Response to Offsite Review Summary of Lines of Inquiry
Additional Information Request #5:
Previous General Education and Core Competencies Assessments
August 2018

5. Reports on the findings of the previous General Education assessments of the Core Competencies (currently only written communication is provided on the website).

Introduction

UC Riverside set forth a plan to assess General Education in its 2010 WASC Accreditation Review and completed assessment of writing, oral communication, and math in 2012-13. These reports were used to enhance the writing program, add more oral communication courses in the Theatre department, and enhance foundational math coursework over the next several years. Around the same time, WASC released its new standards for accreditation, requiring assessment of core competencies.

In preparation for the 2018 review, we developed a plan to assess the core competencies: written communication, oral communication, quantitative reasoning, information literacy, and critical thinking. To ensure our campus met this requirement for our 2018 review, and consistent with the new WASC standards, our focus shifted from assessment of general education courses to incorporating assessment of core competencies into the annual program assessment conducted by all departments (see the 2015 Interim Report). Our program review process requires programs to discuss their annual assessments of program learning outcomes (PLOs), how these assessments relate to the core competencies, and whether students are achieving these goals.

The enclosed report outlines UCR's approach to assessing the core competencies. Our approach is faculty-driven and program-specific. We provide examples of program learning outcomes that relate to the core competencies, how they are measured, and the outcomes of those assessments. Based on the most recent round of annual assessment studies (2017-18), faculty find that most of their students are meeting or exceeding faculty expectations and where students are not meeting expectations, faculty consider how to further monitor and/or change their course content and/or pedagogy to ensure students attain proficiency before graduation. We also examine indirect evidence: senior students' self-reported proficiencies for each core competency using University of California Undergraduate Experience Survey data from 2016, the most recent data available. We find that the vast majority of senior students reported having good or better skills in each of the core competencies. The survey evidence strongly suggest that during their studies at UCR individual students improve their proficiencies across all core competencies. We plan to continue with our program-specific assessment of the core competencies in the future and the reconstituted Assessment Advisory Committee will be charged with reviewing the results of the core competencies assessments and making recommendations to the campus starting next year.

Assessment of Core Competencies

Assessment of the core competencies is a part of the annual assessment process and is carried out by faculty at the program level. The core competencies are integrated into program learning outcomes (PLOs) across all colleges and schools: College of Humanities, Arts, and Social Sciences

(CHASS), College of Natural and Agricultural Sciences (CNAS), Bourns College of Engineering (BCOE), and School of Business (BUS). The Graduate School of Education welcomes its inaugural undergraduate class in Fall 2018 and is in the process of finalizing its learning outcomes and assessment plan this summer. The undergraduate program for public policy that is currently part of CHASS will be moved to our School of Public Policy in Fall 2018. The program, its learning outcomes, and assessment plan will remain unchanged.

Each year, programs select a subset of PLOs and a core competency for assessment as part of their multi-year assessment plans. Many programs conduct assessment by committee and use artifacts from coursework for assessment, such as written work, exam questions, or presentations. Because programs conduct their own assessments of PLOs and the core competencies, such assessments authentically evaluate competence within the context of a particular program, as determined by its faculty. Program faculty regularly use their program assessments to reflect on student proficiency and make changes to the curriculum, assignments, or pedagogy when deemed necessary.

UCR has been collecting program-level information about the core competencies from programs on an annual basis since 2014-15 starting with Oral Communication. Information Literacy was assessed by programs in 2015-16 and Critical Thinking was assessed by programs in 2016-17. Both Written Communication and Quantitative Literacy were assessed by the Office of Evaluation and Assessment in 2012-13 and 2013-14, respectively. With the exception of Written Communication and Quantitative Literacy, we have not written comprehensive reports on the data and information submitted each year. Instead, all reports were reviewed and assessed by a subset of faculty assessment coordinators (the Meta-Assessment Committee) in an effort to provide feedback on the quality of assessment being conducted by each program. The core competency programs were asked to focus on in 2017-18 was written communication. We analyzed the 2017-18 annual reports with evidence of attainment for written communication and other core competencies. This document reports assessments relating to all core competencies, with special focus given to written communication.

UCR's Institutional Research Office reviewed the 2017-18 PLO assessment reports to summarize the results of the core competencies' assessments. The enclosed report is our inaugural institutional assessment of the core competencies that describes the findings and conclusions for all five core competencies from our 2017-18 assessment cycle. This section is organized by each core competency and includes evidence from the college or school that produced them in 2017-18. Supplemental indirect evidence of the core competencies from the 2016 University of California Undergraduate Experience Survey (UCUES) are also enclosed in a separate section. This survey is conducted biannually and we plan to prepare a similar report when the 2018 data becomes available.

Core Competency 1: Written Communication

The campus focused on assessing written communication in 2017-18, and all programs were encouraged to provide direct evidence pertaining to written communication in their annual assessment reports. The results of PLO assessments relating to written communication are summarized below.

College of Humanities, Arts, and Social Sciences (CHASS)

All undergraduate degree programs in CHASS have a PLO related to communication. The following represent a sample of PLO statements related to written communication:

Graduates will be able to:

- Construct sophisticated interpretive arguments in writing, ultimately producing original critical essays on research topics of their own design
- Write complex and persuasive expository prose
- Develop the ability to present art historical arguments in written and oral formats
- Analyze in written, embodied and oral forms individual components of works by self and others in terms of critical, aesthetic and performative choices made to most effectively impact an audience
- Develop the capacity to write and speak clearly and effectively.

Within CHASS, programs assessed written communication in a variety of ways ranging from assessments of close reading and analysis proficiency or reviews of individual class papers. Because faculty have an interest in understanding their program curriculum more broadly, courses selected for assessment included introductory, advanced, and capstone coursework. Methods for assessment reflect individual disciplinary needs and goals for students. For this report, we selected assessment results collected in upper-division courses.

Across programs in CHASS, faculty reported that most students demonstrated proficiency in written communication. Specifically, some programs reported a specific proportion of students who were proficient; this ranged from 66% to 88%. A few programs reported the average score of student performance and concluded that it was above the threshold defined by faculty. Several small programs elected to use qualitative methods and reported that faculty were satisfied with their students' written competency.

College of Natural and Agricultural Sciences (CNAS)

All undergraduate degree programs in CNAS have a PLO related to communication. The following represent a sample of PLOs from CNAS programs which guided departmental assessment of written communication proficiency:

Graduates will be able to:

- Communicate effectively with environmental professionals, as well as with citizens, concerning environmental issues in both written and in oral communication
- Demonstrate scientific literacy and writing skills as well as the ability to critically evaluate concepts in entomology
- Demonstrate the ability to write clearly and accurately about statistics
- Communicate the concepts and results of their laboratory experiments through effective a) writing and b) oral communication skills

Methods used for assessing written communication ranged considerably across CNAS programs. Faculty evaluated student writing in lab reports, consultation projects, and written exam questions. Faculty assessed these written artifacts with faculty-developed rubrics. They also collected student self-assessments of their written communication skills through exit surveys and capstone course evaluations.

CNAS departments reported results of assessments both in terms of the proportion of students performing at a satisfactory level in written communication, as well as the average performance on assessment rubrics. Programs stated that from 90% to 100% of students met writing proficiency standards. A few programs submitted qualitative assessments of written communication based on

faculty evaluation of student work. Qualitative assessments of student work evidenced proficiency in written communication.

School of Business

School of Business only has a single program for undergraduate students and, therefore, this section reports assessment of written communication competence in this program. To measure written communication skills, faculty evaluated the performance of students on a reading reflection assignment from a Competitive and Strategic Analysis course. Faculty report that 96% of students assessed were performing at a satisfactory level.

Bourns College of Engineering (BCOE)

Within Bourns College of Engineering (BCOE) all programs have the same PLO defined as "graduates will be able to communicate effectively." Methods for direct assessment included coursework and assessment instruments from ABET, BCOE's accrediting body, designed to best fit the needs of the program. Overall, all engineering departments in BCOE except one reported that students meet or exceed expectations for written communication. The one program that did not meet its goal will work with the department chair, external stakeholders, and the Academic Senate, if necessary, to make changes to its course curriculum and/or program to improve student written communication skills.

Core Competency 2: Oral Communication

Most programs assessed written communication but very few assessed oral communication in 2017-18 even though it is included in many PLOs. The following sample PLOs show an emphasis on oral communication across the colleges and were assessed in 2017-18.

Graduates will be able to:

- Develop the ability to present art historical arguments in written and oral formats
- Develop an original argument in writing and orally
- Communicate the concepts and results of their laboratory experiments through effective a) writing and b) oral communication skills.

Students' oral communication skills were assessed based on oral presentation and debate assignments in courses. Faculty and teaching assistants for each course assessed oral presentations with the use of rubrics and found student performance to meet their expectations in all cases. Programs reported that 80%-100% of students met proficiency standards.

