AFA APPRENTICESHIPS FOR AMERICA

Learning from the Field: Making Apprenticeship Degrees Work at Scale

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Appreciation

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Executive Summary

As a growing number of higher education institutions (HEIs)—especially community colleges—engage in apprenticeships, aligning these programs with higher education has attracted increasing interest from both policymakers and practitioners. Though still relatively new and uncommon, these earn-and-learn apprenticeship degree pathways help bridge the long-standing divide between workforce training and academic education. They offer students the opportunity to gain hands-on, real-world experience while earning a degree with little or no debt.

This study explores the current landscape of apprenticeship degrees in the U.S., drawing on insights from 24 interviews—including representatives from community colleges, universities, and intermediary organizations. The study identifies a typology of current models, examines key implementation challenges, and offers strategic recommendations at both the organizational and policy levels for expanding apprenticeship degrees nationwide.

Currently, there is no standardized definition of apprenticeship degrees in the United States. Building on New America's 2019 report, which offered an early framework for aligning apprenticeships to postsecondary credentials, this study defines an apprenticeship degree as *"an intentionally designed pathway that aligns apprenticeships with associate or bachelor's degrees through a clearly mapped, credit-bearing structure."*

Under this definition, this study identifies four overarching models that illustrate how these alignments are currently being implemented:

Apprenticeship-Linked Degrees. In this model, apprenticeships take place first, with related technical instruction (RTI) delivered by training providers, unions, or, in some cases, colleges. RTI learning applies toward a degree, but general education requirements are completed separately—typically after the apprenticeship—making the degree an optional, add-on pathway. Common in traditional building trades, this model is now being adapted in emerging fields like IT through partnerships between training providers and select universities.

Apprenticeship-Integrated Degrees. In this model, apprenticeships and degree programs run concurrently and conclude at the same time. Community colleges often serve as both the apprenticeship sponsor and the provider of RTI, using existing degree programs—including general education courses. This structure supports higher degree completion rates, as apprentices must complete the degree to finish the apprenticeship. It is commonly seen in newly established apprenticeship programs sponsored by community colleges.

Apprenticeship-Staggered Degrees. In this model, students begin with a degree program and enter the apprenticeship later after completing foundational coursework. Common in licensed fields like healthcare, the initial coursework serves as a pre-apprenticeship, satisfying prerequisites needed for clinical or hands-on work before starting the apprenticeship. In some cases, the degree and apprenticeship conclude together, while in others, the apprenticeship continues after degree completion.

Apprenticeship-Embedded Degrees. This model utilizes a competency-based approach to embed college course competencies into apprenticeship learning. Faculty collaborate with workplace mentors or RTI instructors to determine how competencies can be demonstrated through work-based learning and modify syllabi accordingly. Currently, this model is seen in a few building trades apprenticeships that embed general education into RTI to make degrees attainable, as well as in healthcare and teacher apprenticeship programs that often serve incumbent workers who can readily demonstrate many course competencies through their job experience.

One of the systematic challenges of establishing apprenticeship degrees within higher education lies in the nature of work-based, technical degrees. Most apprenticeship degrees offered by community colleges are Associate of Applied Science (AAS) degrees, which are often considered terminal degrees without many general education courses. This limits transferability of apprenticeship degrees, posing a challenge for permeability, making apprenticeship degrees a niche program. In addition, lack of consistent funding to cover RTI is a barrier to scaling apprenticeship degrees. Typically, employers cover the cost of RTI in addition to apprentices' wages and benefits. When a full degree program is used as RTI, it drives up tuition costs, which can be particularly burdensome for small- and medium-sized businesses. Finally, because apprenticeship programs often remain small within colleges, advocating for institutional and curricular changes that benefit a limited number of students can be an uphill battle.

We offer several recommendations to advance apprenticeship degrees. At the practice level, we recommend that HEIs strategically consider degree attainment as a desirable pathway within apprenticeship programs, where appropriate, to promote long-term career mobility. Because these degrees require sustained collaboration across academic departments, strong institutional commitment is essential. For a seamless alignment of apprenticeships and degrees, we recommend first integrating apprenticeships into existing degree pathways—leveraging current resources—and then gradually embedding apprenticeship learning into degree structures to improve efficiency in degree attainment. Expanding the use of credit for prior learning (CPL) can also increase degree completion, especially for adult learners with existing skills and experience. Finally, colleges should explore awarding academic credit for on-the-job training (OJT), which remains an underused but valuable component of apprenticeships.

At the policy level, we recommend ensuring consistent and sustainable funding to support RTI tuition. Given the multiple stakeholders involved in apprenticeships, funding could be strategically targeted to help reduce financial barriers to degree completion. To enhance the transferability and permeability of apprenticeship degrees, we recommend establishing clear 2+2 transfer pathways and expanding Bachelor of Applied Science (BAS) programs to better integrate work-based learning into higher education. Finally, we call for greater collaboration among policymakers, institutions, and accrediting bodies to build an ecosystem that more effectively supports CPL and competency-based education (CBE). Although many states have adopted these frameworks, inconsistent implementation continues to limit their impact on degree attainment for apprentices.

