



# Problem-Solving With an Emphasis on Communication

## **A Quality Enhancement Plan**

Submitted to Members of the Reaffirmation Committee of the Southern Association of Colleges and Schools – Commission on Colleges by

Wake Technical Community College Dr. Scott Ralls, College President August 19, 2024

## TABLE OF CONTENTS

| Figures  | 4  |
|--|----|
| Tables   | 5  |
| Letter from the President  | 6  |
| Executive Summary  | 7  |
| ntroduction  | 8  |
| Гһе Торіс  | 8  |
| Topic Identified Through Institutional Planning                                      | 8  |
| Topic Identified Using a Representative Process                                      | 9  |
| Phase I –Topic Identification.   | 9  |
| Topic Identified Based on Institutional Needs  | 12 |
| Learning Data  | 12 |
| Labor Market Data  | 17 |
| Topic Developed  | 19 |
| Defining   | 20 |
| Additional Data Analysis   | 20 |
| Conclusions from Data Analysis   | 22 |
| Topic Research   | 23 |
| Teaching Methods   | 23 |
| Problem-Solving in Different Academic Disciplines                                    | 23 |
| Faculty Professional Learning and Support  | 25 |
| Reaching All Students - Common Terms, Definitions and Student-Friendly Communication | 26 |
| Digital Badging  | 26 |
| Strategies and Tactics   | 26 |
| Develop College-Wide Terms, Definitions, and Process                                 | 27 |
| Support Faculty and Staff Through Professional Learning                              | 29 |
| Common Language and Process (Required)   | 29 |
| College Standards (Required)   | 29 |
| Student-Friendly Language (Optional)   | 30 |
| Support Faculty Supervisors  | 30 |
| Count Modules Toward Professional Development  | 30 |
| Teach and Assess Problem-Solving.  | 31 |
| Teach and Assess Problem-Solving in Each Degree Program                              | 31 |
| Teach and Assess Problem-Solving in ACA Courses                                      | 31 |

| Certify Any Course That Includes the Problem-Solving Process   | 31 |
|--|----|
| Add Problem-Solving to Work-Based Learning (WBL) Course Shells | 31 |
| Develop Career-Specific Course Activities                      | 32 |
| Incentivize Teaching and Learning Through Digital Badging      | 32 |
| Students   | 32 |
| Faculty  | 32 |
| Staff  | 32 |
| Reinforce Problem-Solving Through Student Support Services     | 32 |
| Tutoring and Learning Center (TLC)                             | 32 |
| Advising Care Teams  | 32 |
| Enrollment and Student Services                                | 33 |
| Library Services   | 33 |
| Other Supportive Activities Already in Progress                | 33 |
| Student-Centered Syllabus Template                             | 33 |
| Digital Badging Pilot  | 33 |
| Focus  | 33 |
| Summative Outcomes   | 34 |
| Changes, Gains and Benefits for Students                       | 34 |
| Challenges and Barriers  | 39 |
| Resources  | 39 |
| Organizational Structure                                       | 40 |
| Implementation Timeline  | 44 |
| Budget   | 51 |
| Broad-Based Support  | 57 |
| Faculty  | 57 |
| Faculty Supervisors  | 58 |
| Student Support Personnel                                      | 58 |
| Students   | 57 |
| Communication  | 58 |
| Assessment and Evaluation                                      | 58 |
| Assessment Team  | 58 |
| QEP Evaluation Plan  | 59 |
| Formative Assessment   | 59 |
| Summative Assessment   | 63 |
| Implementation Checks  | 67 |

| References  | 69 |
|---|----|
| Appendix A  | 72 |
| Acknowledgements  | 72 |
| QEP-Discovery Steering Committee (2022-2023)  | 72 |
| Appendix B  | 73 |
| QEP-Development Steering Committee (2023-2024)  | 73 |
| QEP-Development Subcommittees (2024)  | 73 |
| Appendix C  | 74 |
| QEP Assessment Team   | 74 |
| General Education Assessment Team   | 74 |
| Appendix D  | 75 |
| The following colleagues contributed to the feedback, review, writing and revision of the QEP:. | 75 |
| Appendix E  | 77 |
| Work-Based Learning: Employer's Evaluation Survey   | 77 |
| Appendix F  | 78 |
| Work-Based Learning: Survey Analysis Report   | 78 |
| Appendix G  | 79 |
| General Education Problem-Solving Standard  | 79 |
| Appendix H  | 81 |
| Results of Spring 2024 Student Poll   | 81 |
| Introduction/Background:  | 81 |
| Conclusion  | 81 |
| Appendix I  | 82 |
| AAS Programs That Will Use Program-Specific Courses for Direct Assessment for Outcome 5         | 82 |

