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SWITZERLAND'S APPRENTICESHIPS: LESSONS FOR THE U.S. EDUCATION SYSTEM

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SOLUTIONS FROM BEYOND THE BELTWAY

About the Author

Gretchen Morgan is a policy and strategy fellow at the Center for Innovation in Education. She was previously the president of CareerWise Colorado, where she led the launch of a state-wide youth apprenticeship system. Morgan also served as the associate commissioner of innovation at the Colorado Department of Education, where she led strategic initiatives, including the design of an assessment pilot and competency-based learning, and oversaw the state's charter, postsecondary, and student reengagement work. She has also worked as a principal, curriculum and program developer, instructional and leadership coach, and elementary school teacher.

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Executive Summary

Many people have studied and written about Switzerland's youth apprenticeship system, and there are good reasons to do so. The Swiss economy has been called the most innovative in the world. Switzerland's students significantly outperform U.S. students in scholastic achievement. Its youth unemployment rate is lower than ours.

Apprenticeships are not a minor add-on existing on the margins of the Swiss education system. Instead, youth apprenticeship is an integral, fundamental feature of that system—and one with far-reaching, positive effects on Swiss society.

In America, much of a young person's life trajectory reflects choices made at the end of high school. College—yes or no? Which college? To study what? Under which set of financial conditions? The answers to these questions have a lifelong impact on a person's work, financial stability, and social class. Given the stakes, these choices are the source of tremendous anxiety for parents and students alike. Swiss youth and their families do not experience the levels of anxiety experienced in the United States.

Two of the characteristics of Switzerland's educational system stand out as particularly important to Americans hoping to reform our own.

- *There are no dead-end choices for young people in the education system*. No matter what path a Swiss student embarks upon—going for a college degree or entering one of a number of apprenticeship programs—at the end of the journey, the student will have the opportunity to choose another path, another kind of education and training, and decisions to pursue it will be financially accessible.

- *All educational pathways are high-skill pathways*. A registered apprenticeship in the U.S. requires 2,000 hours of on-the-job learning, may take one to two years, and typically results in a job, often in the skilled trades. Swiss apprenticeships span a broader range of industry sectors—including banking and information technology.

Swiss apprenticeships typically require four years of training and a high level of technical skill that is agreed upon by industry leaders in a single, national framework. The intensity, length of time, and high level of skill also contribute to the student's feelings of trust and safety: the apprenticeship path is not a decision to exit postsecondary education and to be less skilled or less prepared to earn a good wage.

SWITZERLAND'S APPRENTICESHIPS: LESSONS FOR THE U.S. EDUCATION SYSTEM

An Integrated, Lifetime Educational System

Many people have studied and written about Switzerland's youth apprenticeship system, and there are good reasons to do so. The Swiss economy has been called the most innovative in the world.[1] Switzerland's students significantly outperform U.S. students in scholastic achievement.[2] Its youth unemployment rate is lower than ours.[3] And Switzerland has lower levels of income inequality than the United States.[4]

Another reason to envy Switzerland's system: apprenticeships are not a minor add-on existing on the margins of the Swiss education system. Instead, youth apprenticeship is an integral, fundamental feature of that system—and one with far-reaching, positive effects on Swiss society. In my roles at the Colorado Department of Education and CareerWise Colorado, I had the pleasure of being part of a team that designed and launched the Colorado approximation of the Swiss youth apprenticeship system. As part of that effort, I had the opportunity to study the apprenticeship system up close, while meeting with a wide range of apprentices, employers, apprentice teachers, and parents. Overwhelmingly, young people and their parents described the process of making decisions about what to do at the end of compulsory education (roughly equivalent to 10th grade in the U.S.) as one that they undertook with care, plenty of good information, and relatively little worry about whether they were making the single best choice for their future.

As a parent and a former high school principal, I found this to be the most striking aspect of the Swiss system. In America, much of a young person's life trajectory reflects choices made at the end of high school. College—yes or no? Which college? To study what? Under which set of financial conditions? The answers to these questions have a lifelong impact on a person's work, financial stability, and social class. And despite our country's best efforts, the choices that students make often have more to do with the circumstances of their birth rather than their intellectual curiosity or career aspirations. Given the stakes, these choices are the source of tremendous anxiety for parents and students alike.