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1. Introduction

As apprenticeships have garnered renewed interest in recent years in the U.S. as a proven pathway to prepare individuals for the world of work, there has been a corresponding rise in efforts to align them with the education system. One growing area of interest at the postsecondary level is integrating apprenticeships into degree programs through the creation of apprenticeship degrees. Apprenticeships—widely considered the most robust model of work-based learning, combining paid on-the-job training (OJT) with related technical instruction (RTI)—have traditionally been offered as noncredit programs. This reflects a long-standing divide between workforce development and academic education. While that divide still persists, interest in bridging it is growing—driven by a growing recognition among policymakers and practitioners of the need to better integrate work-based learning into existing education systems.

Community colleges—national leaders in Career and Technical Education (CTE)—are playing a key role in bridging apprenticeships

with degree programs. A 2024 report by Apprenticeships for America (AFA) report noted a significant rise in the number of community colleges sponsoring registered apprenticeship programs. These colleges, serving as the entity responsible for the administration and operation of the apprenticeship, have grown from just 30 sponsors in 2016 to over 200 by 2023. Many have secured competitive U.S. Department of Labor (DOL) grants to expand registered apprenticeships and allow credit-earning opportunities for these programs. The most recent federal grant initiative in 2024, Apprenticeship Building America (ABA) 2, emphasized the creation of education system-aligned pre-apprenticeship programs and registered apprenticeships—further reflecting the nation's priorities to connect U.S. apprenticeships with education systems in ways similar to countries with mature apprenticeship models, such as Switzerland.

Amid growing interest and investment in connecting apprenticeships to degree programs, apprenticeship degrees remain relatively new and not widely understood. What motivates higher education institutions to offer—or not to offer—these programs? Are some occupations more naturally aligned with this model than others? How are apprenticeships being integrated into degree pathways in practice? And what challenges—and strategies—are emerging in the process? As an exploratory study, this research investigates the emergence of these earn-and-learn pathways by examining the current landscape of apprenticeship degrees—their models, implementation strategies, and challenges to expansion. Drawing on 24 interviews with community colleges, four-year universities, and intermediaries supporting apprenticeship degrees, the study offers informed recommendations for policy and practice to advance their systematic adoption.

2. Literature Review

2.1. Why Apprenticeship Degrees?

In its 2023 report, The Big Blur, Jobs for the Future highlights the persistent disconnect between the U.S. education and workforce systems. These systems remain misaligned, marked by incompatible curricula, instructional models, expectations, and support services. As a solution, the report proposes "The Big Blur"—new institutional configurations that eliminate the arbitrary divide between education and workforce systems by strategically integrating credit-earning opportunities, advising systems, and work-based learning to culminate in postsecondary occupational certificates and associate degrees, providing students with direct labor market value and the option to pursue further education.

Apprenticeship degrees represent one promising strategy to realize this vision of a more integrated education-to-work system, enabling greater permeability—the ability for learning and credentials gained through apprenticeships to transfer within formal education pathways (Hamilton, 2020).

Traditionally, apprenticeships have been offered in limited occupations, mainly in construction-related fields, with very little connection to the formal education system—often presented as an alternative to higher education and perceived as "dead-ends" with limited opportunities for further advancement. This contributed to the low status of apprenticeships (Lerman, 2013). When apprenticeships lead to, or are integrated into, degree programs, they can help shift this perception.

In addition, apprenticeship degrees can offer a range of benefits: for apprentices, they can promote upward mobility and open up long-term career opportunities, including the potential to move into leadership

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and managerial roles within their fields. Apprenticeship degrees also equip young people with real-world work experience while pursuing higher education aspirations with little or no student debt. These programs are particularly attractive to mature learners, career changers, and individuals from lower socioeconomic backgrounds, offering a meaningful pathway to economic advancement. For higher education institutions (HEIs), apprenticeship degrees enable HEIs to forge stronger partnerships with employers and training providers, complementing broader efforts to engage with industry. They can also present new income opportunities for HEIs by supporting the development of nontraditional, innovative degree models in collaboration with employers—often backed by public funding ((Universities UK, 2017; Voeller, 2022). For these reasons, apprenticeship degrees have expanded rapidly in countries such as the United Kingdom, France (Farvaque & Messaoudi, 2018), and Germany (Graf, 2018) as part of broader efforts to modernize apprenticeships and respond to evolving labor market demands in knowledge-based economies.

