

Expanding College-Connected Apprenticeships to Improve Social Equity and Inequality

Dr. Douglas Decker

Laurel College of Technology

ddecker@laurel.edu

Abstract

The events of 2020 in the U.S have brought economic inequality and social justice to the forefront of society. Literature suggests that apprenticeship can serve as a pathway to access higher education, remove financial barriers, and give economic opportunity to all. The program's earn and learn structure creates a framework for a participant to receive not only a debt-free education but also a sustainable wage throughout the process. Prior to COVID-19, the U. S. economy saw unprecedented growth and historically low unemployment rates; however, wages low and middle-skill workers stagnated for decades (Zessoules & Ajilore, 2018). While productivity and profitability increased, gains have largely been realized by only by the upper tier of Americans, exasperating the persisting income inequality gap and creating an ominous outlook for the future middle-class standard of living. The share of American adults who live in middle-income households has decreased from 61% in 1971 to 51% in 2019 (Schaeffer, 2020). Moreover, gaps in both employment and income by race and gender have disproportionate labor market consequences for certain groups. Despite higher educational attainment, wage gaps and growing income inequality divide along racial lines. The New Jersey Institute of Social Justice (NJIST, 2020) sees apprenticeship as a way to help bridge the inequality gap while creating more equity and opportunity for people of all gender, race, and socioeconomic background.

Introduction

Economic inequality in the United States is a central issue in mainstream popular culture, political commentary, and scholarly research. The subject of inequality and the economic mobility of people with low socioeconomic status took center stage in the public discourse in the years following the Great Recession (Lerman, 2016). Experts subsequently focused on two aspects of inequality. The first aspect concerns the separation of the 99% of society from the rising concentration of incomes of the top 1 %. Piketty (2014) found data indicating the trend toward income inequality will persist due to the increase in income from capital investments. The second factor contributing to economic inequality proliferation is the differences in educational attainment. The three career pathways available to the American worker are straightforward: the high school pathway, the middle-skills pathway, and the bachelor's degree pathway (Carnevale et al., 2018). Throughout a career lifetime, a worker with a high school diploma earns on average \$1.3 million, a bachelor's degree earns \$2.3 million, a Doctor of Philosophy nets \$3.3 million, and a professional degree earns \$3.7 million. (Carnevale, 2016) Although there have been overall gains in college completion, those results still bring weak results for low-income and minority students. This paper explores an alternative approach: expanding college-connected apprenticeship as the primary means for reducing wage inequality and increasing opportunity for economic mobility for all people regardless of race, gender or social class.

Apprenticeship is an employer-driven, earn and learn model that combines on-the-job training provided by the employer that hires the apprentice, with job-related instruction in curricula tied to the attainment of national skills standards. The model also involves progressive increases in an apprentice's skills and wages (DOL, 2020). Since apprenticeships require far less of a financial investment than college for the participant, there are fewer barriers to entry, more attainable for low-income students, and more likely to lead to valued occupational credentials. Apprentices typically pay little or nothing for their classroom-based education and experience no opportunity cost due to the lost earnings during the skill development period (Lerman, 2016). At the same time, not only do college students forego substantial amounts of earnings but also many have to pay significant amounts for their formal education. Many apprenticeship programs result in the completion of a college degree paid for by the sponsoring employer (DOL, 2020).

In the U.S., the modern concept of apprenticeships is categorized as a work-based learning (WBL) strategy. The apprenticeship frameworks are classified as Registered Apprenticeships (RAs) regulated by the U.S. Department of Labor (DOL) who awards a federal certificate upon completion. The DOL Registered Apprenticeship (RA) program covers over a thousand occupations; however, many of the occupations outside of the skilled trades are relatively new programs to the federal registry. DOL defines an RA program as innovative work-based learning and post-secondary earn-and-learn models that meet national standards set by DOL. These standards must meet five essential criteria (DOL, 2020):

1. Participants are paid by employers during training.
2. Programs meet national standards for registration with the U.S. Department of Labor.
3. Programs provide on-the-job learning and job-related classroom or technical instruction.
4. On-the-job learning is conducted under the direction of one or more of the employer's personnel.
5. Training results in an industry-recognized credential that certifies occupational proficiency.

