



Earn While You Learn:

Switzerland's Vocational and Professional Education and Training System

A Model for Apprenticeships in the United States

Contents

Forewords	4
The Swiss Vocational and Professional Education and Training System	6
The Swiss System in a Nutshell	6
Key Features	7
Funding	8
Apprenticeships and the Skills Gap	8
Choosing an Apprenticeship	9
Swiss-U.S. Cooperation	10
Exchanging Best Practices	10
Memorandum of Understanding	11
The Role of the Embassy of Switzerland and Swiss Representations in the U.S.	11
Success Factors of the Swiss System: A Source of Inspiration	12
The Return on Investment for Companies	12
Apprenticeships as a Recruitment Strategy	12
Creating a Highly Skilled and Sustainable Talent Pool	13
Swiss-Inspired Apprenticeships in the U.S.	14

Forewords

“In Switzerland, more than one-third of businesses across all industries train apprentices as part of their human resource strategy, thus creating a highly skilled talent pool of young professionals.”



The private sector is the biggest driving force behind our apprenticeship system. Many Swiss companies have taken a similar approach at their U.S. facilities, which further strengthens our already close economic and educational ties. I strongly support our cooperation in the field of apprenticeships. Investing in a strong and sustainable workforce in our advanced economies should ultimately benefit both the Swiss economy and the U.S. economy—and our societies.

Guy Parmelin
Federal Councillor
Head of the Swiss Federal Department
of Economic Affairs, Education and Research

“Since the beginning of my posting in the United States, I have found that there is strong interest in Switzerland’s vocational and professional education and training system.”



We value our dialogue with the U.S. because it not only allows us to raise awareness and appreciation for our robust apprenticeship system, it also inspires us to adapt it to new challenges. At the Embassy of Switzerland, we liaise with government officials, the private sector, education and workforce specialists, and other stakeholders to foster discussions in this field. We are committed to exchanging best practices and fostering the dialogue between our two countries.

Martin Dahinden
Ambassador of Switzerland
to the United States of America

“In the United States, we are focused on expanding pathways to success. A dynamic and changing economy requires dynamic and changing approaches to education.”



That’s why everyone must question everything to ensure nothing limits students from being prepared for what comes next. America can learn a great deal from Swiss models for apprenticeships and work-based learning. Our 2018 Memorandum of Understanding and the implementation of the Strengthening Career and Technical Education Act for the 21st Century, or “Perkins,” are important steps to rethinking how students can prepare themselves to pursue their passions and live lives of deep meaning and purpose.

Betsy DeVos
Secretary of Education
U.S. Department of Education

“Under the leadership of President Trump, the United States is creating its first-ever National Workforce Strategy – promoting pathways to good careers and underscoring employers’ key role in training the next generation of U.S. workers.”



These principles are integral to Switzerland’s world-class apprenticeship system and increasingly important in the U.S. operations of leading Swiss multinationals, to the substantial benefit of their 500,000 U.S. employees and their communities. The Memorandum of Understanding signed in 2018 by the United States and Switzerland ensures that the insights and experiences of Switzerland’s companies and apprenticeship system will inform our National Workforce Strategy.

Wilbur Ross
Secretary of Commerce
U.S. Department of Commerce

The Swiss Vocational and Professional Education and Training System

In Switzerland, apprenticeships are an integral part of the educational system. In recent years, the United States has shown increasing interest in learning more about the Swiss system and other European models. This brochure explains the key characteristics of the Swiss system, highlights the Swiss-U.S. dialogue, and showcases current initiatives in the field.

The Swiss System in a Nutshell

Additional details and statistics about the Swiss apprenticeship system and the Swiss educational system as a whole can be found on the website of the Swiss State Secretariat for Education, Research and Innovation at www.sbf.admin.ch/berufsbildung (also available in English).

