**NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY**

**Program Assessment and Improvement Report**
**Department of Graphic Design Technology**
**Bachelor of Science in Graphic Communication Systems**

Five full-time (3 tenured and tenure track (core); 1 of the 3 just added after reporting period)) and four part-time (non-core) Graphic Design Technology faculty deliver the BS in Graphic Communication Systems program. Located in the College of Science and Technology, it follows University's guidelines for assessing educational programs. The mission of the Department of Graphic Design Technology is to develop media agile, productive and problem-solving professionals for industries related to Design Drafting, Media Design, and Graphic Design.

## 1. Expected Outcomes for the Educational Program and Its Student Learning Outcomes

### a. Program Outcomes

(1) The BS program in Graphic Communication Systems will retain its accreditation by the Association for Technology, Management, and Applied Engineering.
The Program's accreditation was reaffirmed in 2016 for a seven-year cycle.
Subordinate Program Outcomes Contributing to Reaccreditation

a) Develop sustainable interdisciplinary research and add scholarships.
b) Achieve excellence in academic effectiveness and efficiency.
c) Create a culture of service and civic engagement.
d) Strengthen laboratory facilities and equipment.

### b. Student Learning Outcomes

(1) Communication: Graduating students will be able to speak clearly and accurately about design related content.
(2.1) Critical Thinking: Graduating students will be able to solve technical problems.
(2.2) Critical Thinking: Graduating students will be able to critique a design based on design criteria.
(3) Disciplinary Expertise: Graduating students will be able to apply the principles and elements of design.
(4) Research/Creativity: Graduating students will be able to design a true innovation based on research and development.

## 2. Analysis of Expected Program Outcomes Assessment

### a. Program Outcomes

The four program outcomes for the BS in Graphic Communication Systems are summarized in **Table 1**, showing the relationship between the outcomes, the

assessment, the results, and the improvements made. A narrative follows the table, and the narrative provides additional explanation so the "meaning" of the data is clear.

**Table 1: Program Outcomes, Assessments, and Improvements**

| Name of Program | Program Outcome | Method of Assessment | Results of Assessment | Use of Assessment Results for Improvement |
|---|---|---|---|---|
| BS in Graphic Communication Systems (GCS) | (1)(a) The BS in GCS will develop sustainable interdisciplinary research and add scholarships. | This outcome is measured by the:<br>• Number of grants submitted.<br>• Number of grants awarded.<br>• Number of publications and presentations.<br>Target: 2 grants per faculty member and presentation and article per year<br>• Amount donated to the Program.<br>Target: $25K, one scholarship account | **Target not met.**<br>For the academic years 16-17, 17-18, 18-19, the two GCS core faculty:<br>• Submitted 5 grants as PI for $995,675.<br>• Submitted 5 grants as Co-PI for about $21.2M.<br>• Were awarded 1 grant as PI for $20.9K with 1 grant pending.<br>• Were awarded 1 grant as Co-PI for $167K with 1 grant pending.<br>• Presented at 13 refereed conferences.<br>• Published 2 refereed conference proceedings.<br>$250K scholarship proposal to an alumnus. $0 raised.<br>$2000 raised via advisory board. | To improve the rate of production, the program:<br>• Provided 2 grant writing workshops<br>• Encouraged collaboration across campus.<br><br>Co-PI proposals increased, culminating in more proposals submitted as PI and an award as PI.<br><br>For scholarship money, the Program will task advisory board members and *key* program alumni to develop a targeted approach to scholarship fundraising. |
| | (1)(b) The BS in GCS will achieve excellence in academic effectiveness and efficiency. | The primary measures of this outcome are enrollment, retention, graduation, and placement rates.<br>Targets:<br>Enrollment: 3% growth<br>1st Year Retention: 78.6%<br>6 Year Graduation: 53.4%<br>Placement: 50% | **Targets met.**<br>**Enrollment:**<br>16-17 to 17-18,<br>• 132 majors to 111<br>17-18 to 18-19,<br>• 111 to 123<br>**First-year retention**<br>15-16 to 16-17,<br>• 92.9% to 75%<br>16-17 to 18-19<br>• 85.7% and 82.5% exceeding target.<br>**(4-year graduation:**<br>12-13 to 15-16 | **To improve enrollment**, even with target met:<br>• Changed targeted high schools.<br>• Changed Program from GCS to Computer Graphics Technology, User Experience, modernizing.<br>**To improve retention**, even with target met: |