Core Competency 3: Quantitative Reasoning

Although for AY 2017-18 programs focused on evaluating written communication, a few departments also assessed PLOs related to quantitative reasoning within CHASS, CNAS, and BCOE.

College of Humanities, Arts, and Social Sciences (CHASS)

The following are examples of PLO statements that address quantitative reasoning in CHASS.

Graduates will be able to:

- Understand the basic elements of statistical analysis
- Demonstrate an ability to analyze empirical data

In two CHASS programs, quantitative reasoning was assessed based on coursework and through surveys of self-rated skills. Programs found that students met or exceeded their expectations in quantitative reasoning abilities.

College of Natural and Agricultural Sciences (CNAS)

Quantitative reasoning is one of the PLOs in all CNAS programs. The following are examples of PLOs in CNAS programs that relate to quantitative reasoning:

Graduates will be able to:

- Understand the theoretical underpinnings of statistical methodologies
- Develop descriptive statistical summaries
- Parse mathematical statements, determine whether they are true or false, identify and articulate flaws or gaps in mathematical arguments
- Given a data set, students should be able to assess the reliability of the data and draw appropriate conclusions.

Methods used to assess quantitative reasoning include a pre-/post-exam, quantitative exercises in senior capstone coursework. Faculty found that the majority of their students achieved proficiency in quantitative reasoning used in these fields of study.

Bourns College of Engineering (BCOE)

Quantitative reasoning is one of the PLOs in all BCOE programs. The following are examples of PLOs that relate to quantitative reasoning in BCOE programs.

Graduates will be able to:

- Analyze and interpret data
- Apply mathematics

Faculty in BCOE rely on course assignments and exams to assess PLOs related to quantitative reasoning. All programs in BCOE report finding their students meet or exceed expectations for PLOs related to quantitative reasoning. All programs also collect student self-assessment via surveys. Student survey data indicate that on average, students feel they have achieved literacy in the above areas.

Core Competency 4: Information Literacy

Overall, information literacy is expressed in PLOs indicating that students should be able to recognize and gather information, evaluate, and apply it. Many programs do not have explicitly defined information literacy in their PLOs but they assessed information literacy closely alongside other competencies such as research skills, quantitative literacy, and critical thinking. Within each program assessing information literacy, PLOs reflect the unique needs of each individual field and methods were devised by program faculty. In 2017-18 CHASS and CNAS provided assessments for information literacy.

College of Humanities, Arts, and Social Sciences (CHASS)

The following are examples of PLOs in CHASS programs that included information literacy in their assessments:

Graduates will be able to:

- Recognize, identify and apply the APA Ethical Guidelines regarding the conduct of ethical research practices, informed consent, confidentiality, privacy, and conflicts of interest
- Have an understanding of sociological theories, concepts, and research methods. Specifically, students should be able to: a) demonstrate proficiency in the use of important sociological concepts; b) be familiar with important theoretical traditions; c) master basic empirical and statistical research methods; d) be able to apply their theoretical and empirical knowledge
- Construct sophisticated interpretive arguments in writing, ultimately producing original critical essays on research topics of their own design
- Develop a methodological practice of gathering, sifting, analyzing, ordering, synthesizing, and interpreting evidence
- Experience with methods for assessing rational, scientific and aesthetic information
- Undertake historical, textual, qualitative, ethnographic, political-economic, policy, social-movement, and quantitative research to investigate the relationship between the media, audiences, culture, and society across the globe.

Methods for assessing these PLOs included evaluation of class assignments or exams in upper division or senior capstone courses. Individual program reports suggest information literacy is a central goal within CHASS and that in most cases, students are showing levels of proficiency that are satisfactory to program faculty. In two instances, students' level of proficiency fell below faculty-determined thresholds. These programs indicated that lessons related to these learning outcomes need to be improved by program faculty.

College of Natural and Agricultural Sciences (CNAS)

The following are a sample of PLOs in CNAS programs that included an analysis of information literacy:

Graduates will be able to:

- Apply critical thinking skills to evaluate existing knowledge and to formulate methods for generating new knowledge.
- Apply and synthesize information – graduates will be able to apply, synthesize, and evaluate their knowledge and skills to quantitatively solve novel problems in Geology over a wide range of spatial and temporal scales.
- Make critical personal/professional judgments based on their scientific understanding.
- Acquire and synthesize relevant information from various sources (books, journals, internet, experiments, etc.)

In CNAS, departments reporting on information literacy assessed student proficiencies based on exams and written assignments in upper division coursework. Faculty report that most students are meeting expectations related to information literacy.

Core Competency 5: Critical Thinking

PLO statements that relate to critical thinking focus on applying and analyzing information to construct an argument or solve a problem, or use critical perspectives. In 2017-18 departments within CHASS, CNAS and BCOE assessed PLOs related to critical thinking.

College of Humanities, Arts, and Social Sciences (CHASS)

The following are a sample of PLOs that relate to critical thinking in CHASS programs.

Graduates will be able to:

- Apply appropriate critical methodologies to analyze a text or context
- Critically assess documents and media
- Reason about, analyze, conceptualize, interpret, critically evaluate, and compare and contrast key political institutions and structures
- Apply economic concepts to analyze business decisions, public policies and current economic affairs

Methods of assessment of PLOs relating to critical thinking often focused within particular courses that are considered to require critical thinking skills for success. Some programs assessed critical thinking in senior capstone courses based on writing assignments, oral presentations, or exam questions. Faculty most often assessed students with the use of rubrics developed for each assignment or exam question. All programs that assessed critical thinking in 2017-18 found that most students were meeting or exceeding expectations.

College of Natural and Agricultural Sciences (CNAS)

The following represent a sample of the PLOs related to critical thinking in CNAS programs.

Graduates will be able to:

- Parse mathematical statements, determine whether they are true or false, identify and articulate flaws or gaps in mathematical arguments
- Solve problems in a scientifically sound manner, and formulate rational recommendations and solutions
- Demonstrate scientific thought and techniques, and understand analyses pertinent to the Cell Molecular and Developmental Biology (CMDB) field

In CNAS, PLOs related to critical thinking were typically assessed based on exam questions that require students to think about and apply abstract concepts, sometimes using pre- and post-exams, or other course assignments. Across program assessments, faculty report that most students are meeting or exceeding proficiency in critical thinking. In the few programs that found relatively low proficiency, faculty have already started to devise ways to improve achievement of critical thinking competency as well as methods to assess it.

Bourns College of Engineering (BCOE)

The following represent a sample of the PLOs related critical thinking in BCOE.

Graduates will be able to:

- Design a system, component, or process to meet desired needs within realistic constrains such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- Apply knowledge of mathematics, science, and engineering

- Ability to analyze a problem, and identify and define the requirements appropriate to its solution
- Identify, formulate, and solve engineering problems

Faculty in BCOE employ a variety of methods to evaluate critical thinking, including course assignments. Overall, faculty in BCOE find that most of their students demonstrate proficiency in critical thinking. Programs also collect student self-assessments via surveys. Findings from the survey suggest that most students consider themselves proficient in critical thinking as well.

Student Self-Assessed Core Competencies (Indirect Evidence)

The second, indirect source of evidence about students' mastery of core competencies is the University of California Undergraduate Experience Survey (UCUES). This survey is administered every other spring and yields a consistently high response rate (29% campus-wide in 2016). The survey includes a series of questions about students' proficiency in skills when they started at UCR and at the present time. Students are asked to rate their proficiency along a 6-point scale of very poor, poor, fair, good, very good, or excellent. Students who rated their proficiency as good, very good, or excellent are considered "proficient" in each core competency. We also join the survey data with institutional data to conduct an equity analysis of student learning outcomes based on first generation status and transfer status.

Because we are interested in students' final levels of proficiencies and improvement during their studies at UCR, the data below are reported for graduating seniors only. We identified graduating seniors in the survey dataset if they selected "probably yes" to the question: "Will you complete a bachelor's degree this spring or summer?" The data below represent 1485 graduating seniors, or about 32.6% of the undergraduates who graduated in 2015-16.

We found that over 90% of seniors report proficiency in written communication, oral communication, information literacy, and critical thinking. We found that the vast majority (86-99%) of graduating seniors report proficiency in quantitative literacy skills across colleges except CHASS where two-thirds of students report being proficient. Transfer students and students who started as freshmen report similar final proficiencies in four core competencies; there is some evidence that as a group, students who start as freshmen report lower final quantitative skills compared to transfer students. We find no differences in final levels of proficiencies for first generation compared to non-first generation students, and note that in several core competencies, first generation students tend to report higher gains on average than their peers (for example, in written and oral communication skills).

