differences: learned something (d=-0.11), combined ideas (d=-0.15), connected learning (d=-0.15), included diverse perspectives (d=-0.10)

While CWRU students scored slightly lower on reflective and integrative learning than the comparison group, four individual items were of note in their contribution towards this difference, as detailed below:

- Combined ideas from different courses when completing assignments: 16% vs. 19%; (M=2.58, SD=0.86) vs. (M=2.70, SD=0.83); d=-0.15, p<.05
- Connected your learning to societal problems or issues: 14% vs. 17%; (M=2.48, SD=0.85) vs. (M=2.60, SD=0.87); d=-0.15, p<.05
- Included diverse perspectives (political, religious, racial/ethnic, gender, etc.) in course discussions or assignments: 14% vs. 16%; (M=2.45, SD=0.87) vs. (M=2.54, SD=0.88); d=-0.10
- Learned something that changed the way you understand an issue or concept: 19% vs. 22%; (M=2.76, SD=0.82) vs. (M=2.84, SD=0.80); d=-0.11
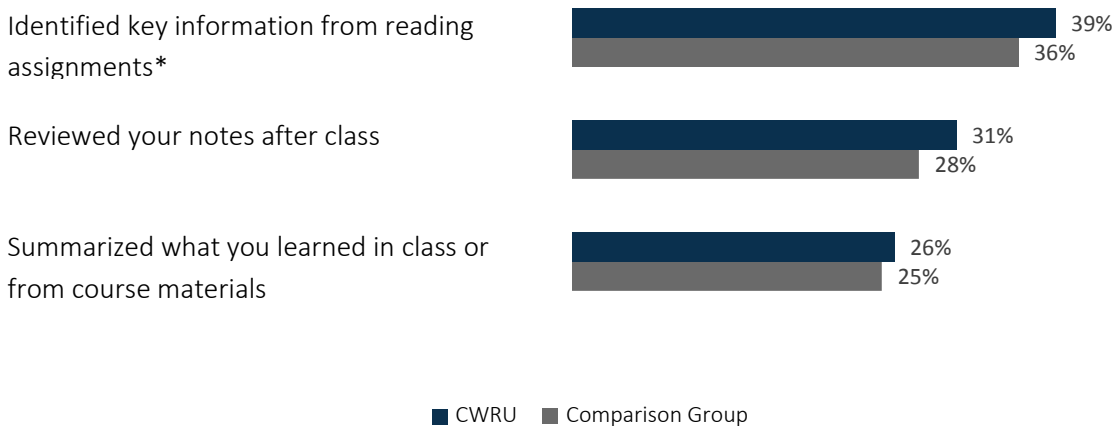
Learning Strategies - First-Years

The *Learning Strategies* EI measures the learning behaviors of students outside of class. There were no meaningful differences between CWRU students and the comparison group on learning strategies; (M=40, SD=13.6) vs. (M=39, SD=14.1).

Following is a breakdown of the individual items and CWRU's scores relative to the comparison group. The percentages represent the frequency with which students indicated "very often".

Learning Strategies (First-Years)

Very often:

Identified key information from reading assignments*

- CWRU: 39%
- Comparison Group: 36%

Reviewed your notes after class

- CWRU: 31%
- Comparison Group: 28%

Summarized what you learned in class or from course materials

- CWRU: 26%
- Comparison Group: 25%

■ CWRU ■ Comparison Group

*Slight difference: identified key information (d=0.13)

Though there was no meaningful difference between CWRU and the comparison group on the Learning Strategies EI, CWRU students scored slightly higher on one item:

- Identified key information from reading assignments: 39% vs. 36%; (M=3.24, SD=0.72) vs. (M=3.14, SD=0.78); d=0.13, p<.05
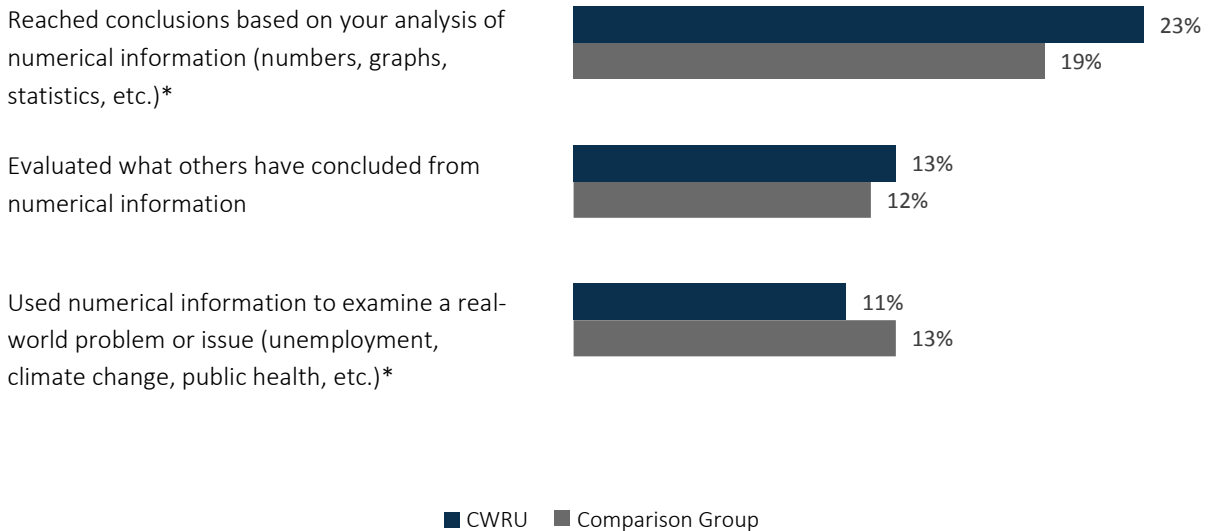
Quantitative Reasoning - First-Years

The *Quantitative Reasoning* EI measures how often students used numerical information to reach conclusions, examine a real-world problem, or evaluate what others have concluded based on numerical information. There were no meaningful differences between CWRU students and the comparison group on learning strategies; (M=29, SD=15.2) vs. (M=29, SD=16.0).

Following is a breakdown of the individual items and CWRU's responses relative to the comparison group. The percentages represent the frequency with which students indicated "very often".

Quantitative Reasoning (First-Years)

Very often:

Reached conclusions based on your analysis of numerical information (numbers, graphs, statistics, etc.)*	CWRU 23% / Comparison 19%
Evaluated what others have concluded from numerical information	CWRU 13% / Comparison 12%
Used numerical information to examine a real-world problem or issue (unemployment, climate change, public health, etc.)*	CWRU 11% / Comparison 13%

■ CWRU ■ Comparison Group

*Slight differences: reached conclusions based on analysis (d=0.17), used numerical information (d=-0.14)

While there was no meaningful difference between CWRU and the comparison group in quantitative reasoning, CWRU students scored slightly higher on conclusion-based analysis and slightly lower on use of numerical information to examine real-world concerns.

- Reached conclusions based on your analysis of numerical information (numbers, graphs, statistics, etc.): 23% vs. 19%; (M=2.78, SD=0.90) vs. (M=2.62, SD=0.92); d=0.17, p<.01
- Used numerical information to examine a real-world problem or issue (unemployment, climate change, public health, etc.): 11% vs. 13%; (M=2.19, SD=0.92) vs. (M=2.32, SD=0.94); d=-0.14, p<.05
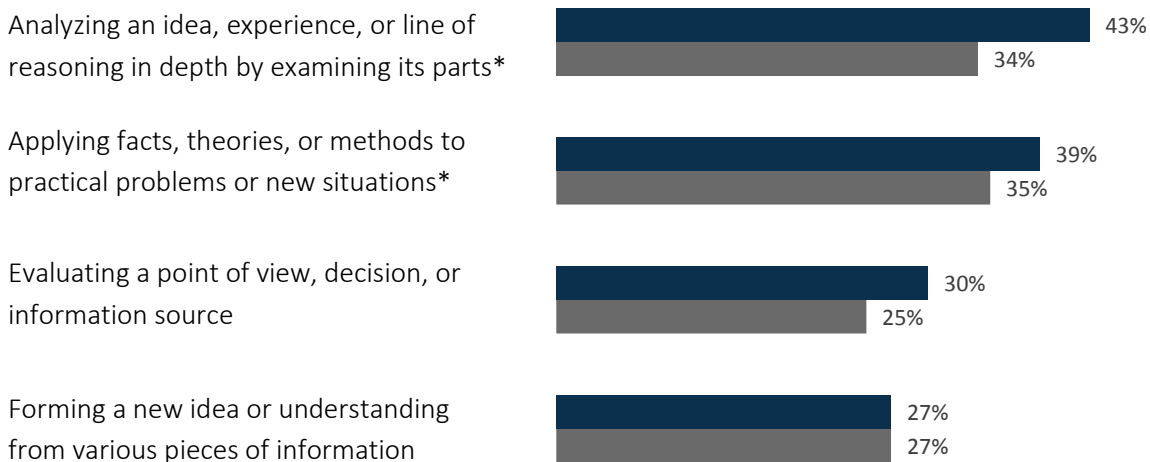
Seniors