## **FIGURES**

| Figure 1. Phases of the QEP   | 9   |
|---|-----|
| Figure 2. QEP Topic Approval Process  | 11  |
| Figure 3. Wake Tech Community College Course Dashboard showing combined student success rates f all courses that did not meet targets for Problem-Solving. The data include BIO-161, BIO-168, CHM-1 MAT-121, MAT-143, MAT-152, MAT-171, MAT-172, MAT-263, MAT-271, PSY-150 (2023, March 23) Retrieved from internal Portal website: https://waketechedu.sharepoint.com/employee/data-services/SitePages/Course.aspx   | 30, |
| Figure 4. Wake Tech Community College Course Dashboard showing combined student success rates f all Career Programs courses measuring Problem-Solving in Fall 2022: The data include SGD-212, OST 286, CTS-115m CSC-121, CSC-134, BAS-121, BAS-270, GRD-246, AHR-211, ELC-114, CST-241, CEG-211, WLD-262, BPA 250, CUL 250, COS 114, ACC 215, EDU 284, BUS 115. Retrieved from internal Portal website: https://waketechedu.sharepoint.com/employee/data-services/SitePages/Course.aspx | Γ-  |
| Figure 5. Wake Tech Graduate Survey Results 2022-2023   | 16  |
| Problem-Solving   | 16  |
| Figure 6. Top 10 Employability Skills (Sarfaz et al., 2018)   | 18  |
| Figure 7. Phase II Timeline   | 20  |
| Figure 8. Analysis of WBL Survey Data for the 2022-23 Academic Year   | 21  |
| Figure 9. Comparison of CCSSE and CCFSSE Responses to "How the Student's Experience at Wake Tech Contributed to Their Knowledge, Skill, and Personal Development in":   | 22  |
| Figure 10. Wake Tech Process Mapped   | 28  |
| Figure 11. HVAC/refrigeration Process Mapped to the Wake Tech Process   | 29  |
| Figure 12. Mean Scores for Problem-Solving/Decision-Making by Division  | 65  |

## **TABLES**

| Table 1. Strategic objectives associated with Learning Goal and QEP  | 8  |
|--|----|
| Table 2. Topic survey results.   | 10 |
| Table 3. Percentage of assessed General Education courses meeting "Problem-Solving" core compete target (70%). | •  |
| Table 4. Percentage of assessed Career Programs courses meeting "Problem-Solving" core competent target (70%). | •  |
| Table 5. Wake Tech Mean Scores Compared to Cohorts   | 17 |
| Table 6. Job Posting Analytics Report, Lightcast Q3 2024   | 18 |
| Table 7. Regional In-demand skills needed in top industries (by number of jobs)                                | 19 |
| Table 8. QEP Logic Model   | 35 |
| Table 9. Key Roles   | 41 |
| Table 10. QEP Implementation Timeline  | 44 |
| Table 11. QEP Budget (2025 – 2030 by Academic Year)  | 52 |
| Table 12. Annual Implementation Check-ins for Modules and Digital Badges                                       | 68 |



August 16, 2024

Dear Members of the Reaffirmation Committee of the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC):

I am proud to transmit our newest Quality Enhancement Plan (QEP) as part of our 2025 decennial reaffirmation. Developed by a faculty-led process, "Solve It, Say It!" represents Wake Tech's dedication to the continuous improvement of student learning in fulfillment of our mission to provide equitable access to education that transforms lives through economic mobility and personal fulfillment.

Just a few weeks ago, I participated on a panel before the North Carolina State Board of Community Colleges with other North Carolina community college presidents as well as executives from two of North Carolina's fastest-growing technology companies. The Chair of the State Board put a question to the two executives, "What is the number one area where our community college graduates are lacking in the skills they need for your companies?" Without hesitation, one of the executives clearly proclaimed, "problem-solving skills."

Her response is consistent with the conclusion of a broad-based and representative group of Wake Tech faculty, staff, students, our Board of Trustees, and other area employers. Rapid changes in workforce needs, including proficiency with automation and artificial intelligence, will require our students to develop innovative solutions to future problems in their careers. However, while problem-solving skills are clearly some of the top skills employers value most, our research suggests students lack confidence and struggle in demonstrating them. By strengthening their problem-solving skills, students will be able to "ladder up" in a workforce that will increasingly demand resilience, creativity, and adaptability.

"Solve It, Say It!" aims to improve the ability of our students to solve and communicate complex problems. While problem-solving is not an easy area of learning to address, I agree with the faculty who developed it: It is the right area of learning to improve at the right time. This QEP is not only vital to improving our students' learning at Wake Tech but is also important to their upward mobility in their chosen careers. To ensure success, we have committed significant human and financial resources to implement and complete the plan.

We appreciate the time and talent you are lending us in your review of the "Solve It, Say It!" QEP. We look forward to discussing it with you during our on-site visit in October 2024.

Respectfully,

R. Scott Ralls, Ph.D., President

Wake Technical Community College

#### **EXECUTIVE SUMMARY**

Wake Technical Community College (Wake Tech) will fulfill the strategies prescribed in its *Reach 'n Rally Strategic Plan* by implementing a Quality Enhancement Plan (QEP) focused on improving students' problem-solving skills. A faculty discovery team arrived at this topic by reviewing data, collaborating with peers, departments, and divisions, and researching literature to discover an area of learning most in need of improvement. A faculty survey ranking four proposed topics led to *Problem-Solving with an Emphasis on Communication* as the area of learning that most needed to be addressed. The data showed a significant portion of general education courses that directly assess learning outcomes aligned with problem-solving did not meet the standards, and courses where problem-solving is taught did not meet performance targets for all demographic groups. Problem-solving is one of the top skills sought by employers in Wake County (Lightcast, 2024; Wake County Economic Development, 2024), and surveys of Wake Tech students (CCCSE, Spring 2022), graduates (Wake Tech, 2023), and employers (Wake Tech, 2023b) indicate we could do better at teaching problem-solving.