2.2. What is an Apprenticeship Degree?

Currently, there is no standardized definition of apprenticeship degrees in the U.S. In the New America report (2019), Tesfai made one of the first attempts to define it as an apprenticeship that "seamlessly leads to an associate or bachelor's degree." This distinguishes apprenticeship degrees from other credit-bearing models that are merely connected to apprenticeships. In other words, if an apprenticeship offers academic credit for some or all of the classroom and/or on-the-job learning components but does not result in a coordinated sequence of courses leading to a degree, it may be considered college-connected—but not an apprenticeship degree. While these approaches allow apprentices interested in pursuing further education to earn credit, they often require individuals to navigate remaining degree requirements on their own, which can be complicated and time-consuming.

On the other hand, apprenticeship degrees are intentionally designed with coordinated coursework that places apprentices on a clearly defined degree pathway. In apprenticeship degrees, HEIs may provide for-credit RTI that culminates in a degree, or they may award credit for apprenticeship experience as part of a competency-based degree pathway. Sometimes degrees may be presented as optional, but a clear pathway exists for those who want to pursue a degree.

Building upon this initial definition, this study defines apprenticeship degrees as "intentionally designed pathways that align

apprenticeships with associate, bachelor's, or potentially master's degrees through a clearly mapped, credit-bearing structure." Under this definition, multiple approaches can be used to align apprenticeships and degrees, creating degree apprenticeship pathways. Currently, many apprenticeship programs at community colleges are designed to lead to industry-recognized certificates, which can be stacked toward an associate degree, based on training needs and duration. These certificate-based programs offer flexible on- and off-ramps for learners, allowing them to pursue short-term credentials aligned with immediate career goals. These programs also enable learners to return later for further education. For the purposes of this study, we focus on programs that are intentionally structured to lead directly to both a degree and an apprenticeship credential—what we define as apprenticeship degrees.

Apprenticeship degrees are intentionally designed pathways that align apprenticeships with associate, bachelor's, or **potentially master's** degrees through a clearly mapped, credit-bearing structure.

Recently, the National Center for the Apprenticeship Degree, a new initiative established in 2024 by Reach University, identified five core elements of a high-quality apprenticeship degree: affordability, professional capital, efficiency, flexibility, and relevance. First, apprenticeship degrees should be affordable, with tuition supported by a mix of funding sources—including state and federal aid, philanthropic contributions, and employer investments. Apprentices also earn wages while they work in their fields, making it possible to complete a degree without incurring student debt. Second, apprenticeship degrees should foster strong professional relationships, alongside years of work experience and related coursework, equipping graduates for full-time employment upon completion. Third, programs should prioritize efficiency by awarding credit for work-based learning and recognizing prior learning, allowing full-time working apprentices to complete their degrees within a standard timeframe. Fourth, courses must be designed with flexibility in mind, offering schedules that accommodate apprentices' work responsibilities. Finally, both classroom instruction and on-the-job learning should be tightly aligned with industry needs to ensure the education provided is relevant, rigorous, and of high quality.

Some of these elements—such as professional capital and relevance—are inherently embedded in the design of apprenticeships. Others, however, can conflict with the traditional structure of higher education. The U.S. credit system is based on the Carnegie Unit, which measures the minimum amount of time students are expected to spend in a classroom. This time-based model is not well-suited to recognizing the learning that takes place through apprenticeship experiences, posing obstacles to the creation of efficient and flexible apprenticeship degree programs. Additionally, the U.S. lacks a consistent funding stream for apprenticeships, making affordability a persistent barrier. While apprentices in degree programs may be eligible for Pell Grants, apprenticeship degrees, which require additional coursework to complete the degree, can impose an increased financial burden on employers, who often cover RTI costs.

2.3. Overseas Examples of Apprenticeship Degrees

United Kingdom. The United Kingdom is frequently referenced in U.S. discussions on apprenticeship expansion, as both countries lack a strong tradition of apprenticeships. However, the UK has made notable progress in modernizing and expanding its apprenticeship system through targeted policies and reforms. This revival began with the introduction of Modern Apprenticeships in 1994. Following the momentum, the landscape of apprenticeships underwent further transformation in 2014 with the introduction of Higher and Degree Apprenticeships (HDAs), which were designed to more closely integrate apprenticeships with higher education. These programs focused on addressing persistent skills shortages—particularly in business management, digital technology, and engineering—and increasing the number of apprenticeships to over three million by 2020 (Universities UK, 2017).

In England, apprenticeship degrees span levels 6 and 7 of the Framework for Higher Education Qualifications, corresponding to bachelor's and master's degrees. Since their introduction, they have experienced rapid growth. A recent 2024 research briefing by the House of Commons notes that nearly 90 universities—around 21% of all higher education institutions in the U.K.—now offer more than 170 higher and degree apprenticeship programs. In their first year (2015–16), only 780 learners began apprenticeship degrees (740 at Level 6 and 30 at Level 7). By 2022–23, that number had increased to 46,790 new starters (25,030 at Level 6 and 21,760 at Level 7), reflecting a rise of more than 6,000% in less than a decade. These programs are most commonly offered by so-called "post-92 institutions"—former polytechnics and vocationally focused colleges that were granted university status under the Further and Higher Education Act of 1992. Their mission aligns with the practical and employment-oriented nature of apprenticeship degrees.