Higher-Order Learning - Seniors

While CWRU first-year students showed no meaningful difference on the Higher-Order Learning EI, CWRU seniors scored slightly higher on higher-order learning than the comparison group (*M*=41, *SD*=14.0) vs. (*M*=39, *SD*=13.8); *d=0.12*.

Following is a breakdown of the individual items and CWRU's ratings relative to the comparison institutions. The percentages represent the frequency with which students indicated "very much".

Higher-Order Learning (Seniors)

Coursework over the past year has emphasized:

Analyzing an idea, experience, or line of reasoning in depth by examining its parts*
- CWRU: 43%
- Comparison Group: 34%

Applying facts, theories, or methods to practical problems or new situations*
- CWRU: 39%
- Comparison Group: 35%

Evaluating a point of view, decision, or information source
- CWRU: 30%
- Comparison Group: 25%

Forming a new idea or understanding from various pieces of information
- CWRU: 27%
- Comparison Group: 27%

■ CWRU ■ Comparison Group

*Slight differences: analyzing an idea, experience or line of reasoning (*d*=0.13), applying facts, theories, or methods (*d*=0.18)

As indicated above, CWRU students scored slightly higher on two items:

- Analyzing an idea, experience, or line of reasoning in depth by examining its parts: 43% vs. 34%; (*M*=3.20, *SD*=0.85) vs. (*M*=3.04, *SD*=0.85); *d*=0.13, *p*<.01
- Applying facts, theories, or methods to practical problems or new situations: 39% vs. 35%; (*M*=3.20, *SD*=0.79) vs. (*M*=3.09, *SD*=0.81); *d*=0.18, *p*<.05
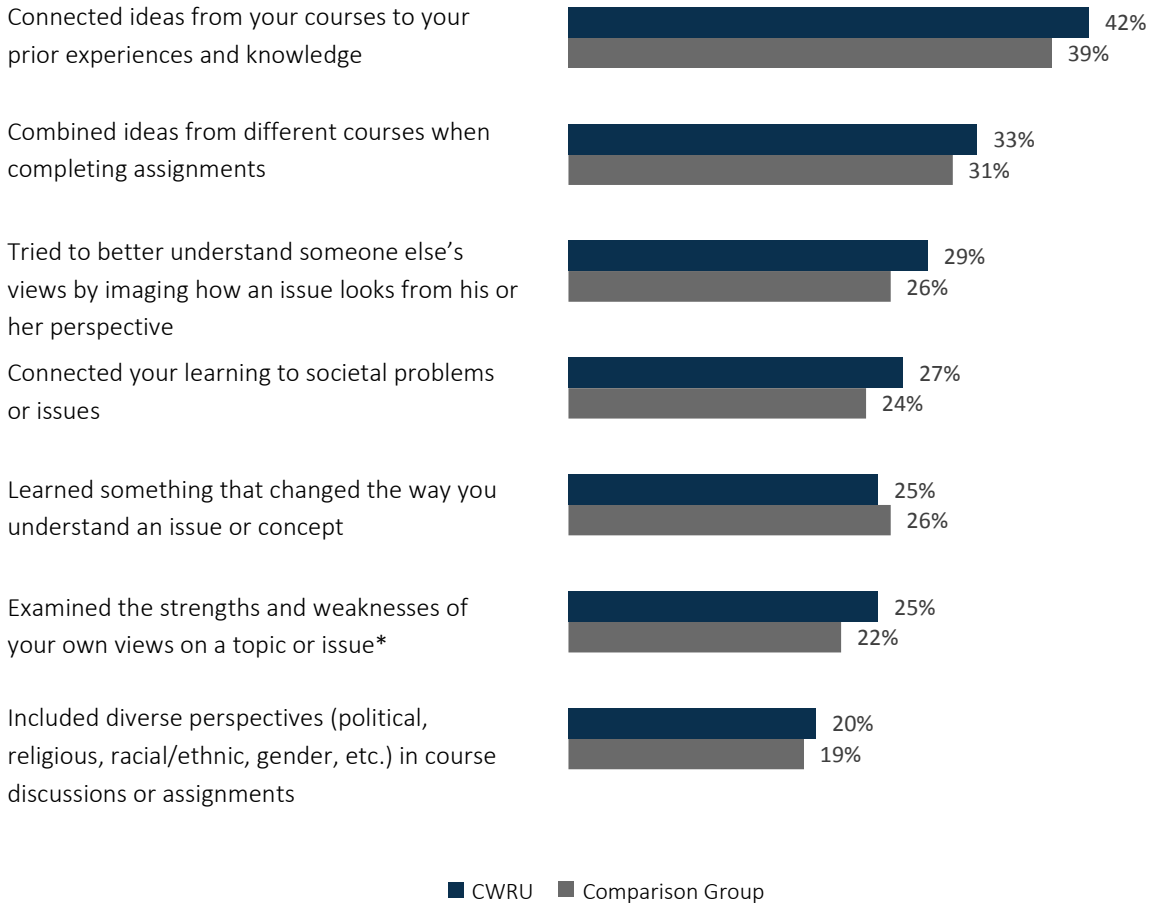
Reflective and Integrative Learning - Seniors