In Switzerland, two-thirds of all students coming out of compulsory education decide to start their careers with an apprenticeship. At the ages of 15–16, they can take very diverse career paths: there are around 230 professions, across all industries, which can be learned through an apprenticeship. An apprenticeship usually takes three to four years and combines classes at a vocational school with on-the-job training at a host company, where apprentices are employed. Once they have graduated, usually between the ages of 18 and 20, apprentices receive a federal diploma, which is recognized by employers all across Switzerland.

During the program, the host company pays the apprentice a salary, which increases with each completed year. Salaries vary for each occupational field and are lower than what regular employees would earn. However, apprenticeships are regarded as education, not primarily as work. Even so, the amount represents compensation for their performance and allows apprentices to have their own disposable income at a very young age.

Two-thirds of Swiss students coming out of compulsory education decide to do an apprenticeship.

The Swiss vocational and professional education and training (VPET) system is managed as a public-private partnership: the professional organizations, the cantons (state governments), and the Swiss Confederation (federal government) have found ways to jointly define curricula, skill sets and standards for occupations throughout the country. The most important partner is the private sector. It is the companies that employ apprentices and provide on-the-job education and training. Professional organizations play an important leading role in defining the industry-wide skill standards and training content. Therefore, the VPET system is very labor market-driven and based on the needs of the different industries, while the cantons and the federal government ensure quality control and recognition.

Apprentices not only learn a profession, but also a broad range of soft skills that are helpful for their future careers. Once apprentices have graduated from their program, they are immediately prepared to work, and employers are aware of the abilities they bring with them. A broad skill set combined with a nationally recognized diploma offers young professionals the chance to work for potentially any company in their field. As a talent pool, apprentices are a great benefit to employers, decreasing recruitment costs.

Another important feature of the Swiss educational system is its high degree of permeability. The system provides career prospects for everyone and delivers a basis for lifelong learning. For example, after apprentices graduate, they can take further education leading to a university degree. Or, they can take additional classes in professional education, which provides the skills needed to handle challenging technical or managerial activities. There are plenty of options and pathways to continue one's education or even to change one's professional field.



Apprentices are integrated into their host company's normal work processes from day one. They are supervised and mentored, but become more and more independent as the apprenticeship progresses. (Credit: Iris Krebs)

Key Features

Popular Career Pathway:

Apprenticeships offer a prestigious career option to many high achievers since they provide them with a basis for lifelong learning and a wealth of job and further education prospects.

Labor-Market Orientation:

Knowledge and skill standards for occupations are closely connected with the demands of the labor market, which ensures high employability of young professionals.

Permeability:

Apprenticeships form a substantial part of the Swiss educational system. There are many pathways for young professionals to follow further education or even to change their occupational field.

Public-Private

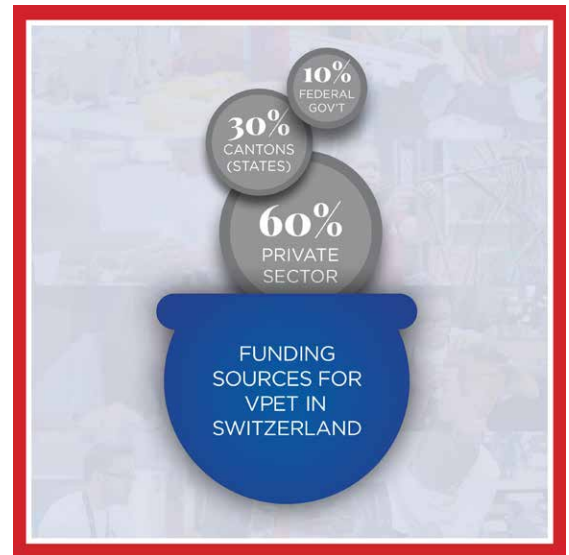
Partnership: The Swiss apprenticeship system is jointly governed by the Swiss Confederation (federal government), the cantons (state governments), and the professional organizations to ensure high quality.