Indirect Evidence: Written Communication

Students were asked to rate their "Ability to be clear and effective when writing" at the time of entry to UCR and at the present time. The graph below shows the percentage of graduating senior students who rated their proficiency at time of entry and at present as good, very good, or excellent. Data is presented for UCR overall and by college. Upon entry, 55% of UCR's graduating seniors rated their proficiency in written communication as good or better. In their final terms on campus, 92% of these graduating seniors rated their writing proficiency as good or better, a 37% increase.
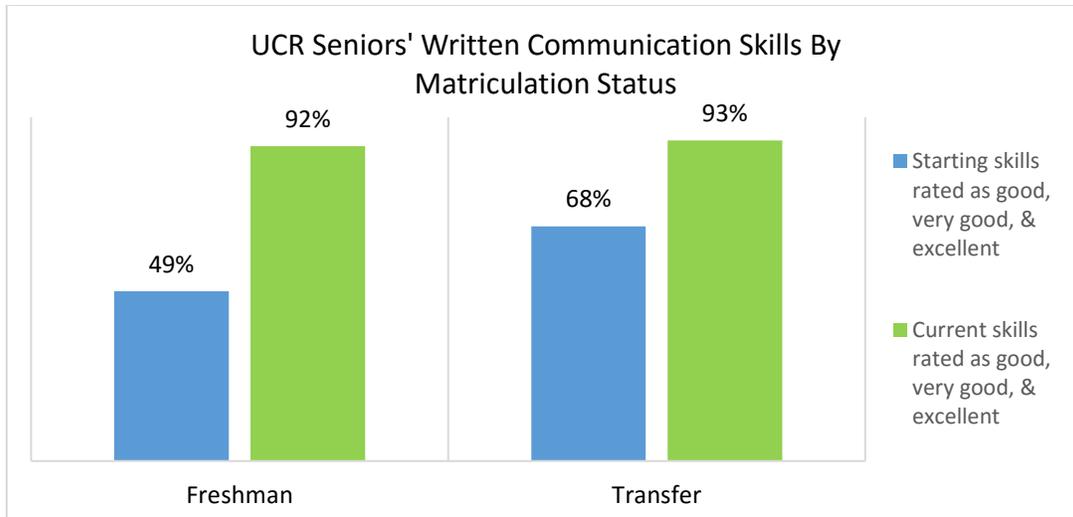
All colleges reported similarly high final levels and an increase in the number of students reporting proficiency (i.e., good or better levels) at graduation. In addition to group-level increase in proficient students, we measure individual student gains in skills by one or more levels during their

studies at UCR. We used these survey data to calculate a gain score by taking the student level of writing proficiency at present and subtracting their reported rating at time of entry. Please note that gain scores are calculated across all students, including those who started with poor skills and improved by one or more levels, as well as those who started with very good skills and improved just by one level. The average of these gains is then reported for the campus, colleges, or subpopulations.
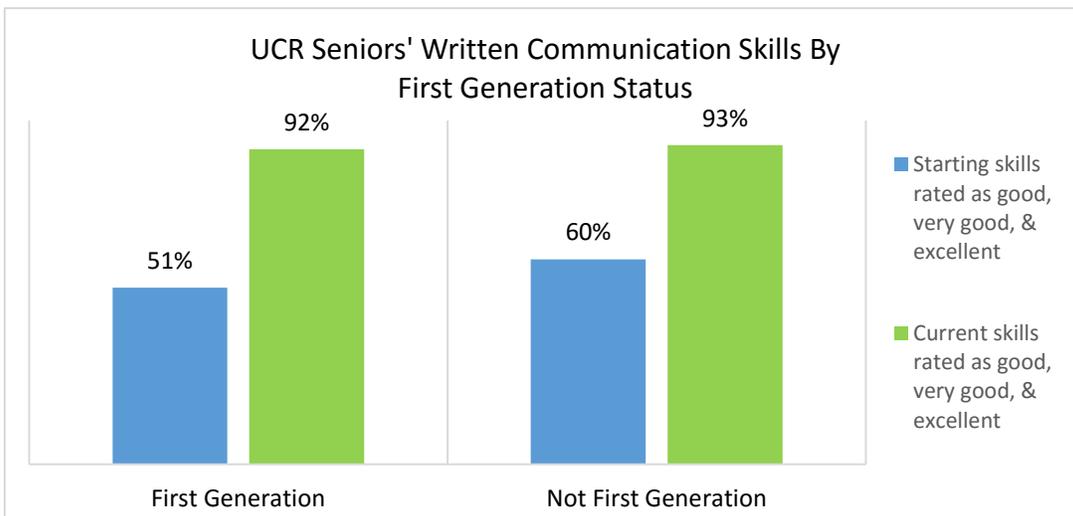
Senior students showed an average gain of 1.08 points, indicating that students with varied starting levels improved their writing skills by about one level on average since starting at UCR. Seniors in School of Business reported the highest gains, an average of 1.29 points while College of Natural and Agricultural Sciences and Bourns College of Engineering students reported the lowest gains of 0.85 and 0.86 points respectively.
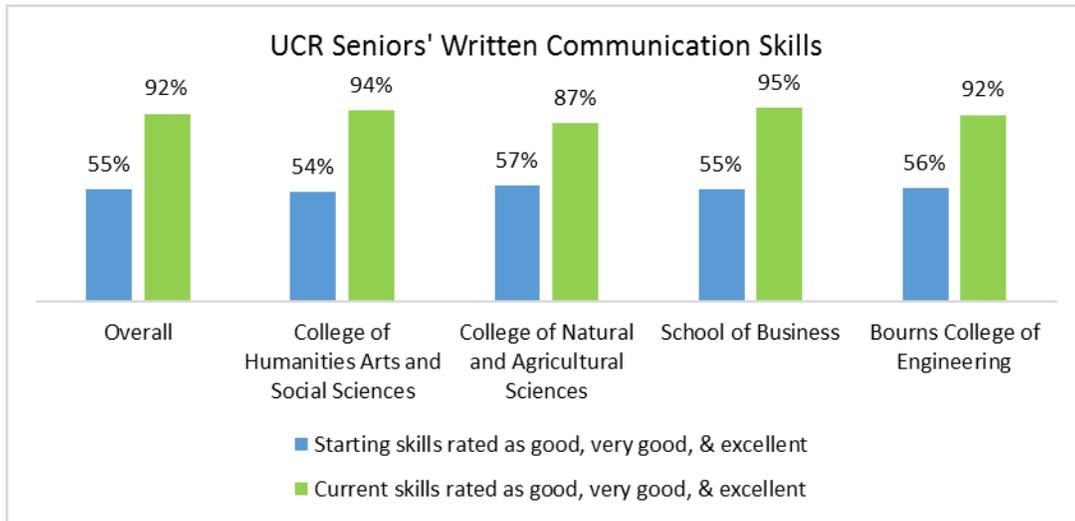
We also examined final levels and improvements in written communication skills by matriculation status. While transfer students come into UCR with higher self-reported proficiency than students starting as freshmen, both freshmen and transfer students graduate from UCR with similarly high rates of proficiency. Freshmen showed an average gain of 1.19 points while transfer students showed an average improvement of 0.80 points. This is not surprising as transfer students come to UCR with more preparation and take fewer courses at UCR than freshman matriculants based on the knowledge and skill developed by their prior institutions.

UCR Seniors' Written Communication Skills By Matriculation Status

	Freshman	Transfer
Starting skills rated as good, very good, & excellent	49%	68%
Current skills rated as good, very good, & excellent	92%	93%

Similarly, we reviewed these data by first generation status. A somewhat lower percentage of first generation students rated their written communication skills as proficient at entry compared to non-first generation students. At time of graduation, first generation and non-first generation students report similarly high proficiency in written communication skills. We note that closing of the initial gap of 9% is due to higher individual gains by first generation students who on average report a 1.14-point gain in written communication skills between entry and graduation while non-first generation students report a 0.99-point gain.
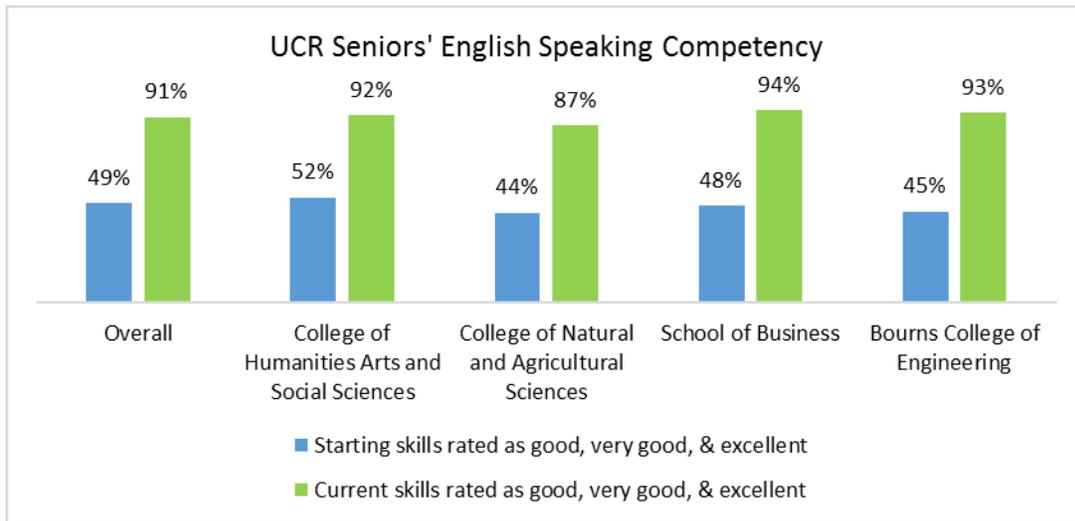
UCR Seniors' Written Communication Skills By First Generation Status

	First Generation	Not First Generation
Starting skills rated as good, very good, & excellent	51%	60%
Current skills rated as good, very good, & excellent	92%	93%

Indirect Evidence: Oral Communication

Two questions in UCUES relate to oral communication, a student's "Ability to speak clearly and effectively in English" and a student's "Ability to prepare and make a presentation." We analyzed the results of both questions for this report and found no notable differences in student ratings.