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| | | | • 40.9% to 28.6%)<br>**6-year graduation**: 12-13 to 13-14<br>• 55.3% to 59.1% exceeding target.<br>**Placement** in a graduate program or related job had been documented on a five-year cycle per accreditation.<br>• 2016: 50%<br>The University has switched to an annual survey at 90 days past graduation.<br>2019: 60% | • Using intrusive and affirmative advising.<br>• Help students with tuition balances.<br>• Require extra advisement and planning for students not in good academic standing.<br>• Send early alerts to students and advisors.<br>• Training on student success for students not in good academic standing.<br>• Training for instructors on advisement and feedback.<br>**To improve graduation:**<br>Graduation rate will improve as retention improves.<br>**To improve placement:**<br>• Added User Experience professionals to advisory board.<br>• Partner, IBM is providing multiple student workshops per year.<br>• Added an extra career expo and portfolio review.<br>• Added two project management courses.<br>• Moved capstone from the last semester of the senior year to the first, thus finalizing portfolios in time to look for jobs. |

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| | (1)(c) The BS in GCS will create a culture of service and civic engagement. | The number of community members/entities assisted by the Program. | Program majors and instructor, Ayal Eckstein, provided 73 different instances of graphic design service to 15 small businesses and 3 public schools, embedded in 7 different GCS courses. | Target met. |
| | (1)(d) The BS in GCS will strengthen laboratory facilities and equipment. | The reduction in the number of student complaints about computer operation. | Having added about $40K worth of powerful computers, installed in 1.5 labs, there are no longer any student complaints. | Target met. |

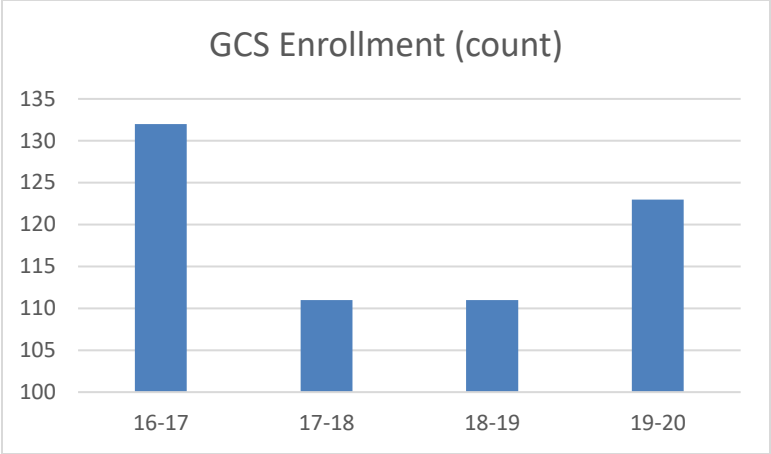
(1) The BS program in Graphic Communication Systems will retain its accreditation by the Association for Technology, Management, and Applied Engineering.

a) Develop sustainable interdisciplinary research and add scholarships.