Dual Approach: Most apprenticeship programs combine classes at a vocational school with practical, work-based learning at a host company where apprentices are employed.

Across All Industries: There are around 230 different professions which can be learned through an apprenticeship.

Funding

The costs of the vocational and professional education and training system are borne by: the Swiss Confederation (federal government), the cantons (state governments), and the employers. The latter are the main financial contributors to the VPET system: about 60% of the costs are borne by the employers. The cantons provide about 30% of the total funding and the Swiss Confederation contributes about 10%. The annual costs for the VPET system have amounted to approximately \$9 billion in recent years. The employers contribute a large share of the costs for training and intercompany courses and pay for the apprentices' salaries and their supervision and training at the company. The majority of the public expenditure goes toward the vocational schools, which are funded by the cantons. The cantons also fund career guidance services and train apprenticeship trainers. In addition, they are responsible for quality control and support the Swiss Confederation in ensuring portability and further development of the system as a whole.



Apprenticeships are deeply rooted in Swiss society and are seen as a respected, high-quality education.

Apprenticeships and the Skills Gap

Labor markets continuously change and rely on an educational system that can adapt to such changes. In Switzerland, vocational and professional education and training constitutes one of the reasons for the country's economic stability and innovation capabilities. It's a dynamic system: learning curricula are updated on a regular basis, usually every five years, so they can be adapted to new developments in the labor market. That helps to prevent a skills gap. Apprenticeships provide a way for employers to build their workforce, and the concept of "earn while you learn" gives young professionals the chance to start their careers with a set of practical skills and no student debt.



Swiss students can benefit from a range of guidance and career counseling services that help them to find a career path after they leave compulsory education.
(Credit: Iris Krebs)

Choosing an Apprenticeship

Apprenticeships in Switzerland generally target young adults who are about to graduate from compulsory education (similar to high school). The timeline shows that students start seriously thinking about their future careers at the young age of 14.

With regard to career choice, students can benefit from career counseling and other career guidance services to learn about their options and find out about their professional interests. That is the point when students decide whether they want to continue with general education or whether they would like to pursue the VPET pathway. If they choose the latter, one of the options is to start applying for apprenticeship positions with companies, which is a competitive process.

Upon graduation from compulsory education—roughly at age 16—the students who have opted for an apprenticeship start their three- or four-year programs. Since apprenticeships are organized in a dual approach, apprentices spend between one and three days per week at a vocational school, where they learn technical, methodological and social skills, and also more general academic skills. The remaining days of the week are spent at the host company, where apprentices acquire practical know-how through on-the-job training.



At the end of the training period, apprentices have to take a final exam. If they are successful, they graduate with a federal apprenticeship diploma, which is recognized and respected everywhere in Switzerland. It is the “entry ticket” into the job market and allows young professionals to kickstart their careers without any student debt and with hands-on work experience. In addition, they can pursue further education if they want to.

Apprenticeship diploma holders are highly sought after by employers because these young professionals are trained in a large variety of skills and can be tasked with versatile jobs and responsibilities. Moreover, companies have realized that new generations of qualified workers can have a positive impact on their competitiveness and innovation capacity.

Swiss-U.S. Cooperation

Exchanges with other countries allow for valuable insights into keeping educational systems up-to-date and in line with new trends and developments. Switzerland and the U.S. have conducted an intense dialogue on apprenticeships in recent years. In December 2018, the two countries signed a Memorandum of Understanding to reaffirm their will to cooperate in this area.

Exchanging Best Practices

Visit the Embassy of Switzerland's website and download the report *Gold Standard: The Swiss Vocational Education and Training System* by Nancy Hoffman and Robert Schwartz (Washington, D.C.: National Center on Education and the Economy, 2015). An updated version of the report will appear in *Vocational Education and Training for a Global Economy*, Harvard Education Press, October 2019. The book profiles the systems of China, Singapore, Switzerland, and the United States.