Systemic societal structures create barriers to access career advancement opportunities for people of low socioeconomic status (NJISJ, 2020). The paper will suggest through findings in the literature how apprenticeship can play a part in leveling the playing field. To begin, this paper will chronicle apprenticeship's expansion from colonial America to its modern reemergence as a popular policy initiative. Next, it will explore how apprenticeships intersect with economic and social theories to give a foundational understanding of the advantages and drawbacks from a theoretical perspective. Lastly, opportunities for apprenticeship's alignment with established higher education pathways give potential solutions for addressing economic inequalities and social equities.

Apprenticeships' Journey in the New World

Apprenticeships are perhaps the oldest form of knowledge transfer and educational structure known to civilization. Tracing its roots back to the 18th century B.C., the Code of Hammurabi of Babylon obligated artisans to pass down their crafts to the next generation workers. The ancient Greeks and Egyptians held apprenticeship in high regard as a way to pass along the skills needed to build their timeless structures. In Medieval Europe, apprenticeships were essential to Europe's

rise through programs established in guilds such as blacksmiths, stonemasons, and leather smiths (Rolland, 2016). Prior to the industrial revolution, skills were tacit, and the only method to transfer knowledge was to learn from a master craftsman. Few people in ancient times could read, so learning by doing was the most effective pedagogy (Jacoby, 1991).

By the time European settlers established colonial America, apprenticeship was a staple of European culture. As those craft workers immigrated to the colonies from European countries, they brought with them the same system to pass along their craft and trade to youth going up in their communities. Some master artisans even went so far as to teach their apprentices reading, writing, and arithmetic. Some of the country's most well-known forefathers benefited from this system, such as George Washington (surveyor), Benjamin Franklin (printer), and Paul Revere (silversmith) (Lorenzo, 2017). However, with the arrival of the Industrial Revolution in the mid-1800s, the need for apprentices began to diminish because virtually no skills were needed for factory mass-production jobs. Only jobs that required some type of handicraft or specialized knowledge maintained an apprenticeship culture.

As the construction boom swept across early 20th century America, apprenticeships started to reenter the mainstream through the specialized building trades. Occupations such as machinists, ironworkers, pipefitters, and electricians began to form labor unions and organize a system of training their new members into the profession. Beginning in the 1920s, the legislative success in Wisconsin created a groundswell of support for a uniform national apprentice system from government officials, educators, labor organizations, and national employers. As a result, the Federal Committee on Apprenticeship was appointed by the Secretary of Labor appointed to recommend a unified national system for apprenticeship (Apprenticeship.gov, 2020). Codified into existence in 1937, Congress passed the first national piece of unifying legislation for apprenticeship. Known as the 'Fitzgerald Act,' the National Apprenticeship Act mandated the Department of Labor to formulate the continuance of labor standards necessary to safeguard the welfare of apprentices and to cooperate with the States in the promotion of such standard (Apprenticeship NC, 2020).

Modern American apprenticeship movement. Apprenticeships have languished in the United States for decades ever since due to being typecast as applying only to blue-collar professions (Jones, 2011). The system has experienced upswings and downturns that paralleled economic trends in the economy, but it has never grown to more than .02 % of the workforce according to the Committee for Economic Development (CED) (2019). The original arbiters of the apprenticeship system, the skilled trades union, have resisted sharing the mantle with other sectors of the workforce out of fear that the expansion would dilute the quality and rigor that they have fought for generations to build (Lerman, 2012). Despite that long-held resistance, the program has seen bipartisan support and funding appropriations in recent years, since 2016 over \$500 million has been allocated at the federal, state and local levels to expand apprenticeships to the now approximately 1000 occupations recognized by the Department of Labor (NSC, 2020). With a goal to reach one million new apprentices by 2022, the DOL saw its best year in 2019, reaching a record of 585,000 active apprentices (DOL, 2020). It remains to be seen how the trajectory of apprenticeship will be impacted by the economic downturn caused by COVID-19. It is possible that the recent uptick was propelled by employers seeking new hiring tactics during an era of record-low unemployment. Once the job market resets, employers may not be motivated to maintain the complexities of an apprenticeship training program, choosing instead to hire in more conventional ways if at all.

