Program Operations Guide:

Extending Equity into the Digital Workplace

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EXTENDING EQUITY INTO THE DIGITAL WORKFORCE

In 2021, Four Corners Regional Education Cooperative #1 received a grant from the U.S. Department of Education to develop an Online Information Technology Career Pathway that would prepare high-school students for the digital requirements of jobs in today's workplace.

INTENT OF FUNDING

Extending Equity is the first major re-envisioning of the Early College High School (ECHS) model since its introduction 20 years ago. The aim of this grant initiative is to extend the ECHS commitment to equity by:

- Supporting ECHSs as they work with their postsecondary partner(s) to create an Information Technology (IT) Career Pathway. Having college and university faculty deliver instruction online addresses teacher shortages and ensures IT instructors possess the qualifications for rigorous high-quality IT online programs.

- Developing the IT pathway as an online opportunity. By building the pathway online, the project addresses challenges school districts face with staff shortages for small clusters of students in small rural schools.

- Providing career-connected Algebra 1 and Geometry curricula as the skills foundation for the IT pathway. Learning math in a way that is relevant to needed job skills engages students in learning and helps them understand the value of learning math.

- Bringing a wider range of businesses online and making them accessible to students through videotaped presentations, mentorships, and virtual work-based learning. The ability for students to learn first-hand what employers are looking for is a key for ongoing success.

The Extending Equity design brings greater assurance that ECHSs accomplish what they set out to do—provide equity of preparation and opportunity to bring targeted students into rich, high-demand STEM careers.

WHAT THE FUNDERS HAD TO SAY ABOUT THE EXTENDING EQUITY PROGRAM

The Extending Equity program proposed by Four Corners REC #1 has garnered national attention and federal funding for the promise of innovation in education it brings, with verifiable outcomes to share with other ECHSs nationwide.

Just look at what U.S. Department of Education evaluators say about Extending Equity.
The program…

- Has national significance: It addresses current workforce demands by increasing the number of high-school graduates pursuing STEM majors in college. Especially noteworthy is the potential to increase the number of people of color and women in Information Technology (IT) careers. This is extremely significant as underrepresented groups still not accessing in-demand careers at the same rate as their non-underrepresented peers.

- Prepares more diverse candidates for college and IT careers, achieving greater equity in the long-term.

- Will provide racial and ethnically diverse students, and especially students living in rural communities, with access to an IT Career Pathway online program

- Effectively builds on the success of an ECHS model, with a focus on targeted students with a pathway for improved digital skills and information technology (IT) programs.

- Is unique in that it has a focus on equity issues as well as a connection to mentor relationships with prospective employers.

Why Information Technology?

INFORMATION TECHNOLOGY IS AN EQUALIZER

A major concern around issues of a digital divide in our nation is the racial disparities in IT careers, one of the fastest-growing and highest-paying fields today. If under-representation of women and minorities continues to shut out these groups, it means public education is failing in its role as the great equalizer.

By providing access to IT skills training for any ECHS student—regardless of ethnicity, geographic distance, or other challenges—Extending Equity provides a solution to this unmet need in the ECHS model and the broader educational community.

INFORMATION TECHNOLOGY CHALLENGES EDUCATION

Gradually over the past decade, education, the economy, and workforce readiness have converged to redefine what students require from schools for students to be college and career ready. As a result, we are looking at a trifecta of educational challenges:

- More jobs and careers require training and education in high school and beyond, particularly in IT and digital skills.

- America's underrepresented populations—e.g., persons of color and economically disadvantaged—have less probability of getting the education and training they need due to limited school resources.

- Traditionally underserved populations constitute a growing proportion of students in US schools.

INFORMATION TECHNOLOGY IS EVERYWHERE

Digital skills are basic to every industry. Digital literacy and knowledge—part of an overall IT infrastructure— are required for any job, from entry-level to higher-level in our 21st Century global workforce.

- The greatest demand will be in computer/digital occupations, projected to increase 11.5% by 2029. These occupations will include information security analysts and cybersecurity, information technology specialists, and software developers. As more small devices become connected to the internet and send data, more computer specialists will also be needed.

- For entry-level jobs, skilled workers from machinists to office workers are already asked to be familiar with machine learning, coding, and automation. At higher levels of workforce entry, skilled workers are required to be familiar with online marketing and platform development, i.e., Zoom and Asana.

- In other arenas, new technologically rich systems are being developed for warehouses, grocery stores, call centers, and manufacturing sites. Health sciences and clean energy industries will also require these kinds of skills.

MATH IS THE UNDERLYING DRIVER IN INFORMATION TECHNOLOGY

According to the U.S. Department of Education, math skills are the foundation for future success in school and jobs. Correlations between the study of math with college and career success are so strong, they are in fact the dividing line separating minority and low-income youth from more advantaged and better prepared youth. Without a solid foundation in math, students cannot build their IT and digital skills.

Through a national demonstration grant, the state of New Mexico has adopted Pathway2Careers (P2C), a career-infused math program, as a supplemental curriculum series to connect math learning with career exploration. With career-infused math programs, students learn how math is used in real workplace settings. This approach to learning math has been shown to be more comfortable for students. With this engagement and comfort, students can build their IT skills and be better prepared to be part of a more representative and inclusive workplace.

To assure math lessons reflect students' career interests in STEM jobs, each course begins with students exploring their career interests. Then, each math lesson begins with a career spotlight that provides students with the occupation description and the varying levels of education required for their career choices. In this way, students come to understand the importance of math no matter the career they choose.

With the proposed P2C curricula, students will learn to solve math problems in the context of how they will use these skills in the careers they are exploring in each lesson.

- What if students who are interested careers in agriculture learned algebra and geometry by calculating acreage to plant and storage availability in silos?

- What if students interested in construction learned about angles and weight bearings by how this information helps them build a house?

- And, what if the student wanting to go into health care learned how to measure dosages for their patients by using their math skills?

Taken together with IT skills, career-infused math prepares students for the digital workforce.

Joining the Grant:
Getting Started and Roles & Responsibilities

Extending Equity into the Digital Workplace program gives your district and school the flexibility to develop your online IT Career Pathway to reflect your unique school priorities, community needs, and student population. This occurs as ECHSs engage with the postsecondary partner of their choice to create their IT course program.

This flexibility is enhanced and balanced by the rich shared resources the project provides you—i.e., development of a video library of businesses to mentor students, and provision of a rich professional development program. Taken together, students will be prepared for high-demand careers in IT.

OPERATIONAL SUPPORT

Your school will receive $20,000 annually to support program operations including recruitment, program supplies, course materials, technology resources, and assessments.

RECRUITMENT SUPPORT

Districts and schools will be provided with a wide range of promotional resources to use in informing families and recruiting students to the online IT Career Pathway.

The Four Corners project team will collaborate with your district and school staff individually to mitigate barriers to student enrollment, e.g., readiness for the ECHS program, and their success in the online IT Career Pathway.

POSTSECONDARY PROGRAM PARTNERSHIP SUPPORT

While you are required to establish your own postsecondary partner to develop the IT course curriculum leading to a certificate or degree, the Four Corners REC project team will be available to help in this process, including online access to these courses.

BUSINESS PARTNERSHIP SUPPORT

The Four Corners REC project team is developing a comprehensive network of IT businesses and business requiring digital skills to serve as partners for the project.

A video library of business interviews will directly familiarize students with what jobs are available in the field, what levels of training and education are required, anticipated career growth and wages, and mentorship and internship opportunities. Open webinars held quarterly will put students closer to the IT employers through question-and-answer sessions online.

Businesses will develop capstone projects each semester for your students to problem-solve real workplace challenges. Your in-place IT business partnership can be added to the library.

CAREER INFUSED MATHEMATICS SUPPORT

All schools will have access to P2C Algebra 1, Geometry, and Algebra 2. These curricula can be used in your school as a core mathematics course or as a supplemental program to your classroom math coursework.

NS4ed, the vendor provider of P2C will provide your district or school with training and implementation support for P2C.

PROFESSIONAL DEVELOPMENT SUPPORT

The project will provide a wide catalog of professional development for teachers and administrators. Topic areas will include online learning, IT careers, college and career preparation for STEM careers, including IT, and equity in education and the workplace. Through participation in these training opportunities, you will be part of an ECHS IT Career Pathway learning community.

ASSESSMENT AND EVALUATION SUPPORT

The project evaluation will determine the efficacy of location the IT Career Pathway online and its impact on development, operational, and sustainability costs.

Each school is required as part of participation to conduct a Randomized Control Trial (RCT) for their annual evaluation. The *Extending Equity* project team will help schools to design their RCT's as part of their assessment and evaluation. Several data sources will be available to schools to support these assessments of student outcomes:

- P2C curricula include embedded Quantile measures in the software that assesses a student's achievement of each lesson's learning objectives and their readiness to move to the next level.

- The project includes funding for the development and implementation of a full project evaluation. Aggregate results and findings will be provided to schools semi-annually. Four Corners REC will submit the necessary documentation for an IRB review of evaluation protocols to the U.S.

Department of Education, ensuring the safety and confidentiality of students included in the evaluation processes.

SETTING UP YOUR IT CAREER PATHWAY: A STEP-BY-STEP GUIDE

As a participant it this grant program, you have several responsibilities. These are shown in this section, in a step-by-step guide.

The Four Corners REC project team will be available to support all development and implementation activities you undertake to ensure the process for enhancing your ECHS with an online IT Career Pathway is easy to complete!

DEVELOPING YOUR PROGRAM BUDGET

Step 1: Prepare an annual budget for development and implementation of your online IT Career Pathway.

Step 2: Submit your budget to the project team to access the *Extending Equity* stipend, up to $20,000 annually, for your program expenses.

Step 3: Work with the project team to reconcile the budget.

PARTNERING WITH A POSTSECONDARY PROGRAM

The Online IT ECHS Career Pathway is an exceptional opportunity for students to earn credits toward an Associate Degree in Information Technology while in high school.

Step 1: Establish agreements with your higher education partner to develop the IT courses, available online.

Step 2: Working in conjunction with your higher education partner, establish the following key objectives for your ECHS online IT Career Pathway course program:

- Provide students with the essential educational and hands-on elements needed for a career in IT, as well as the training to sit for several industry exams.

- Guide students as they build upon the skills they need to plan, implement, administer, support, troubleshoot and secure networked computer systems found in educational, governmental, and corporate settings.

- Ensure the IT course curricula are available to students online.

- Ensure college and university teaching instructors are available to the students as needed.

Step 3: As part of the course design, ensure all IT coursework results in an online certificate, an Associate Degree, and/or articulated credits for a four-year postsecondary degree in IT. (For example, coursework may lead students to earn an IT-Cybersecurity Support Certificate while in high school, preparing them for work in computer security.)

PROMOTING THE IT CAREER PATHWAY

For some of your schools, an online IT Career Pathway is a solution for the limited resources in some districts to support IT programs.

Step 1: Provide parents and community stakeholders with information and resources about the *Extending Equity* program and the online IT Career Pathway.

RECRUITING AND ENROLLING STUDENTS

Step 1: Hold informational meetings for rising 8th grade students to apprise them of the ECHS IT Career Pathway.

Step 2: Schedule meetings with career counselors to review prerequisite course preparation and encourage application for the program.

Step 3: Continue to promote participation through informational presentations for incoming and current ECHS students and parents about the new IT Career Pathway being offered.

Step 4: Enroll students in the ECHS IT Career Pathway. Enrollment will follow the same Rubric used by the NM Public Education Department in its designation of ECHSs.

READYING STUDENTS FOR THE IT CAREER PATHWAY

Step 1: Ensure all students enrolled in the ECHS online IT Career Pathway have access to the technology resources necessary to engage in related coursework.

Step 2: Work with the project staff and school ECHS program advisors to mitigate barriers to students' success in the online IT Career Pathway.

Step 3: Ensure students have wraparound services to support success in their IT coursework. Some of these services may include:

- equitable technology access to coursework,
- student supports such as tutoring,
- connection to information about careers,
- and opportunities for applied learning.

ENGAGING STUDENTS IN P2C MATH

P2C curricula have been adopted by the state of New Mexico in their demonstration grant to support online student choice (awarded by the U.S. Department of Education in 2020). Thus, its use can be absorbed through this grant.

Step 1: Determine whether implementation of P2C math curricula will be a core or supplemental curriculum in your school.

Step 2: Contact the project team to schedule training and implementation support for P2C curricula.

Step 3: Enroll students in P2C Algebra 1 (9th grade), Geometry (10th grade), and Algebra 2 (optional, 11th grade).

Step 4: Work with students as they explore careers of interest. Math lessons will be presented in the context of these careers.

Step 5: Capture course assessment data through the Quantile software platform in P2C.

FACILITATING BUSINESS ENGAGEMENT

Access to businesses and employers online eliminates the current "single business partner" at many ECHSs. Instead, *Extending Equity* opens doors for many employers to work remotely with students.

Step 1: Review business videos in the project's business video library.

Step 2: Provide suggestions to the project team for any local IT business employers you wish to add to the library.

Step 3: Work with students to journal their career exploration of IT careers through P2C or other career exploration programs you have available to students.

Step 4: Facilitate student participation in the industry-related components of the project including viewing the digital videos of business interviews from the project's online video library.

Step 5: Schedule times during each week for students to review business videos individually or in small-groups for discussion of IT skills.

Step 6: Link students with business employers who have volunteered for mentoring and work-place experiences.

Step 7: Introduce business-developed capstone projects to your IT Career Pathway students to provide them with real workplace problem-solving.

ENGAGING IN ASSESSMENT AND EVALUATION

Each participating district and school is required to conduct a Randomized Control Trial (RCT) annually for the *Extending Equity* program. There are several advantages to this evaluation design:

- RCTs allow you to say whether a program causes a change in outcomes.

- RCTs make it possible for you to determine whether students gained academic achievement as well as college and career readiness by participating in an online ECHS program.

- RCTs are unique among evaluation designs in that they can obtain unbiased estimates of the effects of new practices on education and wider outcomes.

- RCTs that show no change through the intervention are not a failure of design. Rather, the RCTs provide the *Extending Equity* project with important knowledge that the intervention has no negligible benefits related to costs.

The following steps will be followed by schools in conducting an RCT:

Step 1: Identify the district or school staff who will oversee the research in your school.

- For those schools not fully experienced in conduct of an RCT evaluation of their student outcomes, the *Extending Equity* project staff will be available throughout the study to provide support in all aspects of the evaluation.

- Request professional development training workshops for staff that will be part of the research team. This training will be provided by the Four Corners REC #1 and the project staff.

- Request ongoing mentoring and coaching support in your evaluation as needed.

Step 2: Develop your research questions. In this case, the questions should focus on the effectiveness of the online delivery of the IT Career Pathway program. For example,

- What is the impact of an online ECHS IT Career Pathway on high-school outcomes such as attendance, course taking, graduation, and college enrollment?

- What is the impact of an online ECHS IT Career Pathway on changes in students' awareness and enrollment in high-demand careers?

- To what extent are schools able to sustain an online ECHS IT Career Pathway?

- How do the high-school experiences of online ECHS IT Career Pathway participants different from the experiences of non-participants (i.e., experimental versus control group).

Step 3: Identify the control group by random selection. Determine if your control group will be ECHS students not participating in an online career pathway.

- You will need to assign students to "compared groups;" i.e., students who are enrolled in the online IT Career Pathway will constitute the experimental group; students who are not enrolled in the online IT Career Pathway will be randomly selected for size to be the control group.

- Identify a randomized control group of students (assigned unique identifiers to maintain confidentiality) and gather mirror data for this group to conduct an analysis of student progress in the online IT Career Pathway.

- As you conduct your evaluation, the only expected difference between the experimental and control groups in your RCT study is the *outcome* being studied.

Step 4: Monitor delivery of the online career pathway.

Step 5: Determine and measure selected outcomes.

- The availability of the online IT ECHS Career Pathway will increase opportunities for ECHS under-represented students to engage in STEM majors and careers.

- Students completing the IT Pathway will have college-ready and job-ready digital skills.

- Students will be motivated to complete STEM programs and enter STEM careers, through mentorships with prospective IT employers.

Step 6: Collect data at the beginning of the year, mid-year, and end-of-year.

- Create a positive culture for implementing robust data collection that embraces measurement and metrics.

- In addition to data on the use of online delivery of IT courses, collect demographic data including student ethnicity, socioeconomic status (Free and Reduced Lunch Rates), grade, high-school course enrollment, higher-education course enrollment, and course completion.

Step 7: Analyze data in terms of process and outcome.

Step 8: Prepare report of results and submit to project team annually.

- Within your district and school, meet twice a year to share insights gained from data collection activities.

A FINAL SNAPSHOT

- **Target Date** – September 2022

- **Promotion:** The Four Corners REC #1 Increasing Equity project team will develop a series of white papers to encourage district and school leaders' commitment to increasing equitable access to IT college pathways and workplaces for underrepresented students.

- **Introductory meeting:** The project team will convene an initial meeting with those districts and schools who are participating. The meeting agenda is to introduce the online IT Career Pathway, review timelines for student recruitment, schedule professional development workshops, and review individual design components districts and schools want to add to their pathway.

- **Business involvement:** Sector analyses conducted through New Mexico's Comprehensive Local Needs Assessment (CLNA) Councils will help identify IT businesses. The project team will work with Front Porch Studios to video interviews with IT businesses in effort to build the digital video library. These 5 to 15-minute video interviews and podcasts will focus on how digital and IT skills are used in careers at all entry levels.

- **Ongoing support:** The project team will work closely with each school to support integration of the new pathway, address space requirements, and ensure counseling support and college advisement is available both onsite and through the Four Corners REC.

- Schools will meet monthly with the project team to ensure fidelity of implementation.

KEY OUTCOMES FOR YOUR STUDENTS

- Increased high-school attendance.

- Increased high-school STEM course taking (all IT courses are STEM).

- Increased high-school graduation.

- Increased college enrollment in the fall semester immediately following high-school graduation in IT majors.

- Increased persistence as shown by increased second-year return to college.

- Increased access to business internships and apprenticeships.

Extending Equity is designed to affect a range of relevant student outcomes. The program anticipates a positive influence on social-emotional outcomes as mediated by academic engagement; the extent to which students find what they learn in class to be important and useful; a college-going culture; and the extent to which students feel like they are part of their school.