In recent years, Swiss and U.S. delegations have frequently visited each other's country to get first-hand impressions of their educational systems. Many Swiss companies have introduced Swiss-inspired apprenticeships at their U.S. facilities. Labor markets rapidly change and especially the current advancement of technology poses many challenges, which must also be addressed at the educational level. It is therefore crucial for Switzerland to exchange educational best practices.

The Swiss apprenticeship model has also inspired U.S. companies to adopt similar programs and it has reached the attention of various stakeholders: federal and state agencies, researchers, educational institutions, and workforce development advocates in the U.S. have shown great interest in the Swiss model.

Apprenticeships have also been placed on the agenda of the U.S. administration.

Moreover, U.S. education researchers have started to look into the setup and functioning of Switzerland's educational system. Some of them have acquired extensive knowledge about Swiss vocational and professional education and training. For instance, Dr. Nancy Hoffman, who is senior advisor at Jobs for the Future and became enthusiastic about the Swiss model while consulting for the OECD on their study, *Learning for Jobs*. She works closely with Robert Schwartz, Professor Emeritus of Practice in Educational Policy and Administration at the Harvard Graduate School of Education:

“The Swiss education system is the gold standard in vocational education and training for young people. Sources of its strength are that it is the mainstream system—the way most 16 to 20 year olds make the transition from schooling to working life—and it is employer driven.”

Nancy Hoffman and Robert Schwartz
*Gold Standard: The Swiss Vocational
Education and Training System*



U.S. Secretary of Labor Alexander Acosta, U.S. Secretary of Commerce Wilbur Ross, U.S. Secretary of Education Betsy DeVos, then Swiss Federal Councillor Johann N. Schneider-Ammann, and Advisor to the President Ivanka Trump (front row, from right to left) at the Memorandum of Understanding signing ceremony. (Credit: U.S. Department of Education)

Memorandum of Understanding

To further strengthen the cooperation between the two countries, Switzerland and the U.S. signed a Memorandum of Understanding Concerning Cooperation on Advancing Apprenticeship, Career and Technical Education, and Vocational and Professional Education and Training. The signing ceremony took place on December 3, 2018, between then Swiss Federal Councillor Johann N. Schneider-Ammann

and U.S. Secretary of Education Betsy DeVos, U.S. Secretary of Labor Alexander Acosta, and U.S. Secretary of Commerce Wilbur Ross. Swiss Federal Councillor Johann N. Schneider-Ammann retired at the end of 2018. His successor, Swiss Federal Councillor Guy Parmelin, is looking forward to continuing the work on apprenticeships.

The Role of the Embassy of Switzerland and Swiss Representations in the U.S.

At the Embassy of Switzerland in Washington, D.C., and the Swiss representations across the U.S., we encourage bilateral and international dialogue and promote awareness of Swiss vocational and professional education and training. We are delighted to see that the U.S. government has placed apprenticeship on its political agenda, and we are committed to sharing Switzerland's expertise in the area.

We liaise with the U.S. government and connect stakeholders. We also work together with Swiss companies doing business in the United States, many of which have started apprenticeship programs inspired by the Swiss model.

Switzerland and the U.S. signed a Memorandum of Understanding to strengthen their cooperation in the area of apprenticeships.

Success Factors of the Swiss System: A Source of Inspiration

Vocational and professional education and training has a long tradition in Switzerland and is deeply rooted in Swiss society and the country's educational system. Its success can serve as an inspiration for other countries. Most companies get a return on investment for training apprentices already during the training period. Apprenticeships can also serve as reliable recruitment strategies. Ultimately, apprenticeships are valuable to the entire society and economy since they create a highly skilled and sustainable talent pool.

The Return on Investment for Companies

The costs for host companies offering apprenticeships include: salaries paid to apprentices as well as contributions to costs related to providing a workplace, time invested by trainers for instructing apprentices, and recruitment and administrative costs.