Nonetheless, the United States appears to finally be embracing the concept of apprenticeship as a key component of its workforce development; however, it has long been an essential career pathway across most of the developed world. In countries such as Australia, France, Germany, Norway, Switzerland, and the United Kingdom, apprenticeships serve as a mainstream and coveted career opportunity. For example, in Switzerland, 70% of all students choose apprenticeships, and 40% of companies participate (Hoffman & Schwartz, 2015). The country also boasts a 58% college enrollment rate, suggesting that apprenticeships are a complement to, rather than a detractor from, college education (Amoyaw & Brown, 2018; Hoffman & Schwartz, 2015). Contrary to the ubiquity of apprenticeship in Switzerland, in 2012, just shy of 150,000 Americans began an apprenticeship (Steinberg & Gurwitz, 2014). If the United States had the same rate of participation as Switzerland, that figure would rise to 3.1 million. These numbers suggest that U.S. employers are barely leveraging the potential of apprenticeships (Amoyaw & Brown, 2018).

In terms of significance, prestige, and public funding in the United States, degree-granting higher education institutions own the career and workforce development landscape that is designated to prepare students with the skill demands of a 21st-century economy (CED, 2019). Yet more than 30% of high school graduates under the age of 24 are not enrolled in college, and approximately 40% of students who enroll in college fail to successfully complete a degree within six years (Shapiro et al., 2018). Such statistics underscore the need for policy and pedagogical improvements in the secondary and higher education systems in the US. Even with the challenges the higher education sector faces with high costs and degree completion rates, the only decision more expensive than going to college is not going to college (Carnevale, 2016). There is a systemic "...lack of focus on the functioning of, support for, and concerns surrounding alternative pathways to help students who do not secure a college degree to transition to careers, thereby ensuring a skilled workforce" (CED, 2019, p. 1).

Apprenticeship's Intersection with Social and Economic Theory

The lack of emphasis to support those left out of conventional career pathways helps to create a widening income inequality gap in the United States not experienced by many other industrialized nations (Symonds et al. 2011). In Europe, for example, after World War II, leadership knew they had to build out a decidedly regulated relationship between their education and the economy to ensure employment, especially for war veterans. An efficient training system was a central component of the plan. Therefore, Europeans very quickly built out things like apprenticeships, job guarantees, employment guarantees, and three-to-five-year unemployment insurance (Fadulu, 2017). In post-World War II America, the economy has done fairly well, so there has never been any threat that a working-class revolution which would motivate a comprehensive workforce protection system like the Europeans implemented. The apprenticeship model thrives in European countries such as Germany, partly because wages vary less across industries than they do in the U.S (Lerman, 2012). In the U.S., apprenticeship programs have struggled to gain a foothold because Americans use job-hopping as a means for career advancement. They are more likely than their European counterparts to leave a job for a different one that offers better wages. The average American will change jobs twelve times throughout their career (BLS, 2020). The risk of investing tens of thousands of dollars in someone who may leave for a better salary is a gamble few employers are willing to take (Fadulu, 2017). The pervasive mindset of business stakeholders in this country leans toward choosing near term profitability over long term sustainability.