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All apprenticeship programs in England, including degree apprenticeships, must adhere to occupational standards developed and approved by the Institute for Apprenticeships and Technical Education (IfATE), an independent arm's-length body that is accountable to the Department for Education. These standards define the skills, knowledge, and behaviors required for competent performance in specific occupations, as well as the structure of the end-point assessment, ensuring that training aligns

with labor market needs. IfATE works closely with employer-led trailblazer groups—groups of employers organized into 15 occupational routes—to design and update these standards. These standards serve as the foundation for both curriculum design and assessment across all apprenticeship levels, including Levels 6 and 7[1] (Gardiner & Arabandi, 2024).

The primary funding mechanism for apprenticeship degrees is the Apprenticeship Levy, introduced in 2017. Under this scheme, employers with annual payrolls over £3 million are required to contribute 0.5% of their wage bill to fund apprenticeship training and assessment. These funds can only be reclaimed to support eligible apprenticeship programs. Smaller employers benefit from separate co-investment arrangements, in which the government subsidizes a significant portion of training costs. Each apprenticeship standard has a designated funding cap that sets the maximum government contribution; any costs that exceed this cap must be paid by the employer.

Although the Apprenticeship Levy has been instrumental in the growth of apprenticeship degrees, concerns have emerged about how the funds are being utilized. One major criticism is a disproportionate share of funding to existing employees rather than to new workers entering the labor market. A 2020 report by the Sutton Trust highlighted the growing share of mid-career MBA and senior leadership apprenticeship degrees, which accounted for nearly half of all degree apprenticeship programs—receiving funding equal to that spent on all apprentices under the age of 25. In response, the government reduced funding for Level 7 senior leadership apprenticeships in 2021 and the MBA qualification was removed from the relevant apprenticeship standard.

While limited availability of apprenticeship positions relative to student demand remains a challenge, the popularity of apprenticeship degrees has grown significantly. In the 2024/2025 academic year in England, Level 6 degree apprentices accounted for 8.4% of all apprenticeship starts, and Level 7 apprentices made up 9% in England—up from just 3% at both levels in 2018/2019[2]. However, these degree pathways still represent only 4.7% of Level 6 and 5.6% of Level 7 degree programs in 2023/2024[3], indicating substantial room for expansion.

Germany. Traditionally, dual apprenticeships

in Germany take place at the upper secondary level and are coordinated by business and industry representatives—known as social partners—such as chambers of commerce and unions. This system represents a classic case of collective skill formation and serves as a key pillar of Germany's coordinated market economy (Busemeyer & Trampusch, 2012). Historically, however, this system has been separated from higher education, creating an educational divide (Baethge & Wolter, 2015).

Several factors, however, have challenged the traditional dual apprenticeship model, leading to new approaches that integrate apprenticeships with university degrees. These include the shift from a manufacturing-based to a service- and technology-driven knowledge economy (Anderson & Hassel, 2013); rising aspirations among young people for globally recognized bachelor's degrees (Powell & Sloga, 2010; Wolter & Kerst, 2015); and employers increasingly prioritizing firm-specific skills and cultural alignment over the more generalized industry knowledge traditionally emphasized in apprenticeships (Crouch et al., 2004).

Against this backdrop, dual study programs—combining apprenticeship training with university studies—first emerged in the 1970s, pioneered by the Cooperative State University of Baden-Württemberg[4] (Duale Hochschule Baden-Württemberg, or DHBW) in collaboration with three major companies: Daimler-Benz, Bosch, and SEL. Initially established as a vocational academy (Berufsakademie) on the periphery of the traditional VET system, DHBW transitioned into a state-run university in 2009. Today, it serves approximately 10% of students enrolled in dual study programs and partners with over 10,000 companies (Statistik-BW, 2022; Reinhard & Pogreba, 2016).

While the traditional German dual apprenticeship system cannot be easily replicated in other contexts due to the unique role of chambers in governance, the design of dual study programs demonstrates greater flexibility between companies and higher education institutions. In dual study programs, individual companies have a more direct influence on the curriculum and play a key role as gatekeepers to high-quality, work-based higher education, as admission to these programs is controlled by the companies (Graf, 2018).

The popularity of these programs has grown significantly. According to a 2023 report by BIBB—the Federal Institute for Vocational Education and Training in Germany—the number of dual study programs has more than tripled since 2004, while student enrollments and the number of participating companies have more than doubled. Currently, there are 1,749 dual study programs with about 120,517 students. Despite this growth, dual study students represent only about 4.2% of the total student population nationwide, suggesting considerable room for expansion.