At the beginning of an apprenticeship, associated costs are higher than output since apprentices still need to learn a lot. Toward the end of the program, however, apprentices assume many skilled tasks, require less instruction, contribute to the daily work, and have a productive output.

Apprentices earn a progressive salary, but their remuneration is lower compared with what the company would have to pay a skilled worker for the same job. In most cases, the apprentices' productive output offsets the investments made and leaves companies with a net benefit already during the training period.

Additional information and research articles on the benefits of apprenticeships can be found at www.educationeconomics.uzh.ch, the website of the Swiss Leading House "Economics of Education".

The Swiss Leading House "Economics of Education" is codirected by Dr. Uschi Backes-Gellner and Dr. Stefan C. Wolter. They are professors at the Swiss Universities of Zurich and Bern, respectively, and have each done extensive research on the return on investment and other benefits that companies derive from training apprentices.



Apprenticeships as a Recruitment Strategy

Companies often use apprenticeships as a strategy for recruiting their future workforce. They retain the most suitable apprentices and hire them as regular employees. If the company did not achieve a net benefit from training beforehand, it definitely will at this point.

If an apprentice is hired after completing the program, the employer already knows the apprentice is a good match and the employer can save additional recruitment costs. Overall, a better qualified workforce leads to higher productivity as well as better innovation ca-

pabilities. Apprentices bring new input, up-to-date knowledge, and creativity to the workplace, which can inspire new, innovative ideas.

Even if the apprentices cannot be retained, training apprentices might have a positive influence on external recruitment options. Offering apprenticeships is said to increase a company's reputation and is a sign of good working conditions. This improves an employer's image and can result in more and better-quality applicants for job vacancies.



Switzerland is often associated with quality and innovation. Apprenticeships make a crucial contribution toward maintaining a qualified and innovative workforce in the Swiss economy. (Credit: Iris Krebs)

Creating a Highly Skilled and Sustainable Talent Pool

Since Switzerland is a knowledge-based country with hardly any natural resources, its main competitive advantage is its skilled workforce. Many experts believe that Switzerland's robust apprenticeship system plays a crucial role in the country's innovation capabilities. Apprenticeships provide an important way to ensure long-lasting availability of highly qualified and innovative employees.

Although Swiss companies are not obligated to offer apprenticeships, over one third of all Swiss companies which are able to train apprentices choose to do so. For the host companies, apprenticeships provide a way of creating a talent pool and contributing toward the next generation of skilled workers.

Switzerland has a well-established apprenticeship ecosystem. All host companies follow certain industry-specific skill standards for training their appen-

tices and the training content is very comprehensive. Employers are aware of the qualifications an apprenticeship graduate can offer, even if the apprentice was trained by another company. That way, companies can benefit from each other: apprentices who could not be retained by one company are available in the labor market and can be recruited by another company, with very low recruitment costs. Apprenticeship diplomas are nationally recognized, allowing workers to be mobile in the labor market and to find work all across Switzerland.

Professional organizations play an important role in the Swiss apprenticeship system; its labor-market orientation is crucial to its success.

Swiss-Inspired Apprenticeships in the U.S.

In recent years, several Swiss companies with subsidiaries in the U.S. have brought the Swiss apprenticeship model to the United States. They usually work together with local community colleges to establish teaching curricula. Some of them have inspired other companies in their regions to adopt a similar apprenticeship model. Today, there are multiple region- or even state-wide apprenticeship “clusters” inspired by the Swiss model all across the U.S. Here are a few examples of Swiss-inspired apprenticeship pioneers.

Many Swiss companies are leaders in introducing Swiss-inspired apprenticeship programs into the U.S. labor market.