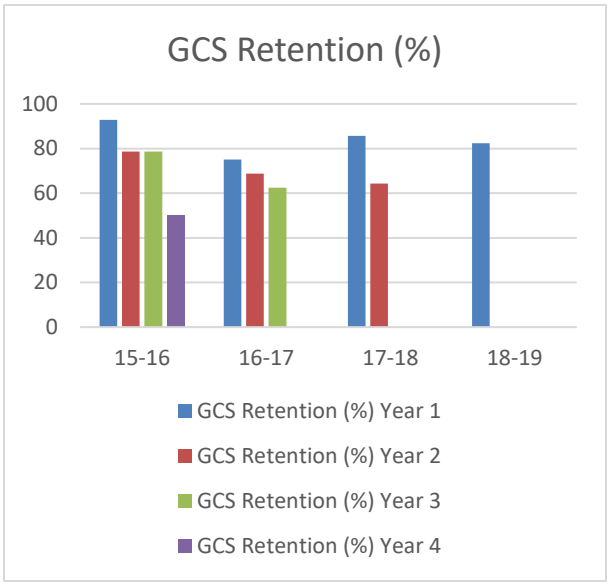
There are relatively fewer funding opportunities in graphic design fields. Following five retirements, tenured (core) faculty in the Program were very busy teaching. As a result, scholarly productivity dropped. While still making sure that much more than 25% of Program courses were being taught by instructors with terminal degrees (core and non-core), more instructors were hired. Gradually, scholarly production is improving (more proposals). An additional tenure track professor was just hired. Just one grant as PI and one grant as Co-PI must improve - and should, now that there was retraining and a culture of research collaboration established. The Program's change in focus to User Experience will open more grant and research opportunities. In turn, the new grants will naturally improve the publication rate, as these projects generate research knowledge. The lack of scholarship fundraising, $2,000, should also improve as *key* alumni are tapped to lead a targeted fundraising effort.

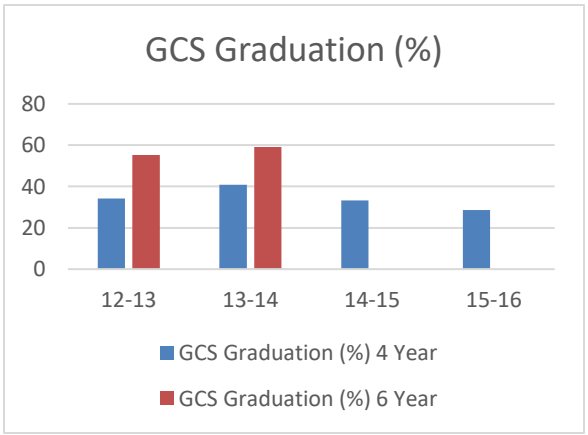
(1) The BS program in Graphic Communication Systems will retain its accreditation by the Association for Technology, Management, and Applied Engineering.

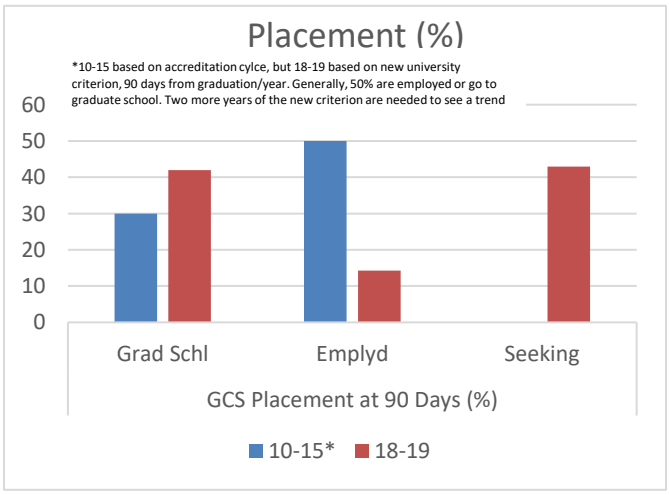
b) Achieve excellence in academic effectiveness and efficiency.




Since the beginning of the University's big push to improve student success metrics, the Program introduced targeted recruitment, intrusive and affirmative advisement, advisement training, and new requirements for student development that engage students who are not making satisfactory academic progress. As a result, the Program is now meeting and exceeding its enrollment, retention, graduation, and placement targets. The new approach to measuring and documenting the placement of students will require two more years of measurement before any trend can be observed, but the Program has already modernized its focus, added new advisory board members, and provided students with increased career readiness development.