Just under 50% of graduating seniors rated their ability to speak clearly and effectively in English as good or better upon entering UCR. An additional 42% of seniors said their current abilities are good or better, showing significant improvement in this area. Similar final proficiencies are seen across college, ranging from 87% to 94% of students reporting being proficient. Seniors, on average, reported a 1.28-

point gain in English speaking skills. School of Business students reported the largest increase of 1.45 points while the remaining colleges report increases of 1.25-1.28 points.

UCR Seniors' English Speaking Competency

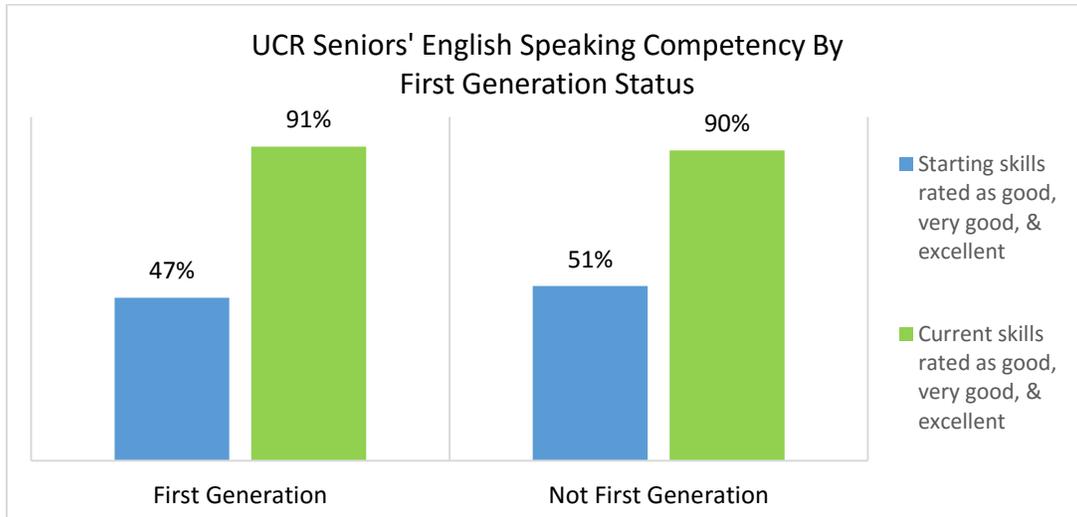|	Overall	College of Humanities Arts and Social Sciences	College of Natural and Agricultural Sciences	School of Business	Bourns College of Engineering
Starting skills rated as good, very good, & excellent	49%	52%	44%	48%	45%
Current skills rated as good, very good, & excellent	91%	92%	87%	94%	93%

We also examined final levels and improvements in English speaking competency by matriculation status. While considerably more transfer students come into UCR with self-reported proficiency than students starting as freshmen (65% vs. 43% respectively), both freshmen and transfer students graduate from UCR with similarly high rates of proficiency (90-93% of students reported good or better skills). Freshmen showed an average gain of 1.43 points while transfer students showed an average improvement of 0.91 points. This difference is not surprising as transfer students come to UCR with more academic preparation and take fewer courses at UCR than freshman matriculants.

UCR Seniors' English Speaking Competency By Matriculation Status

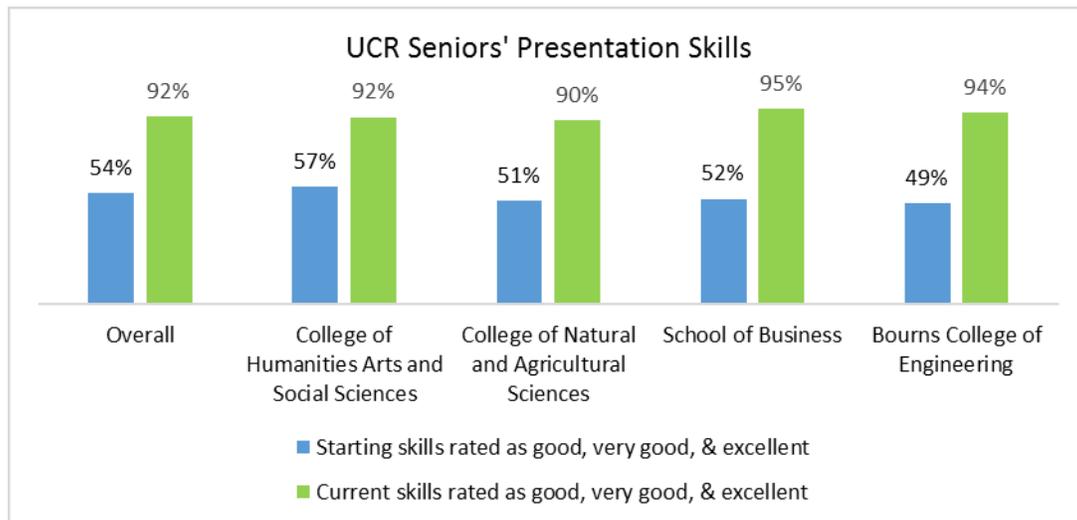|	Freshman	Transfer
Starting skills rated as good, very good, & excellent	43%	65%
Current skills rated as good, very good, & excellent	90%	93%
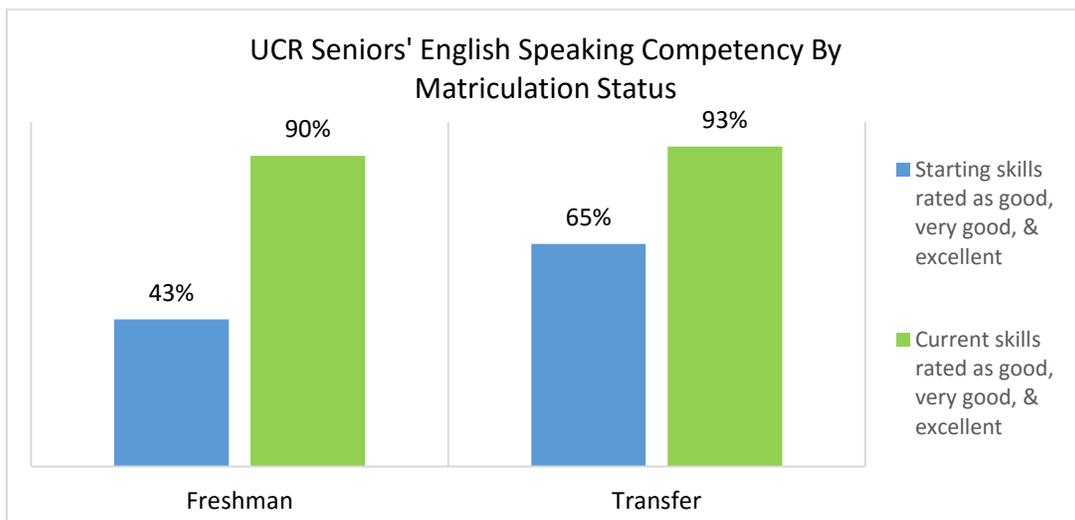
Similarly, we examined starting and final levels of English speaking skills by first generation status. A slightly lower percentage of first generation students rate their English speaking competence as proficient at entry compared to non-first generation students. At time of graduation, first generation and non-first generation students reported similarly high proficiency in English speaking skills (90-91% of students report good or better skills). We also found that first generation students on average reported

a 1.34-point gain in oral communication skills between entry and graduation, which is higher than a 1.20-point gain reported by non-first generation students.
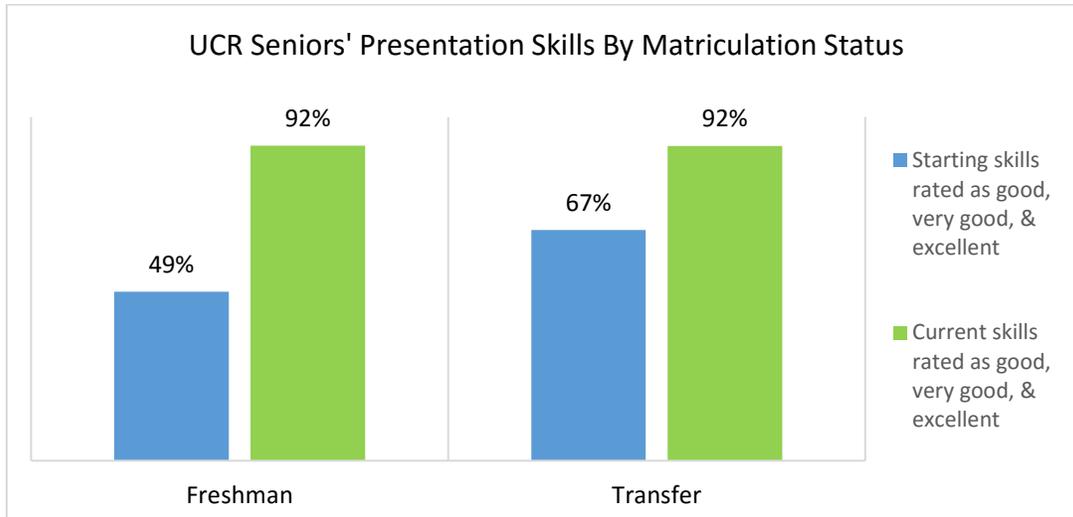
UCR Seniors' English Speaking Competency By First Generation Status

