Super PL: Building a Supervisor Professional Learning Model to Improve Internships in Information and Communication Technology

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Abstract

This award is funded in whole or in part under the American Rescue Plan Act of 2021 (Public Law 117-2). This project aims to serve the national interest by preparing students for careers in information and communication technology (ICT).

The COVID-19 pandemic has increased reliance on computing infrastructure, amplified the need for skilled workers to support this infrastructure, and has disproportionately negatively impacted college students, especially those from historically marginalized groups.

This project addresses the need to prepare students for ICT careers by developing (1) a Career and Leadership Readiness Institute (CLRI) program, (2) an internship program for CLRI completers, and (3) a professional learning (PL) program targeted at internship supervisors for students in Northern Virginia Community College's (NOVA) Information and Engineering Technologies programs.

The goals of the project are to (1) increase access and improve internship outcomes and (2) develop a PL program to support intern supervision. Over the four-year duration of this project, 150 students will be provided with career and leadership preparation through the CLRI program, 75 of the CLRI completers will enroll in an IT internship program, and PL will be provided for 50 supervisors.

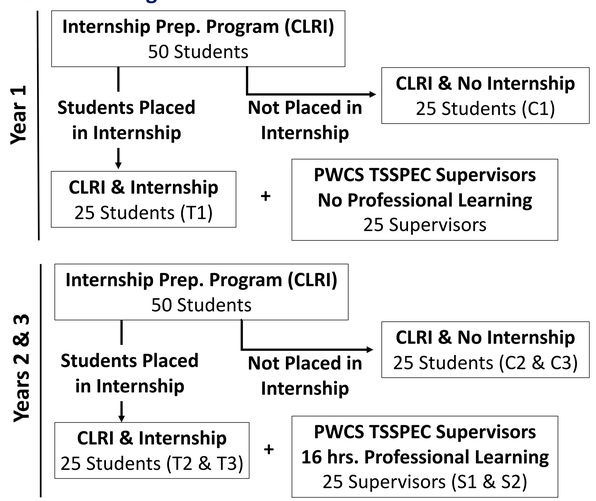
Using a quasi-experimental mixed methods research design, this project will advance our understanding of how projects such as this one (a) improve outcomes (i.e., professional socialization, attitudes toward ICT disciplines, degree completion, persistence in ICT careers) for CLRI completers placed in internships compared to CLRI completers who are not placed in internships; and (b) improve supervisors' coaching of interns (i.e., confidence for supervising, effective coaching skills). The longitudinal and cross-sectional components of the research design allow for comparison of outcomes and documentation of the relative impacts of the CLRI, internship, and PL for students and supervisors, which is absent in the existing research literature. Since supervision quality and characteristics are critically important in determining student learning experiences and outcomes in diverse fields, the model is expected to be valuable across disciplines and for all workplace learning opportunities.

The NSF program description on Advancing Innovation and Impact in Undergraduate STEM Education at two-year Institutions of Higher Education supports projects that advance STEM education initiatives at two-year colleges. The program description promotes innovative and evidence-based practices based practices in undergraduate STEM education at two-year colleges.

Research Questions

- Research Question 1a: Compared to the control group (non-placed CLRI completers), what is the effect of internship placement on professional socialization, career goals, degree completion, and persistence in ICT careers?
- Research Question 1b: Compared to the control group (non-placed CLRI completers), what is the effect of internship placement with supervisors completing the PL on professional socialization, career goals, degree completion, and persistence in ICT careers?
- Research Question 3: How does PL change supervisors' confidence for effective mentoring, effective mentoring strategies, goal-setting approach, task development approach, feedback to interns, and communication with interns?

Research Design



Program Design

Internship Preparation. Students from the 2-year IHE's ICT programs were recruited to participate in a spring semester program designed to prepare students to apply for and work in summer internships (Table 3). This professional preparation program is an ongoing program that adapts common career preparation elements (e.g., resume writing, interview practice) into an ICT and regionally specific format. Each project year, the goal was to enroll 50 students in this program, with program completers encouraged to apply for competitive internships.

Activity	Time	Description
Recruitment	Fall Semester	Recruitment of students from AAS information systems technology, AAS cybersecurity & ICT-based certificate programs in IET division.
Orientation and Pre-Assessment	December & January	Students attend orientation, complete pre-assessment, and submit SMART (specific, measurable, achievable, realistic, and timely) goal.
Resume Writing	January	Students learn the components of an effective resume from career development professionals. Students review sample resumes in small groups, then create a resume and submit it for review and feedback from a program mentor. Students then review their resumes with hiring managers and recruiters from industry partners.
Interview Preparation	February	Students review common interview questions and discuss appropriate responses. Hiring managers from employer partners explain how they evaluate candidates. Students complete a mock interview with program mentors and hiring managers and receive direct feedback.
Networking	March	Students learn and practice networking techniques and develop a LinkedIn profile.
Leadership	March – April	Students attend one additional career or leadership workshop of their choice (e.g., diversity equity and success, conflict resolution, communication, security clearances and certifications).
Completion	April	Students create a final project that includes a reflection and a final dossier (i.e., resume, LinkedIn profile, SMART goal) of all materials necessary to apply for summer internships. Completion event with employers, students and staff.

Internships

Students from target program areas applied for summer internships with the LEA. 2-year IHE and LEA staff collaboratively identified students who applied for internship placement. Internships consist of students spending six weeks working on-site for 30 hours per week with a supervisor. Interns are paired with a school or center-based supervisor to support the IT infrastructure while providing frontline customer service to teachers, staff and students with devices, networks, and instructional technology. Supervisors are provided with their intern's dossier and coursework completion. Supervisors review their assigned intern's dossier and educational background and to provide their intern with (1) an overview of the expected projects, (2) a weekly schedule, (3) instruction and support for specific tasks, and (4) an introduction to the work environment (e.g., personnel, facility). Supervisors have broad latitude to structure the internship experience as they deem appropriate by assigning tasks that meet the technology needs of the school. Project staff from the LEA and 2-year IHE check-in with each intern bi-weekly to verify work hours and ensure the work environment is productive.

Supervisor Professional Learning. In years 2 and 3, Super PL will use the discrimination model of supervision as a basis for PL activities (Bernard, 1979; Byrne & Sias, 2010). This model recognizes that (1) targeted learning goals need to be identified, and (2) learning goal achievement can be supported through (a) teaching; (b) counseling; and (c) consulting (Bernard, 1979). The supervisor may model desirable workplace habits and skills, provide explicit instruction, and/or provide formative feedback to the intern (teaching). When acting as a counselor, the supervisor fosters reflection through questioning. Finally, as a consultant, the supervisor acts as a collegial peer, serving as a springboard for the intern to bounce ideas off and interacting with the intern as a peer. It is important for supervisors to recognize the need for each of these activities to scaffold intern learning, support increasing autonomy for the intern, and facilitate the transition from an apprentice to a peer in the workplace (Murphy & Kaffenberger, 2007).

Session	Alignment with Foundational Topics
Session 1: Internship Overview	Introduction to PL topics, work structure, project details, communication, and preassessment.
Session 2: Supervisor as Teacher Weeks 1-2: Supervisor supports intern as a teacher through modeling, assessment and formative feedback.	Mentoring: set goals for the internship, establish working norms, modeling workplace skills, environmental overview. Task Clarity: granular mode of communication, explicit device level technical problems and solutions. Autonomy: direct instruction, modeling of technical processes, detailed task breakdown in written form.
Session 3: Supervisor as Counselor Weeks 3-4: Supervisor supports intern as a counselor fostering reflection through questioning.	Mentoring: discuss technical skills, coaching, discuss IT certifications and educational strategies. Task Clarity: batch work, utilizing a variety of skills at intern's discretion. Autonomy: side-by-side coworking, counseling solutions to novel technical problems, and some end user interaction.
Session 4: Supervisor as Consultant Weeks 5-6: Supervisor supports intern as a consultant to bounce ideas off like a peer.	Mentoring: career development, future goals, networking and resume building. Task Clarity: device and laboratory diagnostics, networking, and project-based learning. Autonomy: independent projects with frequent check-ins, daily log review, and consult with supervisor as needed.

Results

Internship Preparation # of Completers	
Year 1	37 - Spring '22
Year 2	22 - Fall '22 26 - Spring '23
Year 3	31 - Fall '23 35 - Spring '24
Total	**151 Students**

Interns Placed	
Year 1	21 Interns Summer '22
Year 2	22 Interns Summer '23
Year 3	14 Interns Spring '24 18 Interns Summer '24
Total	**75 Internships**

Supervisors Trained	
Year 1	2022 - 0
Year 2	2023 - 3
Year 3	2024 - 23
Total	**26 Trained Supervisors**

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