(1) The BS program in Graphic Communication Systems will retain its accreditation by the Association for Technology, Management, and Applied Engineering.

c) Create a culture of service and civic engagement.

Mr. Eckstein teaches courses that every major takes. That is why the Program used his courses as the embedded community service courses. Having applied for and achieved Carnegie Community Engagement status for the University, as a committee member on that effort, the Program's chair noticed that embedded efforts are those that are the most sustained over time. Thus, the Program exceeded its target with Program majors and instructor, Ayal Eckstein, providing 73 different instances of graphic design service to 15 small businesses and 3 public schools, embedded in 7 different GCS courses. These efforts help address inequity and barriers.

(1) The BS program in Graphic Communication Systems will retain its accreditation by the Association for Technology, Management, and Applied Engineering.

d) Strengthen laboratory facilities and equipment.

At some point in the past assessment cycle, our students' work and software overhead requirements started to exceed the capabilities of the "off the shelf" computers the Program was providing for laboratories. When rendering projects, computers were locking up and failing on projects at a high rate. The University found Title III funding that allowed the Program to upgrade to faster, more powerful computers that do not lock up. The $40K worth of equipment has completely stopped this failure.

## b. Student Learning Outcomes

The four student learning outcomes for the BS in Graphic Communication Systems program are summarized in **Table 2**, showing the relationship between the outcomes, the assessment and results, and the improvements made. A narrative follows the table explaining the meaning of the findings. *The student learning outcomes (SLOs) are measured based on key assessments mostly in GCS 461, Capstone, and the various rubrics used to measure the key assessments are based on the performance that would be expected of a first-year professional in the design professions. The targets listed were 80% of students scoring Proficient or higher on a rubric with a scale of 1 to 4, with 3 being Proficient. Later in 18-19, that target was increased to 90%*. Although the academic year 2019-2020 is not included in the cycle covered by this report, data from

that year is shown, to close the loop on two action plans. Additionally, results of an action plan that precedes this cycle is included to show continuous improvement.

**Table 2. Student Learning Outcomes, Assessments, and Improvements**

| Name of Program | Program Outcome | Method of Assessment | Results of Assessment | Use of Assessment Results for Improvement |
|---|---|---|---|---|
| BS in Graphic Communication Systems (GCS) | SLO 1 Communication: Graduating students will be able to speak clearly and accurately about design related content. | Direct Measurement<br>Key Assessment: Portfolio Presentation<br>Measurement: rubric<br>Target 16-18: 80%<br>Target 18-19: 90% | **16-17:** Target Met<br>Capstone: GCS 461<br>Oral:100% proficient; N = 25<br>Written:94% proficient, N = 18<br>**17-18:** Target Met<br>Capstone: GCS 461<br>Oral:100% proficient; N = 11<br>Written:94% proficient, N = 18<br>**18-19:** Target Not Met<br>Capstone: GCS 461<br>Oral:80% fall, 73% spr proficient; N = 21 | **2018-2019:**<br>Fall: 2 of 10 students needed better delivery in oral presentation.<br>Spring: 3 of 11 students failed to express themselves effectively, poor wording choices, grammatical errors.<br>**Action Plan:** *Defer* in favor of plan for SLOs 2.2 & 3, for which the targets were also not met. |
| | SLO 2.1 Critical Thinking: Graduating students will be able to solve technical problems. | Direct Measurement<br>Key Assessment: Design Project<br>Measurement: rubric<br>Target 16-18: 80%<br>Target 18-19: 90% | **16-17:** Target Met<br>Capstone: GCS 461<br>100% proficient; N = 18<br>**17-18:** Target Not Met<br>Capstone: GCS 426<br>75% proficient; N = 9<br>**18-19:** Target Not Met<br>Capstone: GCS 461<br>60% fall, N = 10<br>91% spr, N = 11<br>**19-20:** Target Met<br>Capstone: GCS 461<br>93% fall, N = 17 | **17-18:**<br>The capstone level course was animation. The development of animation and the troubleshooting and planning problem solutions are not necessarily second nature.<br>**Action Plan:** Based on the discussion at our continuous improvement meeting we are implementing a problem-solving sequence in all GCS classes, starting in GCS 281, where we will teach it formally, all other classes will reiterate it.<br>**Action Plan Results:** As the 18-19 data show, students in the fall section of capstone still seemed to lack the ability to problem-solve. |