I was determined to understand what it was about Switzerland's system that led Swiss youth and their families to feel so differently about postsecondary choices. In addition to listening to apprentices, employers, apprentice teachers, and parents, I found CEMETS (Center on the Economics and Management of Education and Training Systems) at ETH Zurich (Swiss Federal Institute of Technology) to be an invaluable source of information on Switzerland's vocational education and training (VET) program and how it interacts with the Swiss education system and economic system as a whole. Several characteristics of Switzerland's educational system stand out as particularly important to Americans hoping to reform our own.

- There are no dead-end choices for young people in the education system.
- All educational pathways are high-skill pathways; some are applied, and some are theoretical.
- The entire system is highly organized, efficient, transparent, and easy to navigate.
- The system is built upon meticulously managed incentives and system influences.

In sum: the children and families I spoke with trust the education system, including its apprenticeships—and their ability to make meaningful choices within it. Companies in Switzerland find enough value in the system to sustain participation in it, especially in developing the talents of young people. And the government can monitor the educational system[5] and help facilitate adjustments[6] that are needed to promote economic innovation and ensure high-quality training for all youths.

The success of youth apprenticeships is the direct result of tight alignment with Switzerland's education system. This has to be kept in mind for any significant reform in this country: simply adding youth apprentice programs to the disparate parts of America's K–12, community college, and four-year education system may build another kind of workforce program, but it will accomplish little in terms of changing the level of hope and confidence that American students and parents feel when making postsecondary decisions, or in stabilizing the fragility of the middle class. In a very practical way, apprenticeship creates some of the levers and pulleys that the Swiss use to pull their educational system into alignment; apprenticeships could be used to do the same thing in this country.

Here is an explanation of how the characteristics of Switzerland's successful educational system, and the role that apprenticeships have in this system, interact:

1. There are no dead-end choices for young people. No matter what path a Swiss student embarks upon—going for a college degree or entering one of a number of apprenticeship programs—at the end of the journey, the student will have the opportunity to choose another path, another kind of education and training, and decisions to pursue it will be financially accessible. This means that all first choices are good choices, so young people and their families feel much less anxiety about making a choice.

Consider that in Switzerland, the following kind of pathway is possible:

- A student is struggling at the end of compulsory education and, as a result, is not hired as an apprentice or accepted into a baccalaureate (precollege high school) program.
- The student takes a year in a transition program to hone necessary skills and otherwise become prepared.
- The student could then be hired in a lower-level medical apprenticeship, complete that apprenticeship while earning money, and continue to grow as a young person.
- The student is then hired into a four-year apprenticeship in commercial business and continues to learn, mature, and earn money.
- While in that apprenticeship or in the year following the apprenticeship, the student can also choose to take coursework in preparation for a university entrance exam.
- If the student studies hard and scores well enough on the exam, he or she could continue to work part-time for the same employer after the apprenticeship, or for another employer who needs skilled commercial business employees. Meanwhile, the student begins to pursue a degree in psychology.
- The student could keep working and studying as long as desired for as many degrees as desired, right on through a Ph.D.
- Throughout the period of university study, the student pays very little tuition, in the range of hundreds of dollars a semester.
- Students who choose to reduce work hours to 80% or 60% to pursue higher education can also qualify for a stipend to help cover the cost of reduced work while attending a university.

This pathway is only an illustration but it is not implausible. Perhaps not many people would follow this specific path, but many people do take more than the first few steps. Students and families are fully aware of the variety of opportunities; and the level of family income is not a barrier to going as far as the student would like. This knowledge has much to do with students and families trusting that, whatever choice a young person makes first—whatever door is taken—other doors will not be closed. The actual costs

and opportunity costs of needing or wanting to change direction are very low.

The integration of apprenticeships with the possibility of lifetime learning and variable career paths in Switzerland has implications for the United States. When designing youth apprenticeship programs in the U.S., teams should look for opportunities to build out fully stacked pathways that build from experiences that begin in high school, to certificates and small accumulations of transferable college credit, to full degrees. The build-out of these full education pathways is essential to students and families understanding that their first choice will not limit them—even if, as in Switzerland, only about one-third of students ever pursue the full pathway.

For these pathways to be viable for more than those who can self-fund, the build-out includes the integration of public funding, as well as private funding from employers, to offset the costs of learning new and better skills at each stage of a young person's path. In an ideal design, young people who enter a pathway know what a progression of roles looks like, which competencies they need to advance from role to role, where to go to build those competencies, and that they have economically viable means of learning the necessary competencies to take a few large steps over the first 10 years of their career.