This self-serving mentality displayed by the business community is attributed by scholars to the rise of neoliberalism in the United States (Saunders, 2007). Neoliberalism is a socioeconomic theory that dominates the commodification of public goods, material acquisition, and many of the consumerism behaviors in the United States. Proponents of the theory reject governmental regulation and economical intervention on any level (Giroux, 2004). Neoliberalism is derived from the term, liberalism, from the invisible hand, liberal economic theory conceived by Adam Smith and the Manchester School in the eighteenth century. The foundation of the theory centered around the free flow of supply and demand as a determinant market driver and focused on laissez-faire economic policy (Palley, 2005). The neo addition to the term liberalism took hold of the country in the 1980s. The modern incarnation of the theory is a stronger focus on the individual's property rights, combined with the scrutiny of governmental market intervention in the quest to maximize profitable returns (Saunders, 2007).

Adam Smith, to whom neoliberalism attributed, was an unrelenting critic of apprenticeship. Smith's opposition is based on his assertion that the institution of apprenticeship was both inefficient and unjust. Rothschild (2001) groups his arguments about apprenticeship into four categories.

The first, which is the closest to what would later have been thought of as an economic argument, is that exclusive apprenticeships tend to obstruct competition and to damage the public interest by keeping up wages and profits in particular industries, employments, or locations. The second argument is also, in part, about efficiency. Smith favored universal, obligatory education; he argues that apprenticeship is an unsatisfactory means of training workers either in particular skills or in habits of industry. The third argument is about both efficiency and equity; it is that apprenticeship, which is a restriction on personal liberty, is unjust to workers within apprenticeship relations and to other workers who are excluded from these regulated trades. The fourth argument is the closest to what would now be considered a purely political argument, although it is central, as will be seen, to Smith's account of economic change. It is that apprenticeships are unjust because they reflect an oppressive combination of public laws and corporate bylaws - a "corporation spirit" - in which laws are enacted for the benefit of the powerful, and enforced at the caprice of magistrates, masters, overseers, and churchwardens (p. 87-88).

Due to the nation's alignment neoliberal leanings, it can be attributed to this philosophy that apprenticeship has never taken hold, and the income inequality gap continues to widen.

Economic expansion and growing income disparities. Prior to COVID-19, the U. S. economy saw unprecedented growth and historically low unemployment rates; however, wages low and middle-skill workers stagnated for decades (Zessoules & Ajilore, 2018). Pew Research (2020) found that "Over the past 50 years, the highest-earning 20% of U.S. households have steadily brought in a larger share of the country's total income. In 2018, households in the top fifth of earners (with incomes of \$130,001 or more that year) brought in 52% of all U.S. income, more than the lower four-fifths combined." While productivity and profitability increased, gains have primarily been realized by only the wealthiest tier of Americans, exasperating the persisting income inequality gap and creating an ominous outlook for the future middle-class standard of living. The share of American adults who live in middle-income households has decreased from 61% in 1971 to 51% in 2019 (Schaeffer, 2020).

The gaps in both employment and income by race and gender have disproportionate labor market consequences for certain groups. Despite higher educational attainment, wage gaps and growing income inequality divide along racial lines. As an illustration, earning a bachelor's degree or higher has not translated to the reduction of either the black-white or the Latinx wage gap (Wilson & Roger, 2016). Meanwhile, employers are spending less on their internal workforce professional development training, and usually, the training is industry-specific, resulting in non-transferable skills or credentials (Zessoules & Ajilore, 2018).