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| | | | | **18-19:** Students lack the ability to logically sequence a problem-solving sequence. **Action Plan:** Combined with plan for SLOs 2.2 & 3, for which the targets were also not met, but which will also address this finding. **Action Plan Results:** Data from the fall 19 section of capstone show that students are now proficient at problem solving, thus, showing a program improvement based on directly measured student achievement data. |
| | SLO 2.2 Critical Thinking: Graduating students will be able to critique a design based on design criteria. | Direct Measurement Key Assessment: Portfolio Critique Measurement: rubric Target 16-18: 80% Target 18-19: 90% | **16-17:** Target Met Capstone: GCS 461 100% proficient; N = 25 **17-18:** Target Met Capstone: GCS 461 100% proficient; N = 11 **18-19:** Target Not Met Capstone: GCS 461 70% fall, N = 10 **19-20:** Target Met Capstone: GCS 461 93% fall, N = 17 | **18-19:** Students were not explicit enough in critique to convince reviewer that they are self-aware of the application of design principles and elements. **Action Plan:** For each project assigned: (1) have students say the design/problem-solving prompts out loud, and (2) use the design prompts as a guide during in-class self-critique. **Action Plan Results:** Data from the fall 19 section of capstone show that students are now proficient at critique, thus showing a program improvement based on directly measured student achievement data. |

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| | SLO 3 Disciplinary Expertise: Graduating students will be able to apply the principles and elements of design. | Direct Measurement<br>Key Assessment: Design Projects in Portfolio<br>Measurement: rubric<br>Target 16-18: 80%<br>Target 18-19: 90% | **16-17:** Target Met<br>Capstone: GCS 461<br>96% proficient; N = 25<br>**17-18:** Target Met<br>Capstone: GCS 461<br>100% proficient; N = 11<br>**18-19:** Target Not Met<br>Capstone: GCS 461<br>100% fall, N = 10, 88% spr, N = 11<br>**19-20:** Target Met<br>Capstone: GCS 461<br>93% fall, N = 17 | **18-19:**<br>Students were not explicit enough in critique to convince reviewer that they are self-aware of the application of design principles and elements.<br>**Action Plan:** For each project assigned: (1) have students say the design/problem-solving prompts out loud, and (2) use the design prompts as a guide during in-class self-critique.<br>**Action Plan Results:**<br>Data from the fall 19 section of capstone show that students are now proficient at applying design principles and elements, thus showing a program improvement based on directly measured student achievement data. |
| | SLO 4 Research/Creativity: Graduating students will be able to design a true innovation based on research and development. | Direct Measurement<br>Key Assessment: Design Projects in Portfolio<br>Measurement: rubric<br>Target 16-18: 80%<br>Target 18-19: 90% | **16-17:** Target Met<br>Capstone: GCS 461<br>100% proficient; N = 25<br>**17-18:** Target Met<br>Capstone: GCS 461<br>100% proficient; N = 11<br>**18-19:** Target Met<br>Capstone: GCS 461<br>90% fall, N = 10, 91% spr, N = 11 | **15-16:**<br>**Action Plan:** Students had not performed well on Innovation, SLO 4. Require product Innovation in final projects for technical courses.<br>**Action Plan Results:**<br>Data from the 16-17 section of capstone show that students are now proficient at designing innovations, thus showing a program improvement based on directly measured student achievement data.<br>**16-19:**<br>Targets met. |

(1) Communication: Graduating students will be able to speak clearly and accurately about design related content.

