

Global Models of Career Pathways

How do we build more robust and equitable career pathways to prepare all our youth to thrive in work and life? The scope of the challenge demands that we look both in the U.S. and at top-performing systems around the world. We need **valuable models, inspiration for our immediate challenges, and insights on how to adapt** in real time for a fast-changing and uncertain future.

Key messages from top-performing systems

Career pathways are **tightly connected to national economic development** strategies and goals.

Workforce development is seen as a national security issue, **rising above party politics.**

Credentials **fully qualify students for entry-level work in well-paying jobs** with career advancement opportunities and open pathways to further education.

Pathways are high quality and equitable, organized around **national skills frameworks** agreed upon by industry, labor, education, and government.

A future of work and learning focus means reimagining career pathways as part of a comprehensive lifelong learning system for all.



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Lessons for Today's Challenges

Global career pathway models:

Develop autonomy and curiosity early. Pathways are designed to enable students' self-directed learning and develop their decision-making abilities from a young age. Swiss apprentices identify their own work placements, with assistance from counselors. In the workplace, they are treated as valued employees and given progressively more responsibility. In Singapore, career education—including career fairs and visits to worksites—is part of the curriculum and career counseling is offered to starting at age 12.

Actively connect to industry. Students apply their knowledge and skills in authentic work settings and can see the impact of their contributions. Teachers are supported to link learning and work. In Singapore and Finland, teachers have regular industry externship opportunities. In Switzerland, worksite supervisors are trained in pedagogy.

Offer valuable and transferable credentials. Students earn portable credentials with high value in the labor market. Finland's industry credentials are set by industry leaders, who work alongside government and educators. Industry upholds standards in Switzerland: employer panels assess practical projects that apprentices complete to qualify for their diplomas.

Eliminate “dead ends” for students. Top performers provide pathways to further education, including research universities. Career pathways graduates in Singapore can enter the workforce directly. They also have the option to apply to programs leading to advanced technical or academic degrees.



GLOBAL MODELS: FINLAND

At Omnia Vocational School in Espoo, Finland, each program is a school-based business. Fashion design students research the latest fashion trends, sketch chic dresses and jumpers, stitch together fabrics and produce elegant creations using state-of-the-art textile equipment. Some are used for major opera productions for the City Opera. Aspiring builders construct their own full-sized cabins from the ground up, and sell them to families in the city in search of summer homes.

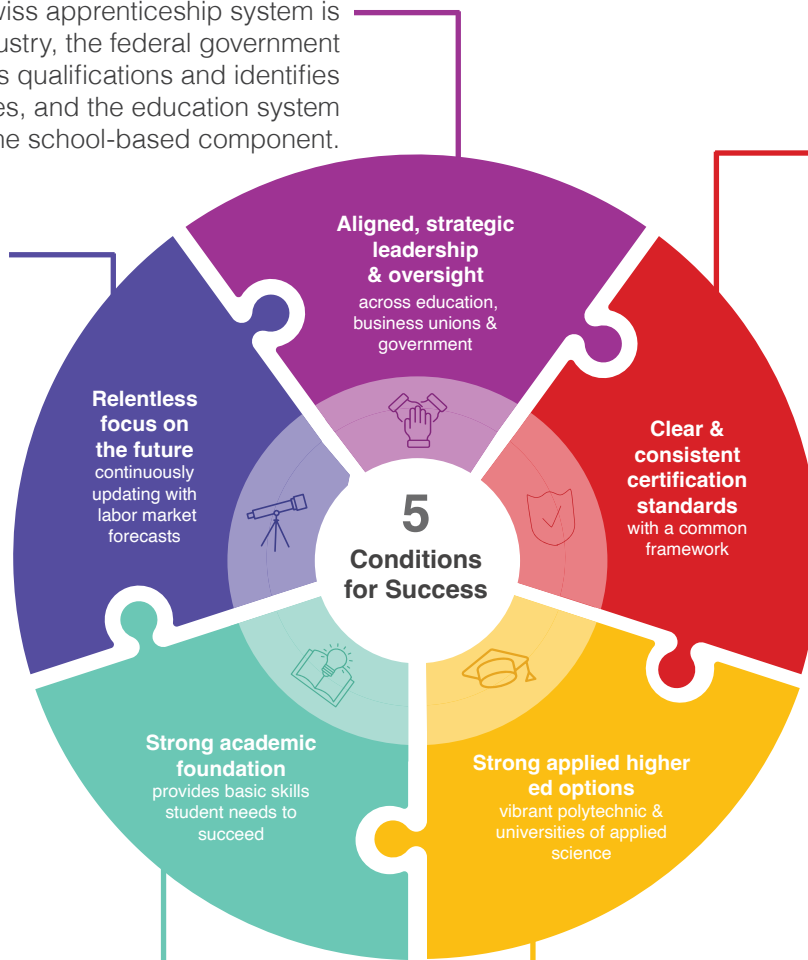
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Conditions for Success

The Swiss apprenticeship system is steered by industry, the federal government oversees qualifications and identifies key industries, and the education system organizes the school-based component.