The faculty-led development team then reviewed the literature, defined, and refined the topic and created a problem-solving process that emphasized the importance of communication, leading to our QEP title: Solve It, Say It! Problem-Solving With an Emphasis on Communication. The literature showed that the most effective way to improve problem-solving skill is to teach a process and to provide the students with an opportunity to apply what they have learned (Stice, 2007). Accordingly, the team developed strategies that will enhance, extend, and accentuate the faculty's ability to teach a standardized problem-solving process to help students learn and apply problem-solving skills and develop solutions. Well-defined terms and student-friendly language will also help students learn the problem-solving in welcoming learning environments that reach across racial, ethnic, gender and ability differences. The application of the problem-solving process will be incentivized by providing students with a means of sharing their newly gained problem-solving competencies through a digital badging program.

The aim of this QEP is to accomplish the following summative outcomes:

- 1. Students will demonstrate the problem-solving process in their courses through graded learning assignments/assessments.
  - a. Target: 75% of students will demonstrate the problem-solving process through graded learning assignments/assessments by Spring 2030.
- 2. Students' problem-solving skills will improve because of their education at Wake Tech.
  - a. Target: 75% of students will indicate that their level of proficiency in problem-solving strongly improved by Spring 2030.
- 3. Employers will indicate that Wake Tech students are able to implement problem-solving skills in jobs and careers.
  - a. Target: 3.75 overall mean (between Very Good and Outstanding) for items in the Problem-Solving and Decision--Making category as indicated by Wake Tech employers by Spring 2030.

#### INTRODUCTION

As a publicly funded two-year college with a mission to provide equitable access to education that transforms lives through economic mobility and personal fulfillment. Wake Technical Community College (Wake Tech) has an open-door admissions policy and a strategic plan focusing the college on reaching students in every part of Wake County and rallying around them to go as far as their dreams, talents, and resilience take them.

Wake Tech is the largest of the 58 community colleges in North Carolina, serving more than 31,000 forcredit students in degree programs and 35,000 non-degree students each year. The student body in degree programs is diverse: 54% female, 51% students of color and 57% aged 18-24. A majority of degree students (64%) attended part-time and 22% were living in low economic health zones of Wake County during fall 2023.

Degree students can enroll in more than 250 associate degree, diploma, and certificate programs. In fall 2023, 48% of degree students were enrolled in University Transfer programs (Associate in Arts, Associate in Fine Arts, Associate in Science, Associate in Engineering, Associate in Arts/Science in Teacher Preparation) and 50% were enrolled in Associate in Applied Science programs (Career Programs). Depending on their programs, students take courses on the college's main campus and/or eight off-campus instructional sites, including high school students dually enrolled in two college and career academies. During fall 2023, 75% of students took at least one online course.

In support of its mission and strategic plan, Wake Tech's Quality Enhancement Plan (QEP) will focus on 1) improving students' problem-solving skills and 2) supporting faculty and staff in building problem-solving exercises and guidance into their courses and services. Students, faculty, and staff will have the opportunity to earn competency-based recognition for their efforts through a digital badging program.

### THE TOPIC

To identify the area of learning in need of improvement at Wake Tech, a faculty-led QEP-Discovery Steering Committee (Appendix A) and a QEP-Development Steering Committee (Appendix B) reviewed Reach 'n Rally data as well as other data, engaged colleagues, researched QEPs at other institutions, and reviewed literature. The following sections document how the area of learning for improvement was identified and developed and makes a case as to why it is important to our students' academic and professional success.

#### **Topic Identified Through Institutional Planning**

Wake Tech's Reach 'n Rally strategic plan includes the creation of our next QEP as part of our comprehensive planning and evaluation processes. The QEP will directly address our Learning Goal, which is to ensure that "Students gain the knowledge, skills, and abilities they need for the labor market and transfer" (WTCC, 2022, p.23) and will focus on improving several strategic objectives identified during the planning process:

Table 1. Strategic objectives associated with Learning Goal and QEP

| Strategic Objective             | Baseline |     | Target | Details/Rationale                  |
|---------------------------------|----------|-----|--------|------------------------------------|
| Improve Program Learning        | 73%      |     | 75%    | In accordance with SACSCOC         |
| Outcomes                        |          |     |        | principles, we should be meeting a |
| Improve overall course          | Seated   | 73% | 75%    | majority of our learning outcomes  |
| success rates in each modality  | Blended  | 76% | 75%    | among all demographic groups,      |
| success rates in each inodulity | Hybrid   | 70% | 75%    | among an aemograpme groups,        |