Max Daetwyler Corporation, North Carolina (Huntersville):

In 1995, the Max Daetwyler Corporation cofounded Apprenticeship 2000—an apprenticeship program with the goal of training the next generation of skilled craftsmen. The program takes four years and leads to an associate’s degree in mechatronics from Central Piedmont Community College as well as a journeyman’s certificate issued by the state of North Carolina. Daetwyler offers all its graduates a job once they complete the apprenticeship.

Bühler Aeroglide, North Carolina (Cary):

Among other Swiss companies, Bühler Aeroglide is also a founding member of a local apprenticeship program called North Carolina Triangle Apprenticeship Program (NCTAP). A number of local companies offer apprenticeship positions in advanced manufacturing as part of NCTAP. At the end of the program, graduates receive an associate’s degree in mechanical engineering technology from Wake Technical Community College and a journeyman’s certificate issued by the state of North Carolina.

Bühler Group, Minnesota (Plymouth):

Bühler has set up what they call the Bühler Apprenticeship Academy, through which they train young apprentices to become customer service engineers. It is a three-year program after which apprentices earn an associate’s degree from Dunwoody College of Technology and a journeyworker card from the Minnesota Department of Labor and Industry. Bühler invests heavily in their apprentices since the company pays for their wages, college tuition, tools, books, computers and uniforms.

Feintool, Ohio (Cincinnati) and Tennessee (Nashville):

Feintool offers a four-year toolmaker apprenticeship. The program was started in Cincinnati in 1988 and partners with Cincinnati State Technical and Community College. Many former apprentices are still with Feintool today—they hold various positions and significantly contribute to the company’s leading position in fineblanking and forming technology. Recently, Feintool Tennessee set up a new program for toolmakers at its plant in Antioch, near Nashville, where more technical experts are required due to the continuous growth of the company.

Zurich Insurance, Illinois (Schaumburg):

In 2016, Zurich started a first-of-its-kind U.S. apprenticeship program for the insurance industry that resembles a program that has been successful at its Switzerland headquarters for many years. Zurich is working with William Rainey Harper College to educate and train people with an interest in becoming insurance professionals, focusing on underwriting and claims, areas core to Zurich’s business. Recently, Zurich launched a new cyber security apprenticeship program to address growing demand for cyber security professionals.

GF Machining Solutions, Illinois (Lincolnshire):

GF Machining Solutions, the global leader of excellence in precision machining and market-driven innovation, engages apprentices in training and education to become field service and application engineers. The program lasts a total of 5 years. For the first 3 years, apprentices attend William Rainey Harper College while participating in job training at GF Machining Solutions’ U.S. headquarters. Upon successful completion, apprentices receive their associate’s degree and industry certifications. Apprentices then work in the field alongside other GF engineers for the final 2 years.



Celine Tschumi, a third-year Mechatronic Electrician apprentice at Daetwyler in North Carolina, wiring a custom-built machine. (Credit: Max Daetwyler Corporation)

SFS Group, Ohio (Medina):

SFS Intec offers unique apprenticeship opportunities in its U.S. automotive division such as: tool and die maker, industrial design engineer, automated equipment engineer, precision machinist and production machining specializing in cold forming technology. SFS Group USA automotive division is a member of the Medina County Manufacturing Partnership and Medina County Economic Development. The division partners with educators and businesses to work with education, workforce development, economic development and community organizations to close workforce skill gaps and address competitiveness needs.

Nestlé, Various Locations:

Nestlé has been training apprentices in the U.S. for decades and has recently increased its investments in apprenticeships by expanding programs in 22 of its U.S. factories. The programs aim to develop skills for workers in the food and beverage industry. Most of Nestlé's programs include a multi-year combination of on-the-job and coursework-based training for electrical and controls technicians, maintenance mechanics, among other functions critical to the production process.

Mikron Corporation Denver, Colorado (Denver):

Mikron started an apprenticeship program at their U.S. facility in Denver in 2016. It is a three-year program in advanced manufacturing and partners with Metro State University. The first apprentices graduate in fall 2019. In setting up the program, Mikron was inspired and supported by Daetwyler and Bühler, which had already established their own apprenticeship programs at the time. Mikron is also a partner of the statewide nonprofit organization CareerWise Colorado.