The division sewed by corporate employment practices led to a polarization of the workforce, stagnant wages, persistent systemic racial, and gender income inequality, and inequities in social mobility (Zessoules & Ajilore, 2018). The United States is becoming an increasingly diverse nation that consists of a majority of people of color. Achieving more parity in the workplace is essential to reflecting national demographic shifts and to filling future workforce demands. Yet, the country continues to see a declining workforce participation rate that is partially driven by legal and structural barriers to employment (Glover & Bilginsoy, 2005). A declining participation rate means more people of color and low socioeconomic status are being left behind. As economic gains increasingly go to the wealthiest, the financial situation for all other families become more precarious. More than four in ten adults (41%) are unable to spend \$400 to cover an emergency expense, and a major life event such as losing a job, a health issue, or another unexpected loss of income or sudden expense will cause 62% of Americans to live in poverty at some point in their life (FederalReserve.gov, 2019). As a result, the already economically disadvantaged continue to experience rising economic inequality and less economic mobility, making it more challenging for an increasing number of people in the United States to afford a college or graduate education necessary for their advancement.

College-Connected Apprenticeships

Registered Apprenticeship programs, which is one of the few issues in Washington D.C. to have bipartisan support, aim to address this issue by providing Americans real opportunity with access to decent-paying jobs. The nation faces an increasing skills gap between technically trained job seekers and available jobs, particularly for middle-skill jobs and jobs in emerging industries. In fact, several industries are unable to operate at capacity and realize their full economic potential because they cannot fill critical openings (NJISJ, 2020). These middle-skill occupations are defined as jobs that require significant training beyond a high school diploma but less than a four-year college degree (National Skills Coalition, 2020). The training required can involve an associate's degree, diploma, professional certificate, or other specialized licensing or credential making them the perfect candidate for apprenticeable occupations. Middle-skill jobs constitute a vast segment of the employment spectrum. They make up more than half of the U.S. labor market (National Skills Coalition, 2020). Job titles range from dental hygienists and critical care nurses who earn \$70,000 a year to CNC Machinists who earn \$53,000 a year (ONET, 2019). Only 43% of the nation's workforce is trained at the middle-skill level; however, these occupations make up 53% of jobs in the United States, creating a middle-skills gap (Johnson & Spiker, 2018).

Even with a larger portion of students going on to attain higher education following high school, existing traditional college models of skill development and training will still fail to support the full scale of school to work pathways (CED, 2019). The lack of alternative pathways is harming large percentages of the population. This continued failure is disproportionately affecting the

most vulnerable and disadvantaged youth. The US Department of Education's Education Longitudinal Study (2013) found that a youth from the highest quartile of socioeconomic status, as determined by their parents' education and family income, was three times more likely to have received a college degree during cohort's observational timeframe than a child from the lowest quartile. This data conveys that the goal of college-for-all approaches to postsecondary education cannot be limited to four-year degrees. In part, this is because traditional higher education institutions do not have the infrastructure and support to affordably serve the needs of most minority and low-income workers and their employers who seek talent and skills that do not necessarily require a degree (CED, 2019).

Apprenticeship has a storied history in assisting with the upward mobility of minorities and economically disadvantaged the U.S. In 1881, Booker T. Washington was selected to open a new vocational, private industrial institution called Tuskegee based on the principles of cognitive problem-solving skills and learning by doing. The school was placed on 2,300 acres with 123 buildings and vocational programs ranging from electricity, machine shop, and bricklaying to painting and basket making (Standafer, 2019). After the Civil War, Washington and Frederick Douglass spoke about expanding vocational training for African Americans. They held the belief that industrial education would build economic self-reliance and better integrate people into industrial America. However, other Black leaders of the time, like W. E. B. DuBois, spoke out that this ideology was an acceptance of a substandard of living for the Black race (Hinman 2005). These philosophies differentiated Du Bois from more conservative black voices like Booker T. Washington. DuBois introduced the idea of "double consciousness," in which African Americans are required to consider not only their view of themselves but also the view that the world, particularly whites, has on them during all parts of life (Hinman, 2005)