The key assessment for this direct measurement was the student's ability to *present* the capstone portfolio. It was measured using a four-point rubric based on the performance one would expect of a first-year design professional on the job, with a 3 representing proficient. Notice the target was not met for 18-19, but the Program decided to defer action on this finding in order to focus on an action plan that addresses SLOs 2.1, 2.2, and 3.

**Table 3: Performance in Communication—Percentage at Target**

| Academic Year | Proficiency Target | Communication |
|---|---|---|
| 2016-2017 | 80% | 100% |
| 2017-2018 | 80% | 100% |
| 2018-2019 | 90% | 80%/73% |

(2) 2.1 Critical Thinking: Graduating students will be able to solve technical problems.

The key assessment for this direct measurement was the student's ability to solve problems as reflected in the design project in the capstone portfolio. It was measured using a four-point rubric based on the performance one would expect of a first-year design professional on the job, with a 3 representing proficient. The target was not met for 17-18, and a failed action plan was implemented for 18-19. The target remained unmet for 18-19. The action plan was altered to also address findings for SLOs 2.2 and 3 for 18-19. However, fall 19 findings now show that students are proficient, target met.

(2) 2.2 Critical Thinking: Graduating students will be able to critique a design based on design criteria.

The key assessment for this direct measurement was the student's ability to critique a design in the capstone portfolio. It was measured using a four-point rubric based on the performance one would expect of a first-year design professional on the job, with a 3 representing proficient. The target was not met for 18-19, and a successful action plan was implemented; fall 19 findings now show that students are proficient, target met.

**Table 4: Performance in Critical Thinking —Percentage at Target**

| Academic Year | Proficiency Target | Critical Thinking |
|---|---|---|
| **SLO 2.1** | | |
| 2016-2017 | 80% | 100% |
| 2017-2018 | 80% | 75% |

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|---|---|---|
| 2018-2019 | 90% | 60%/91% |
| 2019-2020 | 90% | 93% |
| **SLO 2.2** | | |
| 2016-2017 | 80% | 100% |
| 2017-2018 | 80% | 100% |
| 2018-2019 | 90% | 70% |
| 2019-2020 | 90% | 93% |

(3) Disciplinary Expertise: Graduating students will be able to apply the principles and elements of design.

The key assessment for this direct measurement was the student's ability to apply design principles and elements in the capstone portfolio. It was measured using a four-point rubric based on the performance one would expect of a first-year design professional on the job, with a 3 representing proficient. The target was not met of 18-19, and a successful action plan was implemented; fall 19 findings now show that students are proficient, target met.

**Table 5: Performance in Disciplinary Expertise (Design Application)—Percentage at Target**

| Academic Year | Proficiency Target | Disciplinary Expertise |
|---|---|---|
| 2016-2017 | 80% | 96% |
| 2017-2018 | 80% | 100% |
| 2018-2019 | 90% | 100%/88% |
| 2019-2020 | 90% | 93% |

(4) Research/Creativity: Graduating students will be able to design a true innovation based on research and development.

The key assessment for this direct measurement was the student's ability to implement an innovation in the design project in the capstone portfolio. It was measured using a four-point rubric based on the performance one would expect of a first-year design professional on the job, with a 3 representing proficient. The target was not met in a junior level course in 15-16, one year preceding the term of this report, but it is included here to show that in 16-17 a successful action plan was implemented; target met.

**Table 6: Performance in Research/Creativity (Innovation)—Percentage Meeting Target**

| Academic Year | Proficiency Target | Research/Creativity |
|---|---|---|
| 2015-2016 | 80% | 88% (junior level course) |
| 2016-2017 | 80% | 96% |
| 2017-2018 | 80% | 100% |
| 2018-2019 | 90% | 100%/88% |

**3. Evidence of Program and SLO Improvements Using the Results of the Assessment (Closing the Loop)**

**a. Program Outcomes Improvements (Closing the Loop)**

(1) The BS program in Graphic Communication Systems will retain its accreditation by the Association for Technology, Management, and Applied Engineering.
The Program's accreditation was reaffirmed in 2016 for a seven-year cycle.
Subordinate Program Outcomes Contributing to Reaccreditation

a) Develop sustainable interdisciplinary research and add scholarships.