Even without youth apprenticeships, or as a parallel initiative alongside apprenticeships, U.S. postsecondary education pathways built to align with well-mapped professional paths can follow this same form. Financial incentives can be provided by policymakers, philanthropy, or business to support them.

2. All educational pathways are high-skill pathways; some are applied, and some are theoretical. The way Swiss educational pathways differ from one another is in the type of theoretical (university) versus applied (apprenticeship) skills. Most apprenticeships last four years, and industry sets a high standard for skills to be mastered over that time. Neither the U.S. system for registered apprenticeships[7] nor our common use of the term "middle-skill" is exactly analogous to what is expected of apprentices in Switzerland.

A registered apprenticeship in the U.S. requires 2,000 hours of on-the-job learning, may take one to two years, and typically results in a job (often, though not only, in the skilled trades) that pays good wages in stable pathways. In Switzerland, apprenticeships span a broader range of industry sectors—including banking and information technology. Swiss apprenticeships typically require four years of training and a high level of technical skill that is agreed upon by industry leaders in a single, national framework. What Americans refer to as "middle-skill" is even less well correlated with the Swiss situation. In the U.S., it is a general term for careers accessible with some postsecondary training but less than a four-year degree, which is broadly focused in terms or sectors but does not, by definition, ensure strong initial earnings or growth.

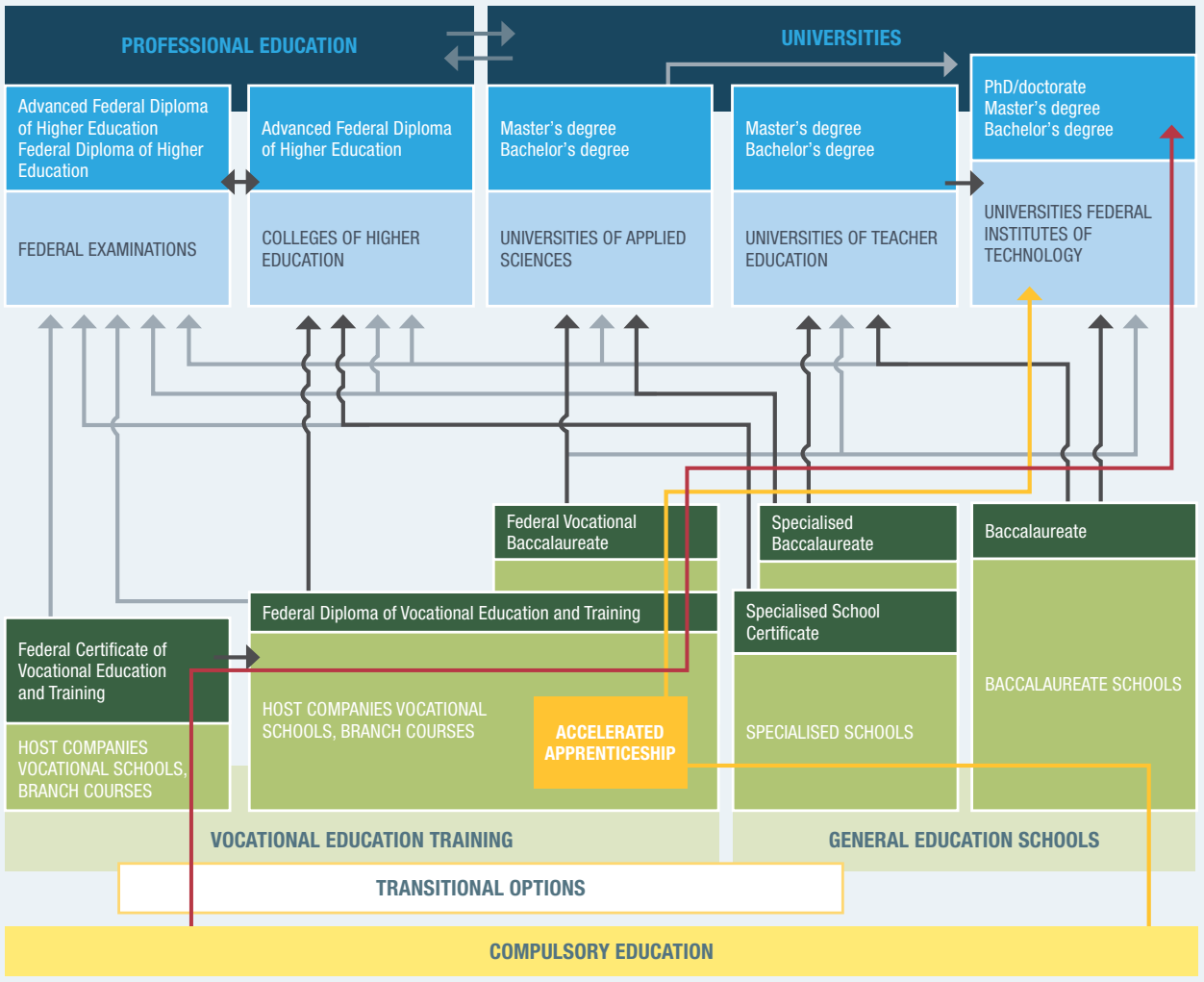
Part of the reason the apprenticeship pathways in Switzerland are all high-skill is that they create an incentive for company participation. From the companies' perspective, the goal is to ensure that apprentices deliver enough value, over a long period, to justify the wages they earn, given the significant financial investment that the companies make in training them. However, the intensity, length of time, and high level of skill also contribute to the student's feelings of trust and safety: the apprenticeship path is not a decision to exit postsecondary education and to be less skilled or less prepared to earn a good wage.

In planning youth apprenticeships or other forms of work-based learning in the U.S., it is important that reformers push themselves to think beyond the competencies associated with entry-level roles. Three or four years into work, a person needs to be more highly skilled and prepared to earn beyond the entry level. Based on the successful example of Switzerland, apprenticeship programs in the U.S. should identify a three- to five-year progression and build out the competencies all the way to the end of that progression.

3. The entire system is highly organized, efficient, transparent, and easy to navigate. The diagram on page 8 shows how a Swiss student might navigate the entire educational system from kindergarten through every possible choice, reaching the highest level of a theoretical (university) degree. Everywhere I visited in Switzerland there was one or two versions of this diagram. All the people I spoke to knew this diagram and could place themselves in it.

The arrows in the diagram show exactly how a student can begin anywhere and go anywhere without repeating learning, wasting time, or wasting money. It is possible to switch lanes from vocational training to theoretical training or vice versa, and some students do so. The system is built to be permeable—to allow for movement and to make that movement efficient. The black arrows illustrate paths that can be taken automatically with the diplomas earned in the step below; gray arrows indicate that an exam must be passed in order to take that path. Supports are provided to prepare for these exams. The red line illustrates the

Switzerland's Education System



Source: State Secretariat for Education, Research and Innovation, "Swiss Education System"

example of the student described earlier who begins with a transitional year and ends by earning a Ph.D. in psychology. The yellow line shows someone who began on the theoretical track in baccalaureate and decided to transfer to an apprenticeship in robotics rather than go to university, was able to complete that apprenticeship in three years, and returned to university later to earn a bachelor's degree in business.

Even within a single state in the U.S., it would take considerable political will to require all institutions to recognize and honor credit from other parts of the system in a consistent way. Generally, such policies are difficult to achieve because of many counterincentives and bureaucratic barriers. Even when such systematic credit transfer is not achievable, systemic or regional brokered agreements between institutions that solidify transfer agreements for students in a program or in a pathway should be pursued. For example, a group of community colleges and a four-year institution in a region could work together to build a pathway of courses, stackable certificates, and a two-year degree in computer science, and agree to allow free transfer of these courses, certificates, and degree. In this scenario, students would know that any amount of study in that area would be valuable in terms of career advancement as well as the potential continued study at their current or any other regional institution of higher education.

With or without youth apprenticeship playing a role in creating a more permeable system in the U.S., there is room for improvement. Today, each type of higher education is accredited differently; one barrier to institutions creating pathways like the computer science

pathway described above is the need for each institution to show that its courses and instructors meet the criteria set out by the accrediting body. Policymakers could seek to incentivize accrediting bodies for two- and four-year colleges and technical schools to work together in a region to build pathways for automatic transfers without any institution facing the risk of losing its accreditation.

4. The system is built upon meticulously managed incentives and system influences. The system design gives each of the various players in Switzerland the ability to influence the educational system in the way that most directly benefits them and contributes to overall system quality. Industry determines what apprentices learn and how their ultimate competence is evaluated. Academia determines the fields of theoretical study. The government determines the content of the curricula, which prepares young people for their highly participatory form of democratic society. Natural incentives are adjusted and rebalanced to ensure the quality of the system as a whole. For example:

- The permeability of the Swiss educational system arose through a series of dramatic reforms to entice students back into apprenticeships when a rising proportion of them began to choose university three decades ago.

- Companies are not given financial incentives to cover apprentice wages because the system relies on companies hiring apprentices they need and paying wages that can be recovered through the productivity of a skilled apprentice over the term of an apprenticeship. With the full financial responsibility for apprentice wages, companies have an incentive to train apprentices to the highest skill level as fast as possible. This, in turn, is good for apprentices because it ensures that they develop high-level skills.

- The government, which knows that the highest earners and tax contributors over their lifetimes are those who have been apprentices and then choose to earn advanced degrees, offers stipends to apprentice graduates who wish to reduce their work hours to continue their education.

The incentives in the Swiss education system ensure its quality; similar incentives would be needed to ensure similarly self-sustaining systems in the United States. When designing the youth apprenticeship portion of an education and training system, it helps to keep in mind the paired priorities of being business-led and student-centered. The Swiss use that language as shorthand for giving business the ability to define key parameters of apprenticeships while ensuring that what is offered to students is of sufficient value to entice a large number and variety of them to participate.

Iterative design processes that engage each of the primary users (business and students) and secondary users (schools, training providers, and higher-education institutions) with prototypes of system parameters are essential to finding the right balance of incentives to begin. Significant refinement may still be required as implementation begins because users will not be able to predict all the implications of design ideas.

Conclusion

After examining the Swiss system, the most optimistic Americans might think that if we just train more postsecondary students as apprentices, magical social and economic improvements will occur. For the less optimistic among us, it is also easy to look at that diagram, realize how very far the U.S. is from having such an orderly system, and become overwhelmed. For others, it is easy to dismiss their system out of hand: Switzerland does not have to deal with the fallout of multigenerational poverty and discrimination. What lessons could we possibly learn from such a homogenous society?

The more interesting and productive way to react is with some combination of curiosity and creativity. After all, what makes America the kind of place others are curious about is our inclination to grab a good idea and do something with it. The four characteristics central to the design of the Swiss education system will help U.S. reformers who are considering, or have already launched, apprenticeship efforts, to deepen the impact of their work and to help drive their reforms to offer young people more choices, and more hope, for their futures.

Endnotes

1 *Global Innovation Index 2018: Energizing the World with Innovation*, Soumitra Dutta, Bruno Lanvin, and Sacha Wunsch-Vincent, eds. (Ithaca, N.Y., Fontainebleau, and Geneva: Cornell University, INSEAD, and World Intellectual Property Organization, 2018).

2 PISA (Programme for International Student Assessment) Mathematics Performance 2015, OECD Statistics.

3 Youth Unemployment Rate 2018, OECD Statistics.

4 Income Inequality 2018 (Gini Coefficient), OECD Statistics.

5 "Interface Barometer 2019: Central Results, August 2019," State Secretariat for Education, Research and Innovation. See the statement of the study goal and design: "The aim of the interface barometer is to record the educational decisions of young people at the end of their compulsory schooling and to assess the situation on the Swiss apprenticeship market. For this purpose, a trilingual online survey in two survey waves is carried out annually for adolescents aged 14–16 and companies with at least 2 employees." See https://www.sbfi.admin.ch/sbfi/de/home/bildung/berufliche-grundbildung/nahtstellenbarometer.html.

6 "Vocational and Professional Education and Training in Switzerland: Facts and Figures 2018," Federal Department of Economic Affairs, Education and Research, State Secretariat for Education, Research and Innovation, 2018, p. 12.

7 A registered apprenticeship refers to an approach to job training sponsored by a company, education institution, or workforce intermediary that has been reviewed for quality and ultimately registered with the U.S. Department of Labor. Registered apprenticeships have begun to expand beyond their roots in the skilled trades. They must comply with a set of federal standards regarding business involvement, on-the-job training, related coursework, compensation, and credential attainment. See U.S. Department of Labor, "A Quick-Start Toolkit: Building Registered Apprenticeship Programs."

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