American apprenticeship's degree pathway to upward mobility. The United States' European counterparts have long since acknowledged this problem of a skills mismatch with respect to the workforce and educational offerings. In countries like Austria, Denmark, Germany, Great Britain, Norway, Netherlands, and Switzerland, a dual education or 'dual-study' model of apprenticeship education is used to ease the school to work transition for the out-of-school and underserved youth population. Apprenticeships are as prevalent in these countries as internships are in the United States (Lerman, 2018). The literature on all aspects of European apprenticeship is extensive and encompasses several decades of research (OECD, 2017). Credited as the primary catalyst to European apprenticeship expansion, the dual education model combines classroom education in a post-secondary program of study with an employer-based multi-year apprenticeship arrangement (Hoffman & Schwartz, 2015). In this model, the education and training take place both in theory at the post-secondary institution and through WBL on-the-job training provided at the partnering apprenticeship company facility (Messing-Mathie, 2015).

This dual-education (or student-apprentice or degree-apprentices as it is known in the United States) model creates a learn and earn relationship between the employee (student) and the employer (workplace) (McCarthy et al., 2017). As apprentices, students apply directly to a firm, which has an agreement with an institution of higher education that provides the theoretical or academic portion of the training. The renewed interest in developing apprenticeship models in the United States is oriented around this model of integrated post-secondary training providers into the apprenticeship framework and facilitation. Presently, community colleges and technical schools are the primary sector of higher education that functions as the organizers of

apprenticeship programs (Messing-Mathie, 2015). These definitions create a massive opportunity and a direct pathway for the integration of higher education into newly innovative apprenticeship frameworks.

Conclusion

America has a long dysfunctional history with apprenticeship. For over a century, American families repeatedly rejected attempts to mainstream vocational education because technical education often precludes their school-age children from aspirational careers as doctors, lawyers, business executives, and scientists (Labaree, 2017). As a traditional four-year college pathway became the accepted gateway to elite professions throughout the early to mid-1900s, apprenticeships fell out of favor with America's upwardly mobile culture (Ferenstein, 2018). This mindset stigmatized the term as being synonymous with blue-collar construction trades. Experts say that Switzerland's apprenticeship system is the 'gold standard' because it is uniquely able to align the most prestigious careers with apprenticeships (Hoffman & Schwartz, 2015). If a successful American apprenticeship system is to be realized, the country needs the upper echelon of high-tech, growing companies to embrace the concept and place apprentices alongside graduates of the elite academic institutions. (Ferenstein, 2018). A connection with higher education is essential for that partnership to flourish as an advanced degree is often required for career growth within these elite organizations. The policymakers have a growth-oriented set of statutes in place for apprenticeship regulations. Higher education is in a position where low growth and high costs burden the sector, so a new vibrant program could help remove barriers to entry and give wider access to everyone willing to work for it. Lastly, the participants (students and employers) gain a partnership that streamlines the bureaucracy that plagues new program expansion efforts.

The timing is perfect for a mutually beneficial system that propels all sides of the apprenticeship triangle forward. The primary attraction to apprenticeships is the open access to the opportunity offered by an employer-sponsored career path and educational plan. For many participants who experience systemic social inequity and economic inequality, apprenticeships level the playing field and grant access to a world once thought unobtainable. Through a broadening of apprenticeship to growing and affluent occupational sectors like STEM and healthcare, all people, regardless of race, social class, gender, background, or sexual orientation, can have access to a system that invests as much in their future as they do. Apprenticeship empowers individuals to become self-reliant and realize that the helping hand they have been looking for is right at the end of their own arm. America has right now, perhaps its last, best chance to learn from the past apprenticeship failures and turn them into positives by leveraging the best higher education community in the world. By granting unencumbered access to higher education credentials, the U.S. system could fast become the new 'Gold Standard' of apprenticeship.