While the Program has not met its target on research productivity and fundraising, it did finally succeed at being awarded two grants and $2,000 worth of scholarship money. As a result of not meeting the target, it has hired a much-needed core faculty member, provided grant writing workshops, participated in developing a culture of collaboration, changed the Program's focus to User Experience, and redesigned the fundraising approach. While targets are not met, there has been improvement, so the "loop is starting to close."

b) Achieve excellence in academic effectiveness and efficiency.

Prior to the University setting target metrics for student success, the Program student success metrics would not have met those targets that were eventually set. Once the University's started its big push to reach those established targets, the Program succeeded at meeting them. That includes enrollment, first-year retention, six-year graduation, and placement. The program has left in place efforts like IBM User Experience career readiness workshops for students and various requirements that engage students in development who do not meet satisfactory academic progress. Training for instructors and advisors in student engagement, provision of timely feedback, and intrusive and affirmative advisement are truly keys to these successes.

c) Create a culture of service and civic engagement.

The Program is meeting its sustained, curriculum embedded community engagement, and has no plans currently to change that process.

d) Strengthen laboratory facilities and equipment.

With $40K in new, one-time funding, the Program now has computers that are well suited for design work, and there are no longer student complaints because of computers locking up.

**b. Student Learning Outcome Improvements (Closing the Loop)**

(1) Communication: Graduating students will be able to speak clearly and accurately about design related content.

While the Program failed to meet the target for communication in 18-19, it opted to not address the failure through a formal action plan. This is because targets were also not met in Disciplinary Expertise and Critical Thinking. The Program instructors have agreed, however, to emphasize better communication for the time being.

(2) (2.1) Critical Thinking: Graduating students will be able to solve technical problems.

The Program failed to meet this target in 17-18 and designed an action plan that focused students on sequencing their problem-solving processes more logically. The action plan did not succeed the following year, 18-19, and it was combined with the action plan designed in 18-19 to address unmet targets for Critical Thinking (Critique) and Disciplinary Expertise (Design Principles and Elements Application). As of 19-20, the target was met. This took two years, but it makes sense that the frequency of instruction in problem solving may have needed to be extended in order for students to transfer it to the capstone level. The Program "closed the loop" on assessment in this case.

(2) (2.2) Critical Thinking: Graduating students will be able to critique a design based on design criteria.

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The Program failed to meet this target in 18-19 and designed an action plan that focused students on (1) sequencing their problem-solving processes more logically (from SLO 2.1) and (2) helping students with critique by providing them with design prompts used in all critique sessions at lower levels and at capstone. As of 19-20, the target was met. This makes sense because problem-solving and design are interrelated. They are not rote, but when they start becoming second nature, the student is moving toward expertise. The Program "closed the loop" on assessment in this case.

(3) Disciplinary Expertise: Graduating students will be able to apply the principles and elements of design.

The same action plan described in 2.2 above was used to addressed this unmet target. It makes sense that a student's self-awareness of his/her use of critical thought to influence the design process and its outcomes, should transfer to his/her ability to transfer principles and elements of design to design works (application). The Program "closed the loop" on assessment in this case.

(4) Research/Creativity: Graduating students will be able to design a true innovation based on research and development.

The action plan on innovation, designed in response to the 15-16 unmet target, succeeded the following year, 16-17. Prior to the action plan, instructors were not teaching innovation explicitly. The action plan required explicit instruction and a rubric, both of which made the Program's expectations clear to students.

Submitted by,
Dr. Vincent Childress
March 27, 2020