Starting skills rated as good, very good, & excellent

Current skills rated as good, very good, & excellent

First Generation: 47%, 91%
Not First Generation: 51%, 90%

Students were also asked to rate their presentation skills. Similar to their self-reported English speaking skills, about half (54%)of graduating seniors said their presentation skills were good or better at entry to UCR and 92% said their current presentation skills were good or better. This is an increase of 38%, showing improvement in this area. Students, on average, reported a 1.14-point gain in their presentation skills. Students in the School of Business reported the highest gain of 1.33 points while CHASS showed the lowest gains of 1.08 points.

UCR Seniors' Presentation Skills

Overall: 54%, 92%
College of Humanities Arts and Social Sciences: 57%, 92%
College of Natural and Agricultural Sciences: 51%, 90%
School of Business: 52%, 95%
Bourns College of Engineering: 49%, 94%

Starting skills rated as good, very good, & excellent
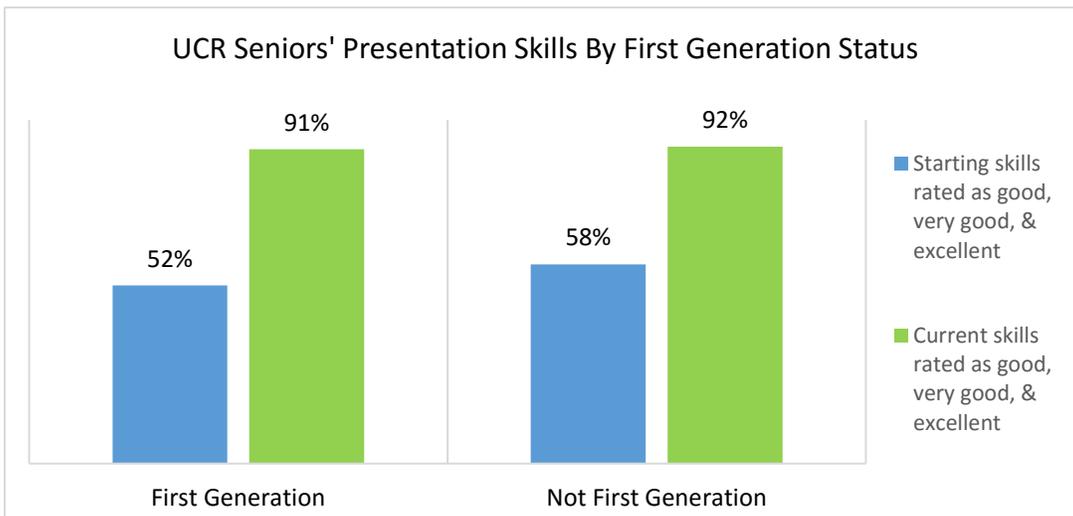Current skills rated as good, very good, & excellent

We also examined final levels and improvements in presentation skills by matriculation status. While transfer students come into UCR with higher self-reported proficiency than students starting as freshmen, both freshmen and transfer students graduate from UCR with the same self-reported rates of proficiency. Freshmen showed an average gain of 1.29 points while transfer students showed an average improvement of 0.78 points. This difference was also found in gains in English speaking skills

and is not surprising as transfer students come to UCR with more academic preparation and take fewer classes than freshman matriculants.

UCR Seniors' Presentation Skills By Matriculation Status

Freshman: Starting skills 49%, Current skills 92%
Transfer: Starting skills 67%, Current skills 92%

Legend:
- Starting skills rated as good, very good, & excellent
- Current skills rated as good, very good, & excellent

Similarly, we reviewed these data by first generation status. Somewhat fewer first generation students rated their presentation skills as proficient at entry compared to non-first generation students. At time of graduation, first generation and non-first generation students reported similar proficiency in presentation skills. We also note that first generation students on average reported a 1.19-point gain in presentation skills between entry and graduation, which is higher than a 1.09-point gain reported by non-first generation students.

UCR Seniors' Presentation Skills By First Generation Status

First Generation: Starting skills 52%, Current skills 91%
Not First Generation: Starting skills 58%, Current skills 92%

Legend:
- Starting skills rated as good, very good, & excellent
- Current skills rated as good, very good, & excellent

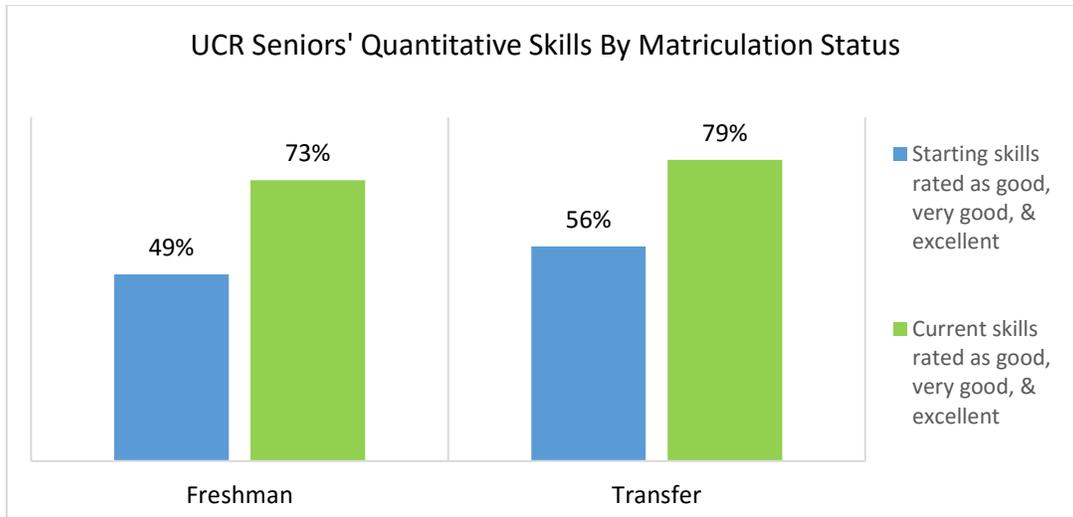## Indirect Evidence: Quantitative Reasoning

UCUES asks students to rate their "Quantitative (mathematical and statistical) skills" when they started and at the present time. Campus-wide, senior students showed an average gain of 0.73 points in their proficiency with quantitative skills, a lower degree of improvement compared to other core competencies. Seniors in the Bourns College of Engineering reported the highest gains, an average of