References

- Amoyaw, M., & Brown, D. (2018). Apprenticeship America: An idea to reinvent postsecondary skills for the digital age. *Third Way*. Retrieved online September 10, 2019 from <https://www.thirdway.org/report/apprenticeship-america-an-idea-to-reinvent-postsecondary-skills-for-the-digital-age>
- Apprenticeship NC. (2020). History. Retrieved online May 31, 2020 <https://www.apprenticeshipnc.com/about/history>

- Apprenticeship.gov. (2020). How to become an apprentice. Retrieved online May 31, 2020 from <https://www.apprenticeship.gov/become-apprentice>
- Bureau of Labor Statistics (2020). Number of jobs, labor market experience and earning growth. Results from a longitudinal survey. Retrieved online May 31, 2020 from <https://www.bls.gov/news.release/pdf/nlsoy.pdf>
- Carnevale, A. P. (2016). Credentials and competencies: Demonstrating the economic value of postsecondary education. *Georgetown Center for Education and the Workforce*. Washington D. C. Retrieved from <https://cew.georgetown.edu/wp-content/uploads/Parchment-Credentials-Competencies-Issue-Brief.pdf>
- Carnevale, A. P., Strohl, J., Ridley, N., & Gulish, A. (2018). Three educational pathways to good jobs: High School, Middle Skills, and Bachelor's Degree. *Georgetown Center for Education and the Workforce*. Washington D. C.
- Committee for Economic Development (US)(CED). (2019). Improving noncollege pathways to skills and successful careers. Committee for Economic Development of The Conference Board, Arlington, Virginia. Retrieved online May 31, 2020 from <https://www.ced.org/reports/improving-noncollege-pathways-to-skills-and-successful-careers>
- Fadulu, L. (2017). Why the U.S. fails at worker training. *The Atlantic*. Retrieved online from <https://www.theatlantic.com/education/archive/2017/11/why-the-us-fails-at-worker-training/545999/>
- Ferenstein, G. (2018). How history explains America's struggle to revive apprenticeships. Brookings Institution. Washington, D.C.
- Giroux, H. (2004). *The terror of neoliberalism: Cultural politics and the promise of democracy*. Boulder, CO: Paradigm Publishers.
- Glover & Bilginsoy (2005). Registered apprenticeship training in the US construction industry. *Education + Training* 47 (4/5): 337–349.
- Harvey, D. (2005). *A brief history of neoliberalism*. New York: Oxford University Press.
- Hinman, Bonnie. (2005). *A Stranger in My Own House: The Story of W.E.B. Du Bois*. Greensboro, NC: Morgan Reynolds
- Hoffman, N & Schwartz, R.(2015). *Gold standard: The Swiss vocational education and training system*. Washington, DC: National Center on Education and the Economy.
- Jacoby, D. (1991). The transformation of industrial apprenticeship in the United States. *The Journal of Economic History*, 51(4), 887-910. doi:10.1017/S0022050700040158
- Johnson, M., & Spiker, K. (2018). Broadening the apprenticeship pipeline. *National Skills Coalition*. https://tacc.org/sites/default/files/documents/2018-08/broadening-the-apprenticeship-pipeline_web.pdf
- Jones, D. A. (2011). Apprenticeships back to the future. *Issues in Science & Technology*, 27(4), 51–56.
- Labaree, D. F. (2017). *A perfect mess: The unlikely ascendancy of American higher education*. University of Chicago Press.
- Lerman, R. I. (2012). Can the United States expand apprenticeship? Lessons from experience. *Institute for the Study of Labor*. Retrieved from <http://ftp.iza.org/pp46.pdf>
- Lerman, R. I. (2016). Reinvigorate apprenticeships in America to expand good jobs and reduce inequality. *Challenge*, 59(5), 372-389.
- Lorenzo, J. (2017). The rise of the modern American apprenticeship. *Public Policy Initiative*. University of Pennsylvania, Wharton. Retrieved online from