Unlike the case with first-year students, there was no meaningful difference between CWRU seniors and the comparison group on the Reflective and Integrative Learning EI; (*M*=38, *SD*=12.8) vs. (*M*=37, *SD*=12.9).

Following is a breakdown of the individual items and CWRU's scores relative to the comparison group. The percentages represent the frequency with which students indicated "very often".

Reflective and Integrative Learning (Seniors)

Very often:

Item	CWRU	Comparison Group
Connected ideas from your courses to your prior experiences and knowledge	42%	39%
Combined ideas from different courses when completing assignments	33%	31%
Tried to better understand someone else's views by imaging how an issue looks from his or her perspective	29%	26%
Connected your learning to societal problems or issues	27%	24%
Learned something that changed the way you understand an issue or concept	25%	26%
Examined the strengths and weaknesses of your own views on a topic or issue*	25%	22%
Included diverse perspectives (political, religious, racial/ethnic, gender, etc.) in course discussions or assignments	20%	19%

■ CWRU   ■ Comparison Group

*Slight difference: examined strengths and weaknesses (*d*=0.10)

While there was no meaningful difference between CWRU seniors and the comparison group in reflective and integrative learning, CWRU students scored slightly higher on one item, as detailed below.
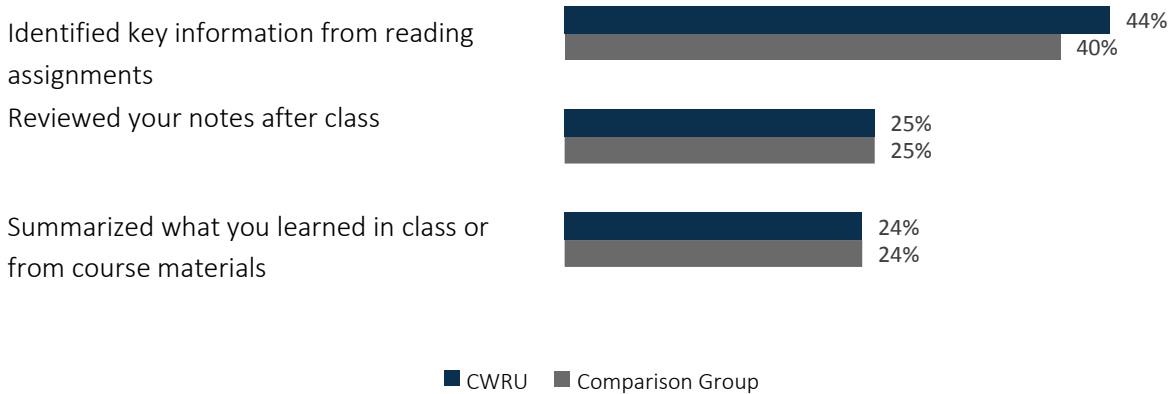
- Examined the strengths and weaknesses of your own views on a topic or issue; 25% vs. 22%; (*M*=2.86, *SD*=0.84) vs. (*M*=2.77, *SD*=0.85); *d*=0.10