1.27 points while CHASS reported the lowest gains of 0.55. CNAS and the School of Business reported average gains of 0.89 and 0.87, respectively.
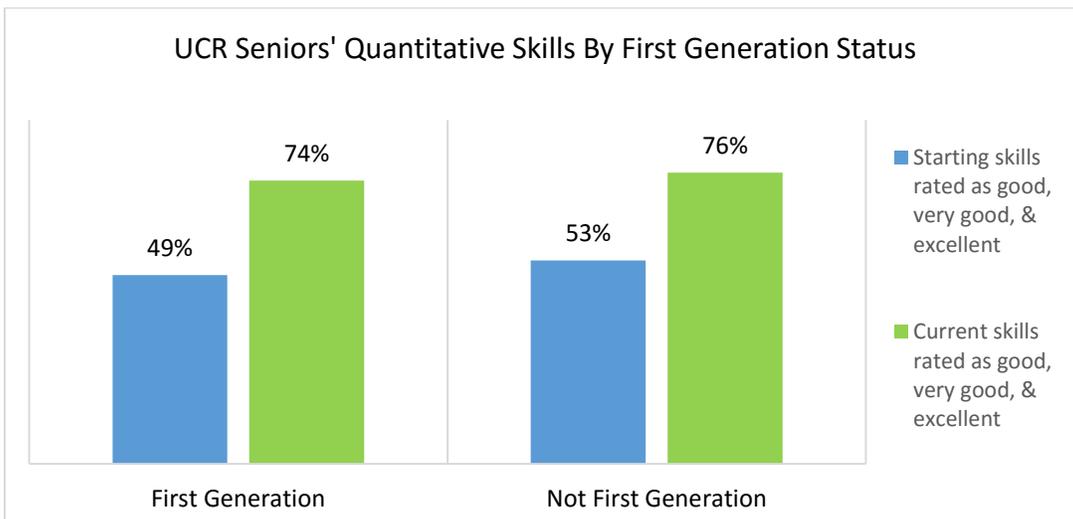
The graph below shows the percentages of graduating seniors who rated their proficiency in quantitative skills as good, very good, or excellent at the time of entry and at graduation. Data are presented for UCR overall and by college. About half (51%) of UCR's graduating seniors rated their quantitative skills upon entry as good or better while in their final terms on campus, 75% of students reported proficiency in quantitative skills. Improvements by college/school vary. Bourns College of Engineering students showed a 40% gain with practically all graduating BCOE students reporting that they are quantitatively proficient, not surprising given that coursework in the Engineering programs heavily emphasizes quantitative skills. In contrast, senior students in CHASS showed only a 19% gain with 64% of graduating students rating themselves as proficient in quantitative skills. Because CHASS graduates comprise about 55% of UCR's undergraduate degree recipients, the campus average of 75% of students reporting proficiency in quantitative skills is skewed toward the lower self-reported levels of CHASS students. While all students take general education coursework to fulfill a math or science requirement, it appears that about a third of CHASS students still do not feel confident in their quantitative skills at graduation.
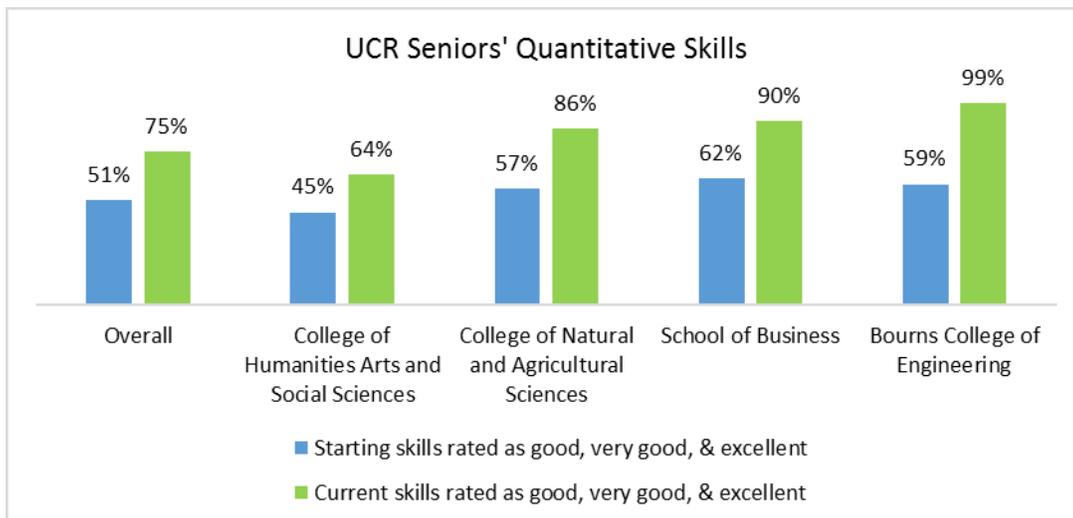
We compared final levels and improvements in quantitative skills by matriculation status. About 7% more transfer students enter UCR with self-reported proficiency in quantitative skills than students starting as freshmen. Approximately 6% more of transfer matriculants graduate with proficiency in quantitative skills than freshmen. Both groups showed improvement. Freshmen showed an average gain of 0.78 points (relatively low gains compared to gains in other core competencies) while transfer students show an average improvement of 0.59 points. The small difference in gains between these two groups is somewhat surprising as transfer students take fewer classes during their studies at UCR than freshman matriculants.

UCR Seniors' Quantitative Skills By Matriculation Status

49% 73% 56% 79%

Starting skills rated as good, very good, & excellent

Current skills rated as good, very good, & excellent

Freshman   Transfer

Similarly, we review these data by first generation status. A slightly smaller percentage of first generation students rate their quantitative skills as proficient at entry compared to non-first generation students. At time of graduation, first generation and non-first generation students report similar proficiency in quantitative skills. First generation students on average report a 0.78-point gain in quantitative skills between entry and graduation while non-first generation students show a slightly lower gain of 0.67 points.

UCR Seniors' Quantitative Skills By First Generation Status

49% 74% 53% 76%

Starting skills rated as good, very good, & excellent

Current skills rated as good, very good, & excellent

First Generation   Not First Generation

Indirect Evidence: Information Literacy

Two UCUES questions relate to information literacy. UCUES asks students to rate their "Library and online information research skills (e.g., finding books, articles, evaluating information sources)," and "Ability to design, conduct, and evaluate research" when they started at UCR and at the present time. We analyzed the results of both questions for this report and found some differences in student ratings.

We start with the UCUES question about "library and online information research skills (e.g., finding books, articles, evaluating information sources)." Upon entry, only 44% of UCR's graduating seniors rated their library and online information research skills as good or better. In their final terms on campus, 90% of these graduating seniors reported being proficient in library and online information
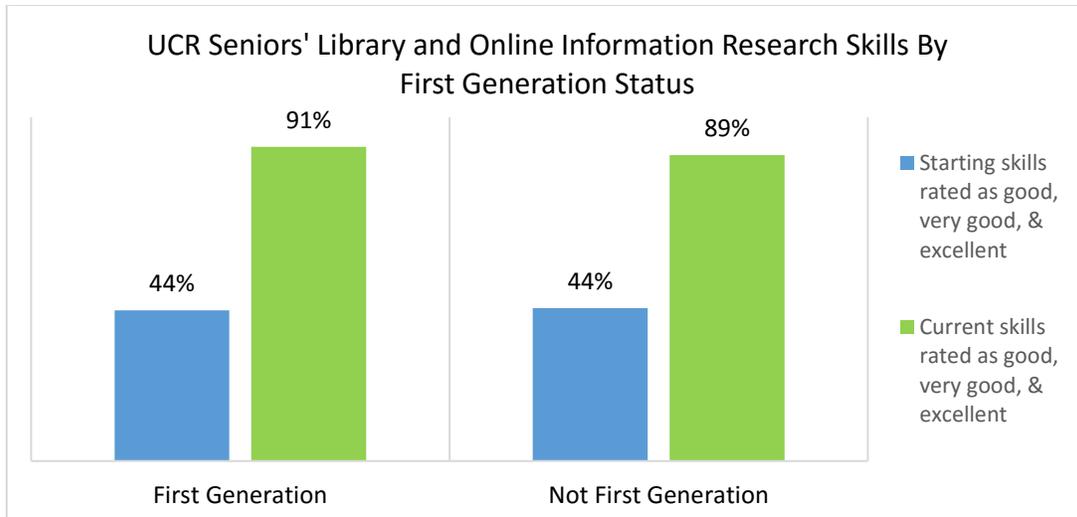
research skills, a 46% increase. All colleges and schools saw similarly high final levels and an increase in the number of proficient students. Students showed an average gain of 1.38 points, indicating improvement. Seniors in School of Business reported the highest gains, an average of 1.53 points while Bourns College of Engineering students reported the lowest gains of 1.05 points.
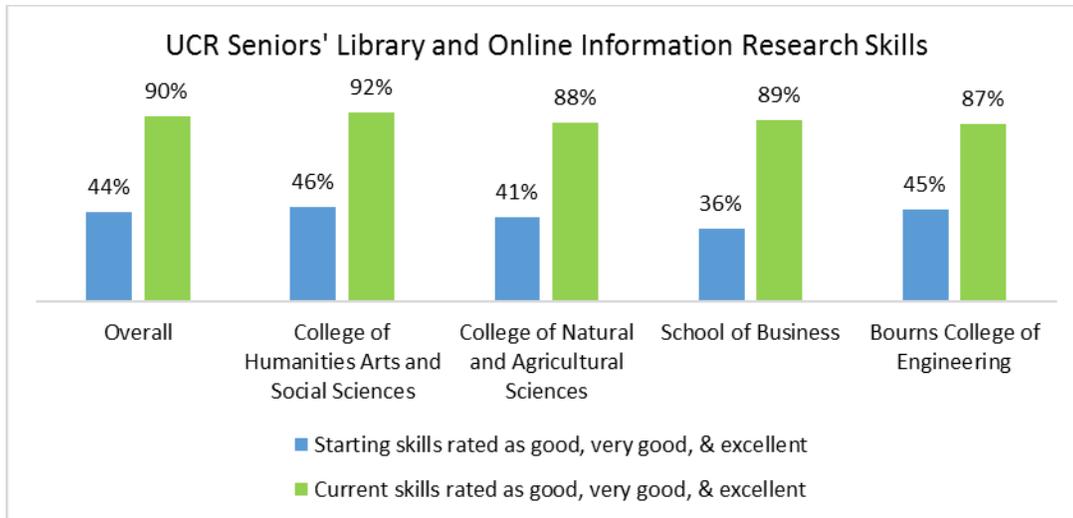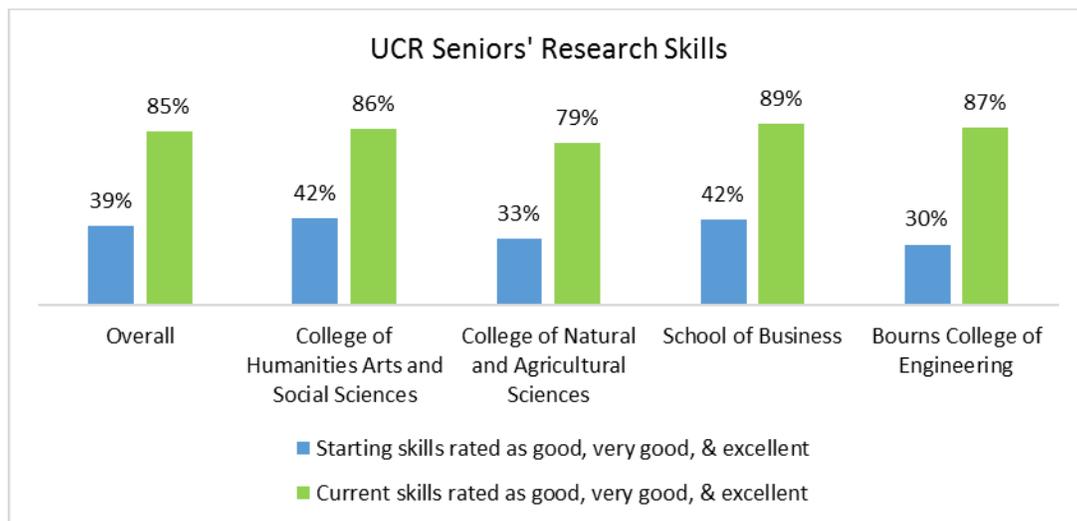

We also examined final levels and improvements in library and online information research skills by matriculation status. While 20% more transfer students come into UCR with self-reported proficiency than students starting as freshmen, both freshmen and transfer students graduate from UCR with similar rates of proficiency. Freshmen show a much higher average gain of 1.50 points than transfer students who show an average improvement of 1.07 points.
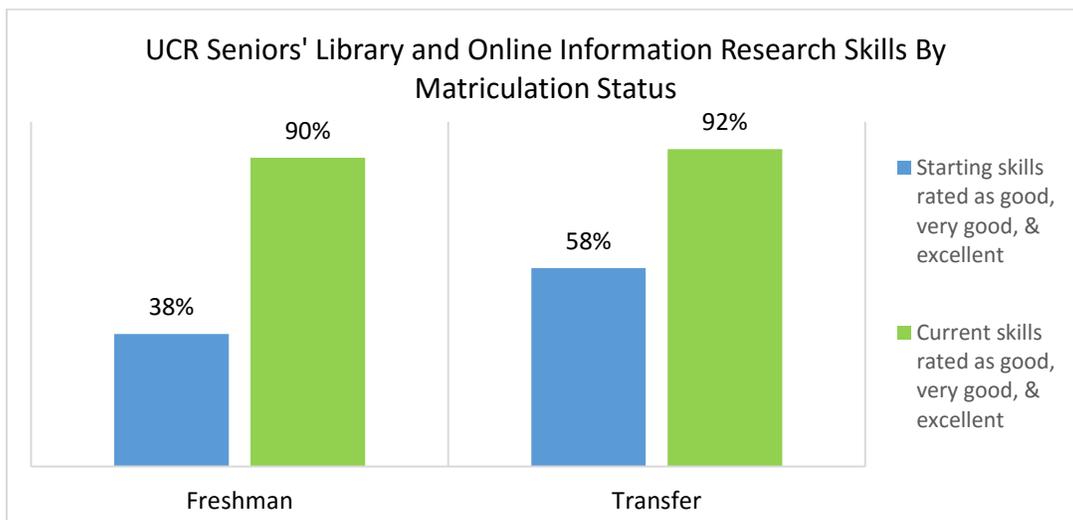
We also reviewed these data by first generation status. Both first-generation and non-first generation students come to UCR with similar rates of proficiency in library and online information research skills and both groups reported similar rates of proficiency at graduation. Of note, first generation students on average reported higher gains than their peers: a 1.47-point gain and 1.26-point gain in library and online information research skills between entry and graduation respectively.

UCR Seniors' Library and Online Information Research Skills By First Generation Status

First Generation: Starting skills 44%, Current skills 91%
Not First Generation: Starting skills 44%, Current skills 89%

Legend:
- Starting skills rated as good, very good, & excellent
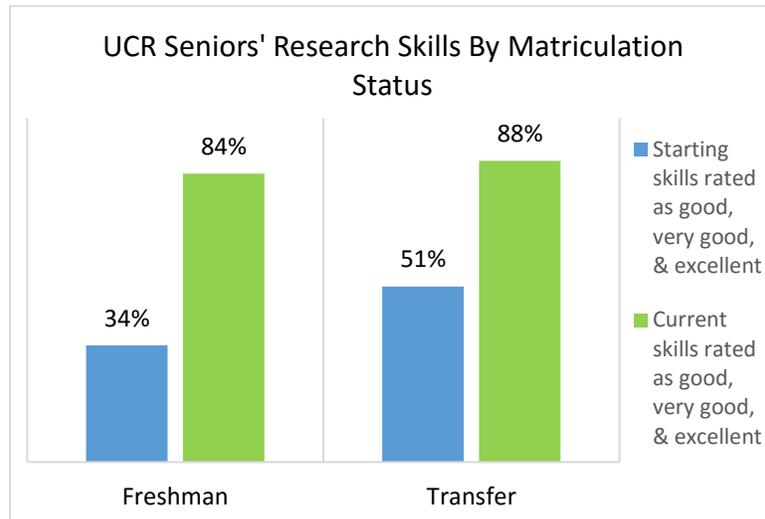- Current skills rated as good, very good, & excellent

Another measure of information literacy skills is a UCUES question about students' "ability to design, conduct, and evaluate research" at the time of entry and at the present time. Upon entry, only 39% of UCR's graduating seniors rated their research skills as good or better. In their final terms on campus, 85% of these graduating seniors reported proficiency, a 46% increase. All colleges saw improvements, but students in the Bourns College of Engineering reported the greatest gains, entering UCR with the lowest proficiency and achieving a 57% increase in students reporting proficiency at the end of their course of study. On average, UCR students showed a gain of 1.37 points, indicating significant improvement overall. Seniors in Bourns College of Engineering reported the highest gains, an average of 1.50 points while students in the School of Business showed the lowest but still respectable gains of 1.20 points.

UCR Seniors' Research Skills

	Overall	College of Humanities Arts and Social Sciences	College of Natural and Agricultural Sciences	School of Business	Bourns College of Engineering
Starting skills	39%	42%	33%	42%	30%
Current skills	85%	86%	79%	89%	87%

Legend:
- Starting skills rated as good, very good, & excellent
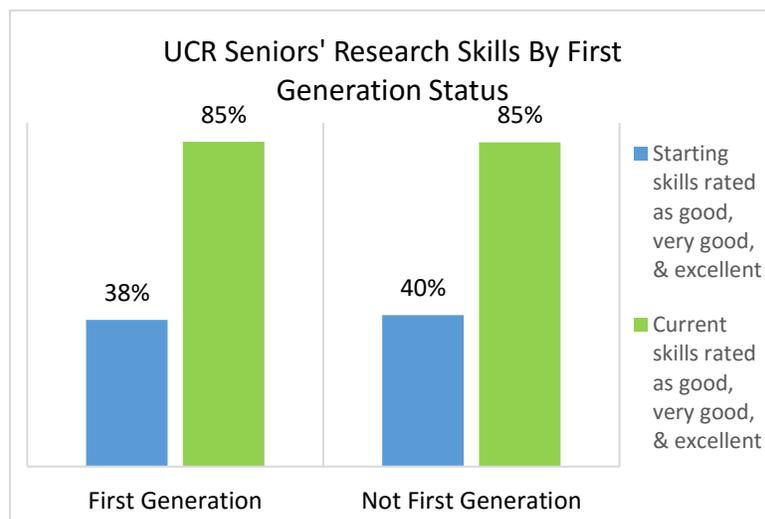- Current skills rated as good, very good, & excellent

We also examined final levels and improvements in research skills by matriculation status. While more transfer students come into UCR with self-reported proficiency than students starting as freshmen, both freshmen and transfer students graduate from UCR with similar rates of proficiency. Freshmen showed an average gain of 1.45 points while transfer students showed an average

improvement of 1.16 points. This is not surprising as transfer students should come to UCR with more preparation than freshman matriculants.

UCR Seniors' Research Skills By Matriculation Status

Freshman: Starting skills rated as good, very good, & excellent 34%; Current skills rated as good, very good, & excellent 84%

Transfer: Starting skills rated as good, very good, & excellent 51%; Current skills rated as good, very good, & excellent 88%

Similarly, we reviewed these data by first generation status. A slightly smaller percentage of first generation students rate their research skills as proficient at entry compared to non-first generation students. At time of graduation, 85% of first generation and non-first generation students reported proficiency in research skills. First generation students on average reported a 1.41-point gain in research skills between entry and graduation while non-first generation students reported similar gains of an average of 1.31 points.

UCR Seniors' Research Skills By First Generation Status

First Generation: Starting skills rated as good, very good, & excellent 38%; Current skills rated as good, very good, & excellent 85%

Not First Generation: Starting skills rated as good, very good, & excellent 40%; Current skills rated as good, very good, & excellent 85%

Indirect Evidence: Critical Thinking

We used one UCUES question to examine students' self-assessed critical thinking skills. The question asks students to rate their "critical thinking and analytical skills" at time of entry and currently. Upon entry, 56% of UCR's graduating seniors rated their critical thinking and analytical skills as good or better. In their final terms on campus, 95% of these graduating seniors reported being proficient in

critical thinking and analytical skills, a 39% increase. All colleges saw similar improvements. Students showed an average gain of 1.17 points, indicating improvement. Seniors in College of Humanities, Arts, and Social Sciences and School of Business reported the highest gains, an average of 1.23 and 1.22 points, respectively. College of Natural and Agricultural Sciences students reported the lowest gains of 0.99 points.
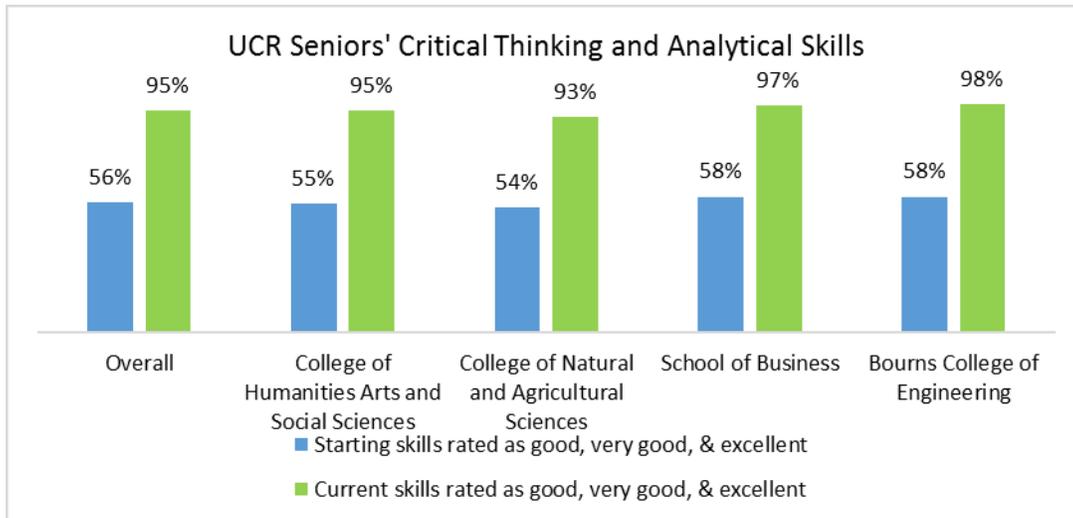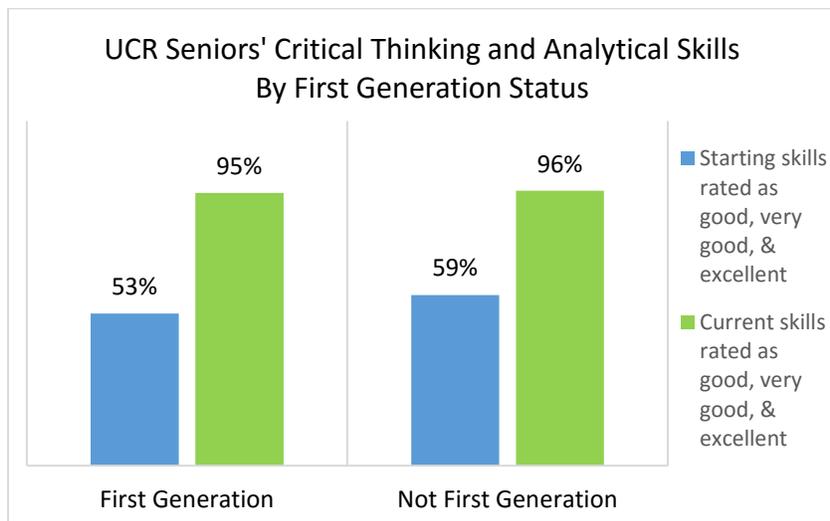

We also examined final levels and improvements in critical thinking and analytical skills by matriculation status. While a significantly higher percentage of transfer students come into UCR with self-reported proficiency in critical thinking and analytical skills compared to students starting as freshmen, both freshmen and transfer students graduate from UCR with similar rates of proficiency. Freshmen showed an average gain of 1.25 points while transfer students showed an average improvement of 0.96 points. This difference is not surprising as transfer students come to UCR with more academic preparation and take fewer courses than freshman matriculants.
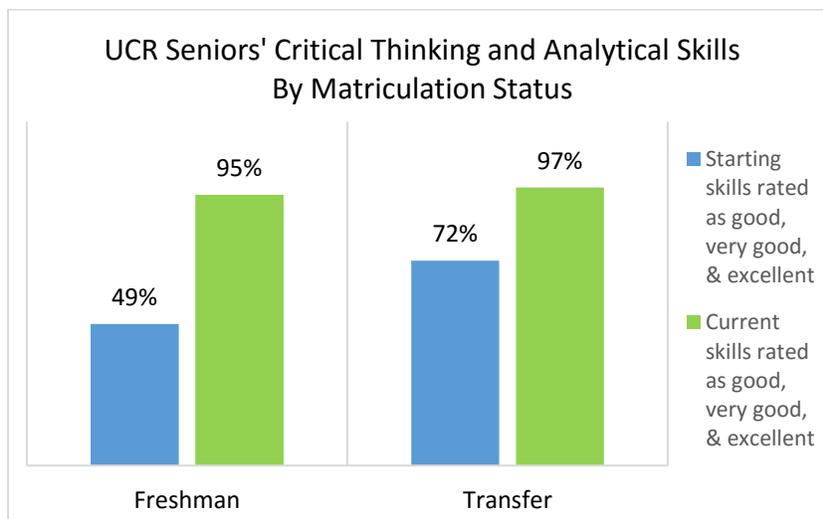
Similarly, we review these data by first generation status. About 6% fewer first generation students rate their critical thinking and analytical skills as proficient at entry compared to non-first generation students. At time of graduation, first generation and non-first generation students report

similar proficiency in critical thinking and analytical skills. First generation students on average report a 1.21-point gain in critical thinking and analytical skills between entry and graduation while non-first generation students reported a 1.11-point gain.

UCR Seniors' Critical Thinking and Analytical Skills By First Generation Status

First Generation: Starting skills rated as good, very good, & excellent = 53%; Current skills rated as good, very good, & excellent = 95%

Not First Generation: Starting skills rated as good, very good, & excellent = 59%; Current skills rated as good, very good, & excellent = 96%

Conclusion: Self-reported Proficiency in Core Competencies

About 90% of graduating seniors reported good or better skills in written communication, oral communication, information literacy, and critical thinking Core Competencies. We found that the vast majority (86-99%) of graduating seniors reported good or better skills in quantitative reasoning in all colleges except CHASS where two-thirds of graduates report proficiency in this area.

Quantitative Reasoning is scheduled to be the core competency of focus for 2018-19. We anticipate programs focused in the humanities and arts may have the biggest challenge with evaluating quantitative reasoning as most of their students gain exposure to quantitative reasoning through general education coursework. We have already received multiple questions from faculty in these programs about how best to incorporate quantitative reasoning into their assessment plans.

The survey evidence strongly suggests that during their studies at UCR individual students improve their proficiencies across all core competencies as reported by graduating seniors. Core competencies in quantitative literacy and information literacy with particular focus on research skills still have much room to grow. All remaining areas have reached at least a 90% proficiency rate as reported by seniors. Quantitative literacy curriculum, especially for students who start as freshmen or in CHASS at UCR, and development of research skills should be of particular importance to the Academic Senate General Education review committee as they consider how UCR's General Education requirements should ensure students gain a well-rounded education. The campus Academic Senate is taking on a review and potential restructuring of the general education curriculum starting in Fall 2018. A committee and its charge are currently being developed by Academic Senate Chair Rodriguez.