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3. Methodology

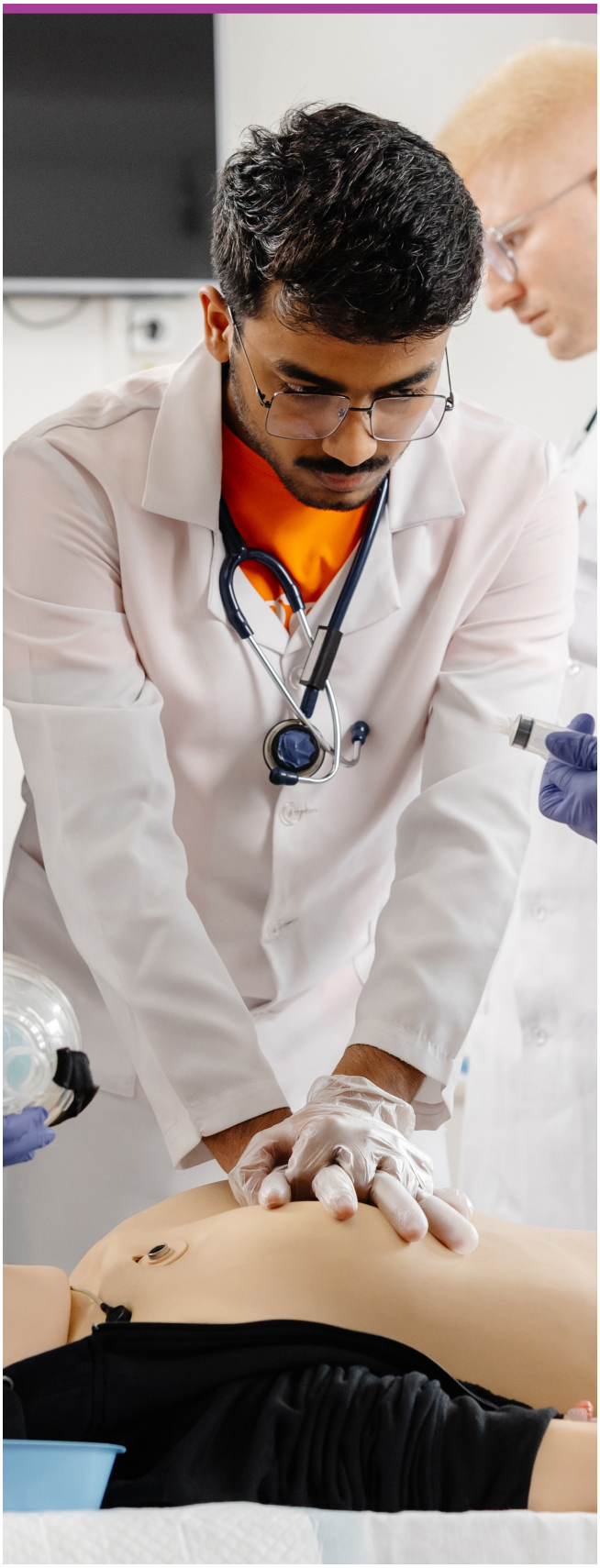
3.1. Participant Selection

Identifying apprenticeship degree programs is not always straightforward, as information about these programs is not consistently indicated in program descriptions on HEI websites and is sometimes available only intermittently. We identified target participants through multiple sources, including past participants in AFA's study on apprenticeships and community colleges, attendees of the AFA 2025 Summit, previous DOL apprenticeship grant recipients, and success stories from the Expanding Community College Apprenticeships (ECCA) initiative. To gain a broader understanding of the current landscape, we did not limit the study to specific apprenticeship occupations. While we prioritized programs with several years of operational experience, we also included newly designed programs to reflect the novelty of the concept. In addition, while we focused on registered apprenticeships, we also included programs that are eligible for registration—meeting the requirements such as 2,000 hours of OJT and 144 hours of RTI with predefined competencies—and are positioned to be registered over time.

Following outreach, this study included 24 interviews conducted with representatives from community colleges, four-year universities, and intermediaries that support apprenticeship degrees. Most apprenticeships associated with

these programs are registered, though a few either allow optional registration or are in the process of becoming registered. The institutions represented in the study appear below:

- **Alabama Office of Apprenticeship**
- **American Council on Education (ACE)**
- **Bay Area Community College Consortium**
- **Council for Adult and Experiential Learning (CAEL)**
- **Columbus State Community College**
- **Dallas College**
- **Foothill College**
- **Front Range Community College**
- **Harper College**
- **Healthcare Career Advancement Program (HCAP)**
- **Howard Community College**
- **Ivy Tech Community College**
- **Lake Region State College**
- **Launch Apprenticeship Network**
- **Macomb Community College**
- **Metropolitan State University of Denver**
- **Pima Community College**
- **Reach University**
- **Santiago Canyon College**
- **Smith Family Foundation**
- **Trident Technical College**
- **TXFame**



3.2. Data Collection and Analysis

To explore models, challenges, and strategies for implementing degree apprenticeships, we conducted semi-structured interviews with key stakeholders from selected apprenticeship degree programs. All interviews were conducted virtually and lasted approximately one hour.

The analysis involved a thorough review of interview transcripts. Qualitative data were systematically organized around the study's research questions, enabling the identification of emerging themes and patterns.

While the selected programs provided valuable insights into apprenticeship degree models, challenges, and strategies, the findings are not intended to be generalizable to all programs nationwide. Given variations by state and institutional context, lessons from one program may not be directly transferable to others. Nevertheless, these examples collectively illustrate the current landscape of apprenticeship degrees in the U.S.—including their models, challenges, and implementation strategies.

The research sought to address the following key questions:

- **Motivations:** What motivates higher education institutions to offer apprenticeship degrees?
- **Occupations:** Are certain occupations more easily connected to apprenticeship degrees than others? If so, which ones and why?
- **Models:** How are apprenticeships connected to degree programs?
- **Challenges:** What challenges arise when connecting apprenticeships with degree programs?
- **Strategies:** What strategies can support the connection between apprenticeships and degree programs?
- **Recommendations:** What recommendations can support the successful connection of apprenticeships with degree programs at both the organizational and policy levels?

4. Motivations and Occupations

4.1. Motivations for Implementing Apprenticeship Degrees

The majority of respondents indicated that while their apprenticeship courses are credit-bearing, the decision to integrate a degree into an apprenticeship depends on industry expectations. For example, Howard Community College prioritizes helping apprentices become "full-salary professionals in the fastest way possible." If a degree is not required by the industry, it remains an optional pathway for those seeking further advancement—there is no need to artificially extend the training by adding a degree component.

However, approximately 30% of interviewees reported using apprenticeship degrees as a core strategy in their apprenticeship initiatives—regardless of occupation—when the apprenticeship training is substantial enough to support integration with a degree. For instance, Trident Technical College has intentionally integrated apprenticeships—both traditional and emerging occupations—into its degree programs since launching its efforts in 2007. This strategy has been driven by strong presidential leadership and a commitment to making apprenticeship degrees a central part of the college's mission. Integrating apprenticeships within degree pathways offers several advantages, including access to Pell Grants, which help make tuition more affordable for eligible apprentices and potentially reduce the financial burden on employers who often cover tuition for apprenticeship degrees. In newer and emerging sectors where apprenticeships are less established, the Launch Apprenticeship Network emphasized that degrees can serve as a foundational "root system," leveraging existing postsecondary infrastructure to support the development of apprenticeship programs.

> **30% of interviewees reported using apprenticeship degrees as a core strategy in their apprenticeship initiatives**

4.2. Apprenticeship Degrees Across Occupations

The programs in the study covered a wide range of occupations associated with apprenticeship degrees, with a few notable trends. First, apprenticeship degrees are growing in fields where a degree is required for licensure or employment, and where practicum-type hours are already included in the degree program, such as in healthcare and teaching. Second, they are also prevalent in occupations where a degree is expected or preferred, and where the duration of apprenticeship training is sufficient to align with the requirements of a degree program. Examples include apprenticeship degrees in information technology (IT), business, and management.

The most striking aspect was the range of responses related to integrating a degree into building and construction trades—the sectors with the longest-standing apprenticeship traditions in the U.S. These occupations are often considered 'blue-collar' and traditionally disconnected from higher education. Rather than pursuing a degree, attaining journeyworker status is typically the goal. While many apprenticeship providers in these fields partner with community colleges to offer college credits that can lead to a degree, a degree is still not widely emphasized. However, some community colleges in the study are actively working to shift this narrative by embedding degrees into apprenticeship programs within the trades. Their goal is to challenge the longstanding perception that higher education is an unattainable or unnecessary path for individuals in 'blue-collar' jobs, offering opportunities for upward mobility into managerial roles. This shift often holds added significance for their families, who place a high value on their children earning a college credential, making it an effective marketing tool as well.

5. Typology of Apprenticeship Degrees

Interviews revealed various approaches to aligning apprenticeships with degree programs. Based on a synthesis of the findings, we identified four overarching models of apprenticeship degrees and developed a typology around them: apprenticeship-*linked* degrees, apprenticeship-*integrated* degrees, apprenticeship-*staggered* degrees, and apprenticeship-*embedded* degrees.

(Model 1) Apprenticeship-Linked Degrees

Description. In this model, apprenticeship takes place first and HEIs award the credit for RTI, which is provided by training organizations such as companies, unions, or the colleges themselves. These credits can count toward an associate's or bachelor's degree. However, general education courses required for a degree are not included in RTI, so apprentices who wish to earn a degree must complete additional general education courses, typically after finishing the apprenticeship. In this sense, the model can also be described as a "Pre-Apprenticeship Degree." While a clearly mapped-out degree pathway is available—combining credits from RTI and additional general education coursework—the degree is often viewed as an optional add-on. In this model, apprentices primarily aim to complete their apprenticeship, with the degree being secondary. HEIs are not usually sponsors of apprenticeships in this model.

Advantages. For apprenticeship sponsors, this model allows RTI delivered outside of HEIs to be recognized for degree credit, facilitating the integration of apprenticeships into the formal education system. For apprentices, it offers the flexibility to complete a degree at their preferred time—often when such a credential becomes necessary for advancement into leadership roles later in their careers. For colleges, this model provides an opportunity to expand their student base without the burden of independently developing and managing apprenticeship programs, which are often resource-intensive.

Challenges. A key aspect of this model is the low rate of degree completion among apprentices.

Once they complete their apprenticeship and secure employment, many are less inclined to pursue the additional coursework required for a degree. For example, only 2% of apprentices in building trades programs at Columbus State Community College complete the associated degree. This model also tends to favor highly motivated and self-directed learners, as degree requirements are not fully integrated with apprenticeship training unlike in the other models examined in this study. As a result, many apprentices are hesitant to pursue both simultaneously due to concerns about the additional workload. Furthermore, general education courses—which are not included in apprenticeship instruction—are often not covered by employers or RTI funding, leaving apprentices to shoulder the cost themselves, although some may qualify for Pell Grants.

> **only 2% of apprentices in building trades programs at Columbus State Community College complete the associated degree.**

Examples. This model is commonly used in traditional building and construction trades apprenticeships, where programs are typically sponsored by companies or unions. Several colleges in the study—such as Macomb Community College, Santiago Canyon College, and Columbus State Community College—have implemented this model for several decades. More recently, it has also been adopted by four-year universities. For example, Metropolitan State University of Denver (MSU) has partnered with the Denver Joint Electrical Apprenticeship & Training Committee (DJEATC) to offer a pathway from apprenticeship to a four-year bachelor's degree. Under this arrangement, apprentices can complete 30 general education credits at MSU—funded by their employers—and certain components of their apprenticeship training are recognized as upper-division coursework. Sponsors in emerging apprenticeship fields are also beginning to adopt this approach. For example, OpenClassrooms, a tech apprenticeship sponsor, has established an articulation agreement with the University of Maryland Global Campus, enabling IT apprenticeship completers to transfer up to 55 credits toward a degree.

Model 1 — Apprenticeship-Linked Degrees

Description

- Apprenticeship comes first, and then apprentices should take additional courses (often general education courses) on their own to complete a degree
- HEIs offer credit for RTI provided by unions, other apprenticeship sponsors, or in some cases, colleges

Examples

- Common in traditional building trades apprenticeships
- Recently adapted in emerging fields like IT through partnerships between training providers and select universities

Advantages

- Clearly mapped-out degree pathway that enables RTI conducted outside HEIs to be recognized for degree credit
- Offering the flexibility for apprentices to return and complete a degree later in their careers

Challenges

- Degree: a nice "add-on"
- Lack of motivation to complete a degree after apprenticeship
- Low degree completion rate

ACE Apprenticeship Pathways: Supporting Apprenticeship-Linked Degrees Through Crosswalks

For decades, the American Council on Education (ACE) has played a leading role in connecting learning that occurs outside the classroom to college credit opportunities. Through its Learning Evaluations service, ACE assesses nontraditional experiences—such as workforce training—and recommends college-level credits that can potentially be transferred to over 1,500 partner institutions.

In 2021, ACE launched the Apprenticeship Pathways service to evaluate learning from apprenticeships—including both RTI and OJT—and determine college-level equivalencies. The service has reviewed a wide range of apprenticeship programs, from traditional building trades to emerging occupations, and provided recommendations for how these programs can be "crosswalked" into college credit.

While the Apprenticeship Pathways service does not constitute an apprenticeship degree model as defined in this study—since apprentices must still navigate the complexities of credit transfer and degree applicability—it offers useful tools that can support the development of Apprenticeship-Linked Degrees. For example, apprenticeship sponsors can partner with HEIs to create structured degree pathways that incorporate ACE-recommended credits, enabling apprentices to pursue degrees with clearly mapped-out plans.

(Model 2) Apprenticeship-Integrated Degrees

Description. In this model, apprenticeships and degree programs are designed to begin and conclude simultaneously. HEIs often serve as program sponsors, offering for-credit RTI that is fully integrated into a structured degree pathway. Both technical instruction and general education coursework are integrated within the RTI, ensuring that the entire degree curriculum is delivered through the apprenticeship experience. This model is commonly found in community colleges that have launched apprenticeship programs in emerging fields—often with support from DOL grants over the past decade—though its use is not limited to these occupations.

Advantages. For colleges, this apprenticeship degree model is relatively easy to implement, as it builds on existing degree programs to deliver RTI. While institutions may need to design a few new courses to meet specific industry needs, the model typically requires minimal changes to established curricula and often avoids the need for additional approvals from curriculum committees. This allows colleges to integrate apprenticeships without significant curriculum overhaul. Another key advantage is the high rate of degree completion. Since both general education and technical coursework are fully integrated in the RTI, apprentices follow a clear, structured path toward earning a degree while completing their apprenticeship. For example, Trident Technical College, which has offered apprenticeships under this model—including in building trades—reports a degree completion rate exceeding 80%. In contrast, national community college completion rates, which include both short-term credentials and associate degrees, have historically been much lower: only 22.0% of students who entered in fall 2010 completed a credential within a standard timeframe. While rates have improved over time —rising to 32.3% for the 2018 cohort and 34.8% for the 2020 cohort—they remain significantly below the outcomes seen in well-integrated apprenticeship degree models. A high completion rate in this apprenticeship degree model can also generate additional tuition revenue for colleges.

Since both general education and technical coursework are fully integrated in the RTI, apprentices follow a clear, structured path toward earning a degree while completing their apprenticeship.

Challenges. While this model is efficient for colleges to implement, the learning that takes place through the college curriculum (used for RTI) and the workplace may not be closely integrated, as existing curricula are often used with minimal modification. In other words, although classroom instruction and workplace learning may be broadly aligned, course syllabi are not necessarily designed with specific occupational contexts in mind. As a result, the responsibility for making meaningful connections between classroom learning and workplace application may fall largely on the learners themselves.

Examples. This model is commonly seen in newly established apprenticeship programs sponsored by community colleges—for example, hospitality and culinary management at Howard Community College; paralegal and mechatronics at Trident Technical College; and banking, finance, and general insurance at Harper College.

Model 2 — Apprenticeship-Integrated Degrees

Degree (used for RTI)
Apprenticeship

Description

- Apprenticeships and degree programs start and conclude simultaneously.
- HEIs often serve as program sponsors, using full degree programs—including general education—as RTI.

Examples

- Common in traditional building trades apprenticeships
- Recently adapted in emerging fields like IT through partnerships between training providers and select universities

Advantages

- Clearly mapped-out degree pathway that enables RTI conducted outside HEIs to be recognized for degree credit
- Offering the flexibility for apprentices to return and complete a degree later in their careers

Challenges

- Degree: a nice "add-on"
- Lack of motivation to complete a degree after apprenticeship
- Low degree completion rate

Hybrid Example of Apprenticeship-integrated Degrees

While this study presents an overarching typology of apprenticeship degree models, each model can take varied forms in practice.

A notable example is Ivy Tech Community College's Apprenticeship Technology programs, which represent a uniquely integrated model for building trade apprenticeships. In this model, Ivy Tech is neither the apprenticeship sponsor nor the RTI provider. Instead, through a longstanding partnership with individual Joint Apprenticeship & Training Committees (JATCs), Ivy Tech awards academic credit for RTI delivered by union training programs, which is structurally similar to Apprenticeship Degree Model 1. What distinguishes this partnership from a typical Model 1 program, however, is the collaborative, tripartite structure involving the JATCs, Ivy Tech, and the State of Indiana to turn this into a well-integrated apprenticeship degree pathway.

Once an applicant is accepted into a JATC-sponsored apprenticeship, they are automatically co-enrolled at Ivy Tech. While the JATC delivers the RTI, it also requires apprentices to take one to two general education courses per year at Ivy Tech throughout their apprenticeship to fulfill degree requirements. The State of Indiana supports this arrangement through targeted tuition funding for general education courses—costs not covered by the unions—via the Special Employment & Training Services Fund.

This tripartite partnership has been in place for nearly 30 years, and its longevity and institutional support have contributed to impressive outcomes. Ivy Tech reports a degree completion rate of nearly 80% for students in these programs.

Although Ivy Tech's model shares some structural features with Model 1—namely, union-delivered RTI and credit awarded by the college—the mandatory general education coursework during the apprenticeship period, supported by state funding, aligns more closely with the intent and outcomes of Model 2. As such, it serves as a strong hybrid example of Apprenticeship Degree Model 2 in practice.

(Model 3) Apprenticeship-Staggered Degree

Description. In this model, students begin by enrolling in a degree program and, after completing certain coursework, apply for an apprenticeship position. This approach is particularly well-suited to licensed occupations—such as healthcare —where apprentices must complete foundational prerequisites before they are legally permitted to work in the field. In this context, the early portion of the degree program functions as a pre-apprenticeship, helping students meet occupation-specific requirements. The apprenticeship may conclude with the completion of the degree or continue after the degree is obtained. A key distinction of this model is that the degree is typically a mandatory requirement for entering the occupation, rather than being an optional credential.

Advantages. Since healthcare and education programs already include hands-on components (e.g., clinical hours or teacher residencies), formally integrating apprenticeships can enhance the quality of on-the-job training, reduce financial barriers for students entering the profession, and strengthen the talent pipeline for employers.

Challenges. While the initial coursework can function as a pre-apprenticeship that prepares students for an apprenticeship role, if a student is not selected as an apprentice, they lose access to the benefits of an apprenticeship degree. In that case, the program defaults to a traditional degree path, which may pose challenges in terms of affordability, flexