Pathways to Prosperity

Pillar 3: Experiential Learning

A Pathways to Prosperity Brief

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The Pathways to Prosperity project is built on the central premise that career preparation should not sit apart from academics as an add-on—it should be woven into general education from elementary school through high school. This brief is one of three companion documents to the Pathways to Prosperity Model Blueprint, which distills lessons from the Career Academy Network of Public Schools (CANOPS) model, an Indiana-based charter school network, into a framework that other schools and districts can adapt. The Blueprint organizes this integration around three interdependent pillars: College and Career Readiness, Professional Learning Communities, and Experiential Learning. Each pillar shapes how students build career awareness, identity, and skill across their K–12 experience.

This brief provides an in-depth exploration of Pillar 3: Experiential Learning, showing how CANOPS puts it into practice in real schools. It is intended for education leaders, program designers, and practitioners who want concrete guidance for implementing this pillar in their own context, whether they are building a new pathways program or strengthening an existing one.

The Challenge This Pillar Addresses

Experiential learning at the Career Academy Network of Public Schools (CANOPS) is a student-centered approach in which learners actively engage in real-world experiences—both inside and outside the classroom—through hands-on work, problem-solving, collaboration, and reflection. These experiences are intentionally connected to academic content and career pathways, which helps students build practical skills and direction over time.

While experiential learning is widely recognized as a powerful approach to building knowledge and career readiness, many schools struggle to move beyond one-time or symbolic experiences, such as guest speakers or short-term job shadows, that spark interest but fail to connect learning to real work. Without intentional design, experiential learning can become disconnected from instruction, uneven in quality, or limited to a subset of students.

CANOPS's approach to experiential learning emphasizes the following:

- **Real-World Application:** Students participate in projects, internships, and community-based learning that relate to their academic interests and career goals.
- **Active Engagement:** Rather than passively absorbing information, students take an active role in their learning by experimenting, exploring, and applying what they learn to real situations.
- **Reflection and Growth:** Continuous reflection is built into the learning process, allowing students to assess their experiences, learn from challenges, and improve their understanding.

Experiential learning at CANOPS ensures that students are not only prepared academically but are also equipped with the practical skills and confidence to navigate complex, real-world challenges. Through this approach, students develop critical thinking, creativity, collaboration, communication, and a strong

sense of direction—skills essential for success in both higher education and future careers.

In many schools around the country, however, experiential learning is not designed as a coherent progression. Students may explore careers episodically without understanding how their interests connect to pathways. Or schools may offer pathways without ensuring that students have built the self-knowledge to choose them well. Too often, students select pathways based on peer influence or convenience rather than informed decision-making.

Even when experiences are offered, they may lack authenticity. Without strong industry and community partnerships and real-world standards, students may "explore" careers through activities that bear little resemblance to actual professional work. The challenge is not just creating engaging projects. It is also ensuring that those experiences build competencies that industry recognizes and values and that students have opportunities to test whether they can succeed in a field before committing to it.

CANOPS learned early that access alone is not enough. The experiential learning work is not simply to provide experiences but also to ensure that those experiences are coherent, purposeful, and connected to students' academic and career development over time.

Pillar Overview

This profile shows what the experiential learning pillar looks like in practice at CANOPS. Because CANOPS has built experiential learning across a K–12 career-connected model, its implementation includes structures such as World of Work, RIASEC[1] reflection, makerspaces, Experiential Learning Fridays, industry-

[1] RIASEC is an acronym for six personality and career interest types: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. Developed by psychologist John Holland in the 1950s, this framework (also called Holland Codes) matches personal traits to work environments to help people find satisfying jobs.

connected projects, public demonstrations, and student enterprises. These structures used at CANOPS are not a required formula for every school looking to implement experiential learning. Rather, they are concrete examples of how a network has made experiential learning coherent, visible, and accessible across grade levels.

In the CANOPS model, experiential learning is the instructional application system. It is how students use academic knowledge to investigate meaningful problems, create products or solutions, collaborate with others, reflect on their learning, revise based on feedback, and demonstrate understanding for real audiences.

Experiential learning goes beyond an enrichment activity, a field trip, or a “fun Friday” add-on. In strong implementation, it is deliberately designed around academic standards, authentic application, career or community relevance, reflection and revision, public demonstration of learning, and universal participation.

This means a strong experiential learning cycle should make the following aspects clear:

- what academic standards or competencies students are learning
- what problem, question, challenge, or purpose gives the work meaning
- how the experience connects to careers, industries, community needs, or real-world roles
- what students will create, investigate, solve, present, or perform
- how students will receive feedback and revise their work
- how students will reflect on their learning, strengths, interests, and growth
- how all students will be supported in participating meaningfully

Implementation Structures

RIASEC, a career framework based on six personality and career interest types, is one of the meaning-making tools that CANOPS uses to help students connect experiential learning to their own interests, strengths, and emerging sense of direction. It gives students and adults a shared language for reflection before, during, and after applied learning experiences.

Makerspaces are another implementation structure that CANOPS uses. They serve as the physical infrastructure in which experiential learning becomes tangible. They are environments in which students apply academic content through design, prototyping, production, revision, and demonstration. Instead of paints and glue as in traditional art rooms, the medium of a makerspace is laser cutting, 3D printing, and other advanced manufacturing tools. CANOPS makerspaces function as cross-curricular production studios in which academic content transforms into physical artifacts. At the elementary level, students engage in hands-on learning by building planet models for science, designing weather tracking displays for math, and creating dioramas to deepen their understanding of literature. They use a range of tools, from basic materials like cardboard and hot glue to more advanced equipment such as laser cutters and 3D printers.

By high school, makerspaces are fully integrated with career and technical education (CTE) courses and engineering labs, which supports client-based projects. Students use industry-level equipment to design and produce real-world products—including aerospace-grade parts—which bridges the gap between classroom learning and professional practice.

In addition, CANOPS uses alumni spotlights to visibly connect elementary exploration to real-world outcomes. Career signing days celebrate seniors' postgraduation commitments (employment, military, college) alongside families and employers, reframing pathways as aspirational. The robotics program maps team roles (CAD designer, fabricator, marketer) to RIASEC scores, helping students see

how extracurricular interests align with career identities. These cultural touchpoints transform career exploration from a program into a district identity.

Authentic Audiences and Public Demonstration

CANOPS partnerships produce work judged by professional standards, beyond traditional academic ones. For instance, high school students intern at Notre Dame's aerospace research lab, where their work contributes to graduate-level research. Students also have the opportunity to present to graduate students and aerospace professionals, explaining advanced manufacturing processes such as additive manufacturing and 3D printing technologies.

Through CASEC (Career Academy Student Enterprise Corporation)—a student-run manufacturing enterprise—students take on the full responsibilities of a business. They produce parts for paying customers that must meet precise ISO tolerances while also managing budgeting, pricing, and profit-and-loss decisions.

The National Aeronautics and Space Administration (NASA), one of CANOPS's partners, sends engineers to classrooms to review student-designed projects such as airfoils. The engineers provide students with direct, expert feedback on whether their aerodynamic designs would perform in real propulsion systems. This level of critique holds students to industry expectations and ensures that their work is evaluated for real-world application, not just academic completion.

Student reflections reveal how authentic partnerships clarify career direction. After interning at Notre Dame's aerospace lab, one student said, "I want to be an aerospace engineer ... this solidified that." Another student working on propulsion combustion research noted, "I realized I can do this, I want to do this." The students have successfully performed professional-level work and know they can compete in these fields.

Student Voice: Learning That Shapes What Comes Next

One high school student described Bend Manufacturing, CANOPS's 100 percent student-developed and run manufacturing business, as more than a class or school project. It gave them access to real equipment, real customers, and real expectations—experiences they may not have been able to secure outside of school: "Bend Manufacturing has helped me, and many other students and friends, achieve this experience by not only treating it like a proper job, but also helping us figure out new machines and paths to take for those who are interested."

The student connected this experience directly to life after graduation: building skills, earning money, strengthening a résumé, and preparing for college with a clearer sense of direction. They also described discovering that skills that they once saw as "humble," including graphic design and customer-facing work, were valued by real companies.

This reflection shows the deeper purpose of experiential learning in the CANOPS model: students are not just exposed to careers. They are testing their interests, building confidence, and learning how their skills can create opportunity beyond school.

Experiential learning supports universal access to high-quality work-based learning while providing shared structures and language for maintaining consistency and quality across schools.

Research and Policy Alignment

This pillar aligns with federal and state definitions of high-quality CTE under Perkins V, which emphasize experiential and work-based learning as essential components of college and career readiness. Research from MDRC (2008) and Advance CTE (2016) demonstrates that structured, high-quality work-based learning is associated with increased academic engagement, higher postsecondary enrollment, and improved workforce readiness.

Table 1. Experiential Learning Is/Is Not

Experiential Learning Is…	Experiential Learning Is Not…
Applied based on standards	A break from academic learning
Connected to real problems or purposes	A disconnected activity
Designed with reflection and revision	A one-time event
Supported by adult planning and calibration	Dependent on individual teacher creativity alone
Connected to career awareness or pathway learning	A generic project with a career label added later
Inclusive of all students	Only for students already succeeding academically
Evidence-generating	Something outside the learning system
Strengthened through public demonstration	A polished showcase without deep learning

The CANOPS approach aligns with established research and national frameworks on career-connected and experiential learning. Models such as Linked Learning and the U.S. Department of Education Employability Skills Framework emphasize integrating academic content, technical skills, and real-world application to

prepare students for college and careers (Linked Learning Alliance, 2012; U.S. Department of Education, 2015). Research from Jobs for the Future (JFF) and the Association for Career and Technical Education (ACTE) further underscores that high-quality pathways include work-based learning, industry partnerships, and durable skill development (ACTE, 2019; JFF, 2020).

CANOPS's approach is grounded in experiential learning theory, particularly the work of David A. Kolb, which demonstrates that learning is most effective through cycles of experience, reflection, and application (Kolb, 1984). Additional research from the National Academies of Sciences, Engineering, and Medicine (NASEM) confirms that active, applied learning improves student engagement, retention, and transfer of knowledge (NASEM, 2018).

The use of RIASEC (also sometimes referred to as Holland Codes), developed by John L. Holland, is supported by decades of research in vocational psychology and remains a widely validated framework for aligning student interests with career pathways, including its use in national tools such as O*NET (Holland, 1997; U.S. Department of Labor, 2020).

Finally, CANOPS's early and developmental approach to career exploration aligns with research from the American School Counselor Association (ASCA) and OECD, which finds that elementary-aged students benefit most from hands-on, exploratory experiences that build career awareness, identity, and self-efficacy rather than from abstract instruction (ASCA, 2021; OECD, 2021).

How CANOPS Implements This Pillar

CANOPS operationalizes experiential learning through structured, schoolwide practices that ensure consistency and depth. The network has established more than 60 active industry partnerships across sectors such as healthcare, advanced manufacturing, higher education, and aerospace. Efforts are supported by dedicated infrastructure, including full-time Maker Managers who work at 80

percent capacity to bridge classroom instruction and hands-on projects. These positions ensure that experiential learning extends beyond isolated activities—for example, Algebra 2 students use catapults to explore quadratics, while English students design and 3D print dioramas for the novel *The Outsiders*.

Experiential learning begins in elementary grades through a structured RIASEC/Holland Codes framework. Starting in 2nd grade, students maintain reflection journals that follow them through 9th grade, building vocabulary to articulate career interests. For instance, one student wrote, “I am a Creator and a Persuader. I love Design and Communications.” Each grade level explores six careers mapped to Holland Code categories, with work activities designed to mirror authentic professional tasks. Students do not observe firefighters—they design fireproof helmets. They do not watch musicians—they compose and perform original songs aligned with literacy standards (W.2.3, SL.2.5).

Students document these experiences in their reflection journals, creating a longitudinal record of preferences, RIASEC scores, and self-identified strengths. By 9th grade, when students select from 15 pathways across two network high schools, they do so with multiple years of documented exploration informing their choice.

This vertical integration ensures that high school pathway selection is informed rather than arbitrary. This mapping is not theoretical—it is documented in a networkwide career matrix that teachers reference when designing lessons. For instance, a 2nd grader studying Graphic Design knows it connects to the Marketing pathway. A 4th grader meeting an entrepreneur understands that the experience aligns with the Entrepreneurship pathway. In the course of kindergarten through grade 5, students explore 36 careers across all six RIASEC categories, each linked to specific high school options. Middle school (grades 6–8) continues exploration of 18 more careers. By the time students begin high school, they have had the opportunity to learn about 54 careers.

The reflection journal serves as the connective tissue. Starting in 2nd grade, students document preferences after each career exploration: “I liked it / I didn’t like it,” RIASEC scores, strengths, and challenges. Stored in secure district systems, these journals follow students through 9th grade, becoming increasingly sophisticated. Elementary entries are simple reflections. By middle school, students analyze how interests align with pathway requirements. When students select pathways in 9th grade, they reference years of documented self-knowledge rather than making an uninformed choice. This longitudinal approach transforms pathway selection from an arbitrary decision into an evidence-based commitment.

CANOPS classrooms include physical RIASEC stations, which are designated spaces where students engage with career-focused activities daily. The Realistic Station features building and hands-on tools; the Investigative Station houses research materials and inquiry prompts; the Artistic Station provides creative media; the Social Station includes collaborative and helping activities; the Enterprising Station offers persuasion and leadership challenges; and the Conventional Station emphasizes organization and data work. Teachers rotate students through stations aligned with academic units, ensuring that career exploration is not separated from core instruction but is rather woven throughout.

Another cornerstone of the approach is Experiential Learning Fridays, which is currently built into the master schedule at one campus in grades K–5 and ensures that all students participate regularly in real-world, project-based experiences. Experiential Learning Fridays are supported by a structured protocol: Get Ready (pre-experience preparation with focused questions), Research (guided observation with RIASEC-specific lenses), and Reflect (post-experience connection to career identity and vocabulary). For example, before visiting a news station, 2nd graders studying Artistic careers discuss their favorite logos and identify what makes design appealing. During the visit, they observe studio graphics and weather map design. Afterward, they create their own news logos in the makerspace using laser cutters, translating observation into creation. This

three-phase structure ensures that experiences are not merely field trips but also integrated learning cycles.

Industry partners collaborate with educators to design authentic projects aligned with pathway goals and academic standards. Examples include students working with engineers to design propulsion systems using 3D carbon fiber printing or collaborating with healthcare providers on applied problem-solving tasks. What makes these partnerships authentic is the real stakes involved. At one site, students assisted the supplier in an on-campus Metal X 3D printer demonstration, which led to an actual customer purchasing the system for use on a production line that makes vehicle parts for Ford F-150 trucks. Projects involve interfacing with genuine clients, customers, or owners rather than just hypothetical scenarios.

This pillar has evolved over time. Early efforts revealed that experiences without clear instructional purpose led to uneven quality. In response, the network refined its approach to prioritize alignment, preparation, and reflection, ensuring that experiential learning consistently advances learning goals rather than standing apart from them.

Example: Transforming a News Station Visit Into Six Differentiated Lessons

When CANOPS partners with a local news station, each grade explores different careers through a RIASEC lens:

- **Kindergarten (Realistic):** Observe camera operators using equipment → Build miniature news sets in makerspace
- **1st Grade (Investigative):** Develop research questions → Create data visualizations of findings
- **2nd Grade (Artistic):** Study graphic design in studio → Laser cut custom news logos

- **3rd Grade (Social):** Analyze how producers help teams → Conduct community helper interviews
- **4th Grade (Enterprising):** Calculate business costs of equipment/staff → Produce persuasive commercials
- **5th Grade (Conventional):** Observe script organization → Correct flawed broadcast schedules

This structure maximizes partnership efficiency—one field trip, six learning outcomes—while ensuring that every student explores all six RIASEC categories across elementary years.

Example: 3rd Grade Character-to-3D-Print Pipeline

When 3rd graders study *Charlotte's Web*, they do not just read; they analyze character traits through a RIASEC lens (Charlotte scores high in Investigative, Artistic, Social). Students then hand draw their own character inspired by the story, photograph it, and navigate a professional workflow: Convert the image to SVG using Adobe Express, transform the SVG to an STL file via svg2stl.com, slice for printing in Prusa Slicer, export the gcode, and print their design. This single activity integrates literacy analysis (character traits), career exploration (RIASEC mapping), technical workflow (multi-software pipeline), and design iteration (adjusting drawings for successful printing). By 3rd grade, students have executed a workflow used by professional product designers.

From Student Work to Professional Recognition

The difference between authentic and simulated experiential learning becomes visible when external parties recognize student work. CANOPS partners with a range of entities, including the following:

- **NASA Glenn Research Center** engineers evaluate student rocket nozzle designs against propulsion requirements, providing technical feedback on thrust characteristics and material selection.
- **University of Notre Dame** research faculty incorporate high school intern contributions into graduate-level aerospace studies, with student work appearing in actual research outputs.
- **Local manufacturers** order production parts from CASEC, the student-run enterprise, because quality and pricing meet professional standards.
- **Plastics Today**, a manufacturing trade publication, profiles CASEC as an innovative workforce development model.
- **Markforged**, an industrial equipment manufacturer, partners over the long term because student operators demonstrate competency with advanced composite 3D printing, providing testing feedback that is valuable to the company.

These recognitions emerge organically when student work meets professional thresholds. Experiential learning is not authentic unless students can fail. When NASA engineers tell you your nozzle design will not work, when a customer rejects a part for quality issues, when research data does not meet publication standards—these moments of professional accountability distinguish CANOPS's model. Students are supported in experiencing success at the professional level because they are held to professional standards.

Operational Infrastructure

Supporting this work requires intentional infrastructure. CANOPS employs full-time Maker Managers who collaborate with teachers to design projects that extend learning beyond the makerspace. These positions ensure consistent quality and help translate academic content into hands-on application. Maker Managers also staff and support open labs.

The network also uses Pathful's Jobready portfolio system to document student work, internships, and outcomes, creating both accountability and a longitudinal record that follows students into alumni status.

Scaffolded Technical Training K–12

CANOPS develops students' technical competency systematically across grades through deliberate skill progression. For example, in K–1, students explore cardboard construction and basic digital design in TinkrCAD, learning spatial reasoning and design iteration. By grades 2–3, they use 3D printing pens and print predesigned models, understanding that digital designs become physical objects. Third graders learn multi-software workflows, navigating professional software pipelines appropriate to their age, including hand-drawing a character, converting to SVG, transforming to STL, slicing for printing, and exporting gcode.

Students in 4th and 5th grade design functional products (e.g., organizers, tools, toys) and understand the complete 3D printing workflow: model → slicer → gcode → part. They learn that design decisions (e.g., wall thickness, infill percentage, orientation) affect outcomes. Middle school (grades 6 – 7) focuses on design constraints such as nozzle sizes, orientation strength, layer heights, support structures, and material properties. Students do not just make; they optimize for manufacturing.

By 8th grade, students use Fusion 360, industry-standard parametric CAD software, gaining 4 years of professional tool experience before graduation. High school students in grades 9–10 study additive versus subtractive manufacturing

theory and explore industrial applications. By grades 11–12, the makerspace functions as a job shop. Students produce carbon fiber aerospace components, CNC-machined parts, and precision assemblies using the same equipment and standards as industry partners. This progression ensures that by graduation, students possess not just exposure but genuine technical competency.

The Makerspace as Pathway Laboratory

As students progress into high school pathways, makerspaces transform from exploratory environments into specialized labs aligned with pathway requirements. The high school makerspace at CANOPS functions as a job shop. Students in the Precision Machining pathway operate CNC mills and lathes, producing components to industry tolerances. Engineering pathway students use industrial 3D printers to fabricate carbon fiber aerospace parts—the same equipment and materials used by Boeing and SpaceX. Architecture pathway students laser cut scale models and prototype structural designs.

These activities are not simulation; they are hands-on production. Students manufacture parts for robotics competitions, produce prototypes for community partners, and fulfill orders from local businesses. The makerspace becomes both training ground and revenue generator, with students learning business operations (e.g., quoting jobs, managing timelines, maintaining quality control) alongside technical skills. By graduation, students possess not just certificates but also portfolios of manufactured work that demonstrates professional competency.

Professional Development and Teacher Capacity Building

Implementing RIASEC exploration at scale requires significant teacher professional development. CANOPS uses a “buy-in chain” model in which administrators provide vision and resource support, teachers receive training and curricular tools, and students experience engagement and growth. Teachers are expected to incorporate every letter into every unit, embedding RIASEC

exploration throughout their curriculum, not just during designated career exploration time.

To support this, administrators provide “RIASEC in a box” resources: predesigned lesson plans, worksheet templates, makerspace activity guides, and field trip protocols. Teachers adapt these resources to their grade level and content area, maintaining consistency in approach while allowing instructional flexibility. The result is a schoolwide career exploration culture in which students encounter RIASEC vocabulary, activities, and reflection prompts across subjects and grade levels.

Industry Partnerships With Professional Standards

CANOPS partnerships extend beyond facility tours and guest speakers to embedded collaborations through which students produce work judged by industry criteria. The district partners with NASA Glenn Research Center and the University of Notre Dame on propulsion systems education, with students designing rocket nozzles tested in supersonic wind tunnels and 3D-printing components using aerospace-grade composite materials. NASA engineers evaluate designs not as school projects but as functional hardware. They provide technical feedback on thrust vectoring, nozzle geometry, and material selection that mirrors professional engineering reviews.

High school students intern at Notre Dame’s Hessert Laboratory for Aerospace Research, contributing to graduate-level projects. One student analyzed Mach 6 hypersonic flow characteristics; another investigated rocket propulsion combustion instability. Their work did not simulate research—it produced data incorporated into actual studies. When students complete these internships, they do not receive participation certificates but rather recommendations from research faculty based on technical contributions.

Perhaps most significantly, students operate CASEC, a functioning manufacturing business producing parts for local companies. Students serve as executives,

engineers, and machine operators. They quote jobs, manage timelines, troubleshoot quality issues, and fulfill orders to customer specifications. This is not a simulated business. Customers pay real money, need professional tolerances, and return for repeat orders based on quality. Students learn that meeting deadlines, maintaining quality standards, and managing costs are not abstract concepts but rather daily operational requirements.

These partnerships work because industry partners function as “the fourth teacher” alongside classroom instructors, Maker Managers, and students themselves. Markforged, a composite 3D printer manufacturer, does not just donate equipment—their engineers train students and teachers on operation, troubleshooting, and design optimization. Students learn not from manuals but from the professionals who built the machines, gaining insider knowledge typically reserved for factory-trained technicians.

Alumni Spotlights and Career Signing Days

Intentional experiences reinforce that career exploration leads to real outcomes. Alumni spotlights track graduates who attended CANOPS elementary schools, documenting their career, military, or college achievements. Displayed prominently on digital walls and bulletin boards, these spotlights serve two purposes: They inspire current students by showing tangible success stories and they demonstrate to K–5 teachers that elementary career exploration has measurable long-term impact.

In May 2026, the district hosted its first annual career signing day, which it modeled on athletic commitment events. Graduating seniors with secured employment, military enlistments, or college acceptances were celebrated publicly alongside families, employers, military branches, and university representatives. This reframes career pathway completion as aspirational. It is not less than a 4-year college route but rather is an equally valid path to postgraduation success. By celebrating all three outcomes (career, military, college) with equal

prominence, the network signals that pathway completion is an achievement worthy of recognition.

Even extracurricular programs reinforce RIASEC. The district's FLL (First Lego League)/FTC (First Tech Challenge)/FRC (First Robotics Competition) robotics teams map roles (e.g., CAD design, programming, fabrication, marketing, awards writing) to RIASEC scores. Students self-assign roles based on interests to build their teamwork and collaboration skills. At tournaments, the RIASEC framework is explained and reinforced to visiting teams and families through a variety of materials and mediums, extending career readiness language beyond CANOPS students to the broader community.

What to Do at Each Implementation Stage

Schools can use this framework to sequence implementation, substituting their own planning, launch, and growth timelines as needed.

Stage 1: Designing and Planning/Preparing to Open

During the design phase, schools should establish the overall structure of the career development model and ensure that it is aligned with academic programming, workforce demand, and graduation requirements.

- Identify priority industries aligned with proposed pathways and build initial partnerships with a focus on project quality rather than quantity.
- Map elementary grades to RIASEC-based career exploration, with each grade exploring careers through hands-on work activities.
- Design reflection journals that will follow students from elementary school through pathway selection in 9th grade.
- Build schedules that protect time for career exploration (e.g., Experiential Learning Fridays).

- Build makerspace “open lab” stations with predesigned projects aligned with RIASEC categories.

Stage 2: Enrolling and Operating

- Implement regular experiential learning cycles that connect directly to classroom instruction and pathway development.
- Train all teachers in “Get Ready/Research/Reflect” protocols and provide structured RIASEC curriculum resources.
- Establish classroom RIASEC stations and implement Experiential Learning Fridays with grade-differentiated focus.
- Build teacher capacity to embed career exploration throughout units, not just during designated career time.
- Establish cultural initiatives such as alumni spotlight displays and annual career signing day for seniors.
- Begin tracking longitudinal data from student journals to inform pathway selection in 9th grade.

Stage 3: Sustaining and Scaling

- Establish a “Dynamic Career Landscape Committee” that includes leadership, teachers, and industry partners to review workforce data and update the career matrix annually.
- Empower students to lead career exploration events and mentor younger peers.
- Transition partnerships from facility tours to embedded collaborations in which students produce professional-grade work.
- Establish student-run enterprises that generate revenue and provide authentic business operations experience.

- Pursue research partnerships with universities in which high school students contribute to actual studies, not simulated research.
- Cultivate relationships with industry partners willing to function as “fourth teachers” and provide ongoing expertise, not just one-time visits.
- Measure alumni outcomes to validate the elementary-to-career pipeline, and use success stories to attract new partners.

Fidelity Indicators (Nonnegotiables)

Regardless of school context, size, or grade configuration, the following elements must be in place for this pillar to be implemented successfully. These are not areas for local adaptation—see the Adaptation Guidance section below for areas that have some flexibility.

Scheduling and Access

- Experiential learning is embedded in the school schedule.
- All students participate in meaningful work-based learning.
- Experiences align with pathways and academic learning goals.
- Dedicated staff positions support the integration of experiential learning with core instruction.

Career Exploration and the RIASEC Framework

- Elementary career exploration uses a systematic RIASEC framework and includes documented work activities (not just exposure).
- Students maintain reflection journals tracking preferences, strengths, and RIASEC scores from elementary through middle school.
- By 4th–5th grade, students can articulate their RIASEC score and identify careers that align with their interests.

- Students can articulate their RIASEC preferences using specific vocabulary (e.g., “I am a Creator and Persuader”).
- 9th grade pathway selection is informed by years of documented exploration, not a single-point decision.
- Alumni outcomes are tracked and displayed to visibly demonstrate elementary-to-career pipeline effectiveness.

Instructional Design and Teacher Practice

- Projects include preparation and reflection, not just participation.
- Students develop career vocabulary and reflection practices that build across grade levels.
- Teachers receive professional development in RIASEC integration and use structured protocols (e.g., Get Ready/Research/Reflect).
- Field trips are structured with grade-specific RIASEC focus and include pre-/post- activities, not just the visit itself.

Makerspaces

- Makerspaces exist at every school level (K–5, 6–8, 9–12) with age-appropriate equipment and complexity.
- Makerspace activities directly extend experiential learning, translating observation into hands-on creation.
- High school makerspaces produce professional-grade output aligned with pathway standards (aerospace parts, CNC machining, composite fabrication).

Industry Partnerships and Authentic Work

- Projects involve authentic audiences, clients, or customers rather than simulated scenarios.

- Industry partners evaluate student work using professional standards, not academic grading rubrics.
- Students produce outputs with real-world consequences (parts for paying customers, data for research, designs reviewed by engineers).
- At least one student-run enterprise operates with actual revenue generation and customer accountability.

Additional indicators that strengthen implementation include ensuring that classrooms have physical RIASEC stations; connecting makerspace projects directly to academic curricula; pursuing university and industry research partnerships in which students contribute to actual projects; maintaining multiyear partnership commitments; prioritizing teachers with substantial industry experience; and celebrating employment, military, and college outcomes equally through an annual career signing day.

Adaptation Guidance

Schools beginning experiential learning at later grade levels can implement scaffolded entry points starting with project-based coursework and gradually expanding to external partnerships. While the form of experiential learning may vary, the design principles—intentional alignment, sequencing, and reflection—must remain intact.

Schools without K–8 continuity can implement condensed RIASEC exploration cycles at entry points (e.g., 6th grade, 9th grade), though the longitudinal reflection component—critical to informed pathway selection—will be compressed. The key adaptation is maintaining the work activity structure. Students must *do* professional tasks, not merely learn about careers. The key nonnegotiable is the explicit mapping of elementary careers to secondary pathways. Career exploration must be purposeful, not random.

Schools implementing RIASEC exploration should prioritize training teachers over adding field trip volume. The three-phase protocol (Get Ready/Research/Reflect) can be applied to any experience—industry partnerships, virtual tours, or even classroom guest speakers—as long as teachers structure preparation, focused observation, and meaningful reflection. The station-based classroom model can start with a single station (e.g., Realistic, Investigative) and expand as teachers gain confidence rather than requiring all six stations from Day 1.

Schools without full makerspace infrastructure can begin with entry-level tools such as cardboard construction, basic hand tools, and free CAD software (TinkrCAD). The key is establishing the design process and workflow rather than requiring industrial equipment immediately. A 3rd grade classroom with scissors, cardboard, and TinkrCAD running on Chromebooks can implement the same conceptual learning as a facility with laser cutters. The sophistication grows with resources, but the pedagogical approach remains consistent.

Common Pitfalls and Design Risks

Partnerships and Authentic Work

- One-off or symbolic partnerships that never transition to embedded collaboration in which students produce professional work
- Overemphasis on novelty rather than learning value
- Career exploration limited to “career days” or guest speakers without hands-on work activities
- Implementation of RIASEC assessments without corresponding experiential learning (assessment alone does not build self-knowledge)
- Lack of the reflection phase in which students process whether they want to pursue a career (authentic experiences should clarify fit, not just build skills)

Vertical Alignment and Pathway Coherence

- Failure to build vertical alignment between elementary exploration and secondary pathway work
- Failure to connect elementary/middle exploration to high school pathway selection, leaving students without context for their 9th grade choices
- Elementary career exploration disconnected from secondary pathway offerings; this creates “exploratory dead ends” in which students develop interests with no corresponding high school options
- Static career matrices that do not update with workforce trends because the curricula become obsolete as industries evolve

Experiential Learning Design

- Inconsistency in access across student groups
- Separation of career exploration from core instruction (RIASEC should be embedded in academic units, not treated as supplemental enrichment)
- Field trips without structured pre-/post- activities (experiences must include Get Ready and Reflect phases, not just the Research/visit phase)
- Lack of the makerspace extension (experiences must translate into hands-on creation, not just passive observation and discussion)
- Career signing days that only celebrate college-bound students because this reinforces hierarchy and undermines pathway completion as a valid outcome

Makerspace Implementation

- Purchasing expensive equipment without investing in teacher professional development on operation and curriculum integration
- Siloing makerspace work from academic curricula (projects should extend rather than replace science, math, and ELA content)

- Skipping foundational skills (e.g., TinkrCAD, basic workflows) to jump to advanced tools (Fusion 360, CNC) because students need scaffolding

Additional risks to monitor include treating makerspaces or experiential time as enrichment rather than instructional infrastructure, underinvesting in dedicated staff positions, expecting teachers to build RIASEC curricula from scratch rather than providing adapted resources, allowing work activities to remain superficial or misaligned with authentic professional tasks, and failing to connect makerspace capabilities to pathway requirements or provide equipment that meets industry standards.

Connections to Other CANOPS Strategies

Experiential learning reinforces K–12 pathway development by grounding exploration in real work. It depends on strategic pathway selection to ensure relevance and is strengthened by integrated supports that sustain student engagement. Together, these strategies create a coherent system in which learning and work are intentionally connected.

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