- https://publicpolicy.wharton.upenn.edu/live/news/2196-the-rise-of-the-modern-american-apprenticeship#_edn10
- McCarthy, M., Palmer, I., & Prebil, M. (2017). Eight Recommendations for connecting apprenticeship and higher education. *New America Foundation: Washington, DC, USA*.
- Messing-Mathie, A. (2015). Building apprenticeship systems for middle-skill employment: Comparative lessons in innovation and sector-based strategies for apprenticeships. National Academies Board. Retrieved May 27, 2020 from https://sites.nationalacademies.org/cs/groups/pgasite/documents/webpage/pga_170050.pdf
- National Skills Coalition. (2020). Fiscal Year 2020 Appropriations provide moderate – but important - boost to workforce and education programs. Retrieved May 31, 2020, from <https://www.nationalskillscoalition.org/news/blog/fiscal-year-2020-appropriations-provide-moderate-but-important-boost-to-workforce-and-education-programs>
- New Jersey Institute for Social Justice (NJISJ). (2020). Becoming the United States of Opportunity: the economic equity and growth case for apprenticeships. Retrieved online May 31, 2020 from https://www.njisj.org/equitycaseforapprenticeships#_ftn3
- Occupational Information Network (ONET). (2019). Job zone three: Medium preparation needed. Retrieved online September 30, 2019 from <https://www.onetonline.org/find/zone?z=3&g=Go>
- OECD (2017), Education at a glance 2017: OECD indicators, OECD Publishing, Paris, <https://doi.org/10.1787/eag-2017-en>.
- Palley, T. I. (2005). From Keynesianism to neoliberalism: Shifting paradigms in economics. *Neoliberalism: A critical reader*, 20-29.
- Piketty, T. (2014). Capital in the twenty-first century. Cambridge, MA: Harvard University Press.
- Rolland, K. (2016). Apprenticeships and their potential in the US. *Cascade, 1*. The Philadelphia Federal Reserve. Retrieved online November 30, 2019 from https://www.philadelphiafed.org/community-development/publications/cascade/90/01_apprenticeships#footnotes
- Rothschild, E. (2001). Economic sentiments: Adam Smith, condorcet and the enlightenment. Cambridge, MA: *Harvard University Press*, 2001.
- Saunders, D. (2007). The impact of neoliberalism on college students. *Journal of College and Character*, 8(5).
- Schaeffer, k. (2020). 6 facts about economic inequality in the U.S. Pew Research. Retrieved online October 11, 2020 from <https://www.pewresearch.org/fact-tank/2020/02/07/6-facts-about-economic-inequality-in-the-u-s/>
- Shapiro, D., Dundar, A., Huie, F., Wakhungu, P. K., Bhimdiwali, A., Nathan, A., & Youngsik, H. (2018). Transfer and mobility: A national view of student movement in postsecondary institutions, Fall 2011 Cohort. (Signature Report No. 15). *National Student Clearinghouse*.
- Standafer, E. (2019) Skilling up: the scope of modern apprenticeship. *Urban Institute*. Retrieved May 27, 2020 from https://www.urban.org/sites/default/files/publication/101353/skilling_up_the_scope_of_modern_apprenticeship_0.pdf
- Steinberg, S. & Gurwitz, E. (2014) The underuse of apprenticeships in America. Center for American Progress. Retrieved online September 5, 2019 from

<https://www.americanprogress.org/issues/economy/news/2014/07/22/93932/the-underuse-of-apprenticeships-in-america/>

Symonds, W., Schwartz, R., & Ferguson, R. (2011). *Pathways to prosperity: Meeting the challenge of preparing young Americans for the 21st century*. Cambridge, MA: Pathways to Prosperity Project, Harvard University Graduate School of Education.

U.S. Department of Labor (DOL). (2020). *Apprenticeship*. Retrieved online May 31, 2020 from https://www.doleta.gov/oa/data_statistics2018.cfm

Wilson, V. and Roger, W. (2016). *Black-white wage gaps expand with rising wage inequality*. Washington: Economic Policy Institute.

Zessoules, D., & Ajilore, O. (2018). *Wage Gaps and Outcomes in Apprenticeship Programs: The Effects of Gender, Race, and Region*. Washington: Center for American Progress.