The Finns created a common national framework of initial, further, and specialized industry credentials in each sector.

The Finnish Ministry of Education has a dedicated Anticipation Unit that monitors the economy and labor market with the aim of determining how career programs should adapt to meet employers' and the country's future needs.



In Singapore, students complete a common primary school and a lower secondary program with a core curriculum that they can personalize. All students demonstrate proficiency when they graduate.

In Switzerland, a vibrant sector of universities of applied sciences operates parallel to research universities and provides well-regarded advanced degree pathways that enroll more than two-thirds of students studying for degrees.

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Key Trends for the Future

Global models are agile and continuously update their systems for an evolving future:

Redesigning lifelong learning to prepare for the future of work, recognizing that workers will need to upskill and pivot many times in their careers. Singapore's SkillsFuture initiative offers training vouchers to all Singaporeans, with additional funds for those at mid-career. It also incentivizes industry to offer work placements for students of all ages.

Reinventing qualifications and certifications by modularizing and personalizing their offerings to give students agency over what and how they study. Finland's competency-based qualifications permit young people and adults to work at their own pace and in different environments—workplace, classroom, online, or self-study.

Supporting all students for a successful future by redesigning the structure and content of programs to meet the needs of all students. Switzerland created a "2+2" apprenticeship for students who need more time and support. After an initial two-year program supplemented with academic and language supports, students earn a certificate qualifying them for entry-level work or continue for two more years to gain a full diploma.

Transforming learning environments by harnessing new immersive technologies to create blended AR/VR classrooms, self-study options, and opportunities to collaborate with industries across the globe. Singapore is using immersive technologies across its career programs to prepare students for complex work both today and in the future.



GLOBAL MODELS: SINGAPORE

At Singapore's Institute for Technical Education, young people train for work in retail in a real coffee shop with customers from the community. Auto mechanics train on new Mercedes and Nissan vehicles provided by those firms. Students at the Aerospace hub work on a Boeing airplane.



GLOBAL MODELS: SWITZERLAND

Imagine a teenager advising a hedge fund client, turning out parts on a multimillion dollar machine, or running a retail phone store. It may sound like a teenager's daydream, but Swiss teens take on responsibilities like these throughout their apprenticeships.



Models in the U.S.

U.S. states and districts are building career pathways for students based on these principles. Promising developments include:

Delaware has organized education and training progressions in 12 fast-growing career clusters that offer high-wage jobs for students across the state. All students have work-based learning experiences and earn credit towards Delaware Tech degrees. Half of high school students in the state enroll in these programs now and the state has a goal of 80 percent enrollment.

Indiana created a Workforce Cabinet to oversee career education and coordinate across agencies including K-12 education, higher education and economic development. All programs for secondary students include capstone experiences with work-based learning and connections to Ivy Tech and Indiana University. The state also funds programs in high-value sectors at higher levels than other programs.

South Carolina and **Colorado** support youth apprenticeship statewide and students learn and earn on the job and graduate qualified for full-time job at their host companies or others in that industry.

In **Vicksburg, Mississippi**, the Vicksburg-Warren school district partnered with local businesses and community members to design new pathways to jobs that pay well in the local community. They created three career academies and an entrepreneurship pathway to incubate new student-initiated businesses with mentorship from community leaders.

In **Donna, Texas**, the district rethought its career technical education offerings to better align with high-growth and high-wage jobs in the local community. They partnered with employers to provide new pathways for students, such as an accelerated welding programs to qualify for jobs paying six-figure salaries at SpaceX and commercial drone pilot training to fill jobs in law enforcement and commercial aerial photography.

In **Madera, California**, the district created a Technical Exploration Center for 8th graders. It has six career-themed labs—agricultural, entrepreneurship and marketing, manufacturing and engineering, health sciences, media and performing arts and public safety—offering half-day programs that introduce students to career pathway options. The programs are organized around project-based learning: the agriculture lab students design a school garden and research safety of GMO foods, public safety students conduct investigations in the community to understand evidence collection and the investigative process.