Learning Strategies - Seniors

As with first-year students, there was no meaningful difference between CWRU and the comparison group on the Learning Strategies EI; (*M*=37, *SD*=15.2) vs. (*M*=37, *SD*=14.8). Following is a breakdown of the individual items and CWRU's scores relative to the comparison group. The percentages represent the frequency with which students indicated "very often".

Learning Strategies (Seniors)

Very often:

Identified key information from reading assignments
44%
40%

Reviewed your notes after class
25%
25%

Summarized what you learned in class or from course materials
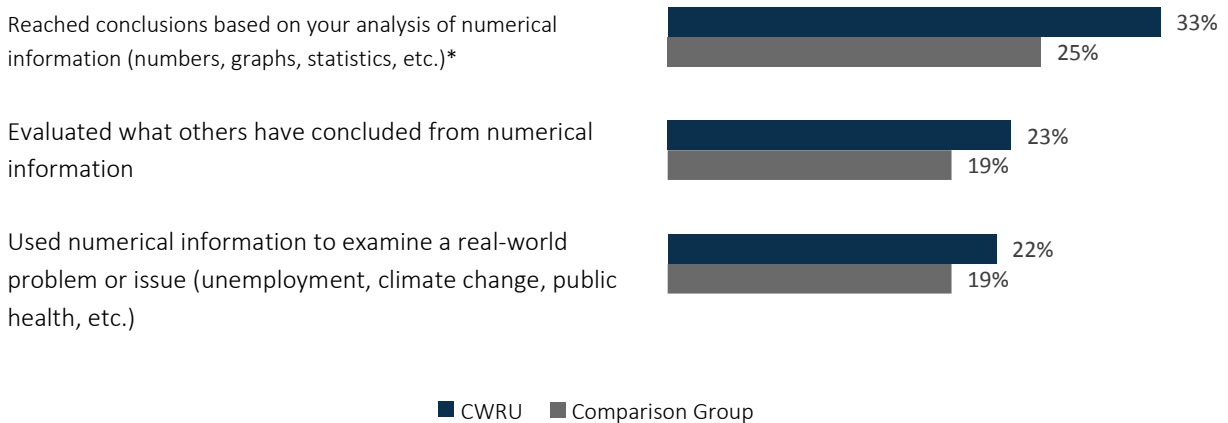24%
24%

■ CWRU ■ Comparison Group

Quantitative Reasoning - Seniors

Unlike the case with first-year students, CWRU seniors scored slightly higher on quantitative reasoning than those in the comparison group on the Quantitative Reasoning EI; (M=34, SD=17.3) vs. (M=32, SD=17.0). Following is a breakdown of the individual items and CWRU's scores relative to the comparison group. The percentages represent the frequency with which students indicated "very often".

Quantitative Reasoning (Seniors)

Very often:

Reached conclusions based on your analysis of numerical information (numbers, graphs, statistics, etc.)*
33%
25%

Evaluated what others have concluded from numerical information
23%
19%

Used numerical information to examine a real-world problem or issue (unemployment, climate change, public health, etc.)
22%
19%

■ CWRU ■ Comparison Group

*Slight difference: reached conclusions based on analysis (d=0.21)

As noted above, CWRU students scored slightly higher on reaching conclusions based on analysis of numerical information; 33% vs. 25%; (M=2.93, SD=0.94) vs. (M=2.73, SD=0.96); d=0.21, p<.01.

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