Various Companies in Partnership with CareerWise, Colorado:

In 2016, the non-profit organization CareerWise was established to expand Swiss-inspired apprenticeships throughout the state of Colorado. Since then, the apprenticeship landscape in Colorado has seen rapid developments. The Swiss companies Mikron, DT Swiss, and Pilatus were among the first to offer Swiss-inspired apprenticeships in the state of Colorado. Now, more than 125 U.S. companies have set up similar programs. CareerWise is committed to continue the growth and expansion of these programs, in Colorado and across the United States.

The Adecco Group, Various Locations:

As the world's leading workforce solutions provider, the Adecco Group is responding to workforce challenges in the United States with a pledge to facilitate 10,000 work-based learning opportunities by 2020, prioritizing the apprenticeship model as the gold standard. The company streamlines the process for businesses across sectors to implement employer sponsored apprenticeship pathways and it also launched its own Registered Apprenticeship Program where HR talent across the nation can receive official training as a recruiter and earn a certificate in the profession.

ABB, Arkansas (Fort Smith), Georgia (Athens) and North Carolina (Marion):

ABB, a pioneering technology leader with a comprehensive offering for digital industries, starts its first Swiss-inspired apprenticeship programs in the U.S. in June 2019. In three different facilities, ABB will train apprentices in the fields of industrial maintenance, mechatronics, robotics automation, and machining. The company has been working closely with these communities to set up these programs. ABB plans to further develop and replicate these programs at other manufacturing locations across the United States.

Visit the Embassy of Switzerland's website and watch the video about the Swiss vocational and professional education and training model and see apprentices in action at www.swissemb.org/scitech.

Published by

Embassy of Switzerland in the
United States of America
2900 Cathedral Avenue, N.W.,
Washington, D.C. 20008
www.swissemb.org
was.info@eda.admin.ch

Acknowledgments

We would like to thank the U.S. Departments of Education and Commerce, and all the Swiss affiliates that contributed information to this brochure. We would also like to thank Dr. Stefan C. Wolter, Dr. Uschi Backes-Gellner, and Dr. Nancy Hoffman for sharing their expertise and knowledge.

About the Content

The first edition of this brochure was published in 2016, shortly after Switzerland and the U.S. had signed a Joint Declaration of Intent on apprenticeships. Since then, there have been many developments in the Swiss-inspired apprenticeship landscape in the U.S. and in Swiss-U.S. cooperation in the field. More companies have established or expanded Swiss-inspired apprenticeship programs at their U.S. facilities. In addition, Switzerland and the U.S. signed a Memorandum of Understanding on apprenticeships in 2018. The content of the second edition reflects those updates and developments and presents the most current information at the time of publication.

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The Global Innovation Index 2018: www.globalinnovationindex.org

Credits

Authors and Project Managers: Kim Hunziker (1st ed. 2016); Sophie Baumann (2nd ed. 2019)

Editor: Cheryl A. Fain

Content and Review: Swiss State Secretariat for Education, Research and Innovation SERI

Review: Andreas Ledergerber and Katia Grütter (1st ed. 2016); Simon Marti (2nd ed. 2019)

Graphics and Design

Clear Sky Creative, LLC, Washington, D.C.

Page Layout: Visual Communication FDFA, Bern, Switzerland

Cover Photograph: Christoph Gysin/courtesy of aprentas

Printing

Gabro Printing & Graphics, Virginia

More Swiss Vocational and Professional Education and Training Online

Visit us on YouTube to watch a short video about Swiss apprenticeships in the U.S. featuring interviews with apprentices and executives of Swiss companies at www.youtube.com/user/ThinkSwiss.

Download this brochure and other material from our website at www.swissemb.org/scitech.

Washington, D.C., May 2019



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