Models around the World

Finland

Finland has long offered a vocational program for secondary students alongside its general education program that allowed students entry to higher education. It has recently transformed this system to be modular and competency-based.

About 50 percent of students choose a vocational path in this Nordic country. Career-connected learning is offered online, in school and in workplaces. Students gain competences in any combination of these settings, or through paid apprenticeships. Graduates receive a secondary school diploma plus an initial professional certification. They can continue to study for more advanced technical certifications or apply to degree programs at universities of applied sciences or research universities.

As part of its recent reform, Finland streamlined its career education programs. It now offers initial certifications in just over 40 industry areas, all in high-growth sectors. The Finnish Ministry of Education has an Anticipation Unit to monitor the economy and workforce needs and regularly update the program areas and skill requirements to reflect the changing needs. The national government sets the direction for vocational education, and the Ministry of Education and Culture oversees the skills qualifications system, in partnership with employer groups and other stakeholders.

Students master foundational academic and skills, but have a personalized plan with a customized program of technical modules.

Switzerland

Switzerland has long been considered “the Gold Standard” of career pathways globally. More than two-thirds of Swiss students pursue paid apprenticeships in a broad range of career-focused areas including high-growth sectors like IT, insurance, health and social care, banking and pre-engineering. Students work three or four days a week and attend school one or two days a week over 3-4 years. Experienced mentors, masters of their craft who are trained in pedagogy, supervise the apprentices at the workplace.

With help from local career guidance centers, students apply for positions with companies directly. Students learn on the job and are expected to do the real work of the company. They take on more responsibility as they progress in their internship, and apprenticeship wages increase over time. To earn their vocational diploma, students sit for final exams and complete an individual practical project at the workplace that is presented to a panel of employers and teachers.

The diploma is recognized across the country as a ticket to both the workforce as well as to higher education. Students can apply to either universities of applied sciences or to research universities. Switzerland also introduced an applied academic diploma that requires additional academic study of apprentices but offers them direct admission to universities of applied sciences.

The Swiss system is overseen and funded by three partners: the federal government, the cantons, and employers. The federal government regulates and steers the system. The cantons, which like U.S. states, oversee education, support and oversee the school component. Employers and their industry sector organizations are the real drivers of the pathways. Sector associations determine diploma skill requirements to ensure that skills are broad, applicable, and relevant. They also assure that apprenticeships match demand and that they align with future skill needs.

Employers view their participation as an investment in their future workforce. In fact, many company CEOs started as apprentices. About 30 percent of Swiss companies host apprentices and many more hire graduating apprentices.

Singapore

Singapore offers the authentic career-connected learning akin to the Swiss system—but without the apprenticeship infrastructure the Swiss model requires. It does so through a world-renowned work-based learning institute—the Institute for Technical Education (ITE)—and a set of world-class polytechnic institutions. Singapore’s strategy was to build a limited set of state-of-the-art technical training institutions and make them attractive to students and well-respected by industry. About 25 percent of students study at the ITE and 40 percent at the polytechnics after secondary school.

The ITE offers initial certificate programs in high-growth areas: Applied and Health Sciences, Business Services, Design and Media, Electronics and ICT, Engineering, and Hospitality. All provide career-connected learning in authentic working environments on ITE’s campus.

Employers are deeply involved in program design and provide state-of-the-art equipment for students to learn on. The curriculum includes foundational skills, technical modules, and elective modules to allow for personalization. Students participate in three and six-month internships as part of the program. ITE also offers options to earn initial and advanced certifications and diplomas through apprenticeships and work/study, which take place entirely at a workplace.

Polytechnics offer an even broader array of programs leading to diplomas, as well as upskilling courses and certificates for current workers. These all have internships and options to study for through fully work-based learning. Students with technical certification and diplomas can enter the workforce directly or pursue degrees in the polytechnics or Singapore’s research universities. Up to 40 percent of vocational education graduates enter degree programs, which are often accelerated as they receive credit for initial learning.

The system is tightly coordinated by the government. The Ministry of Manpower works with economic agencies and industry groups to identify critical workforce skill needs. Program offerings are regularly updated, and numbers slots are adjusted to reflect expected demand.

And for more on top-performing education systems, see [ncee.org/top-performing-countries](https://www.ncee.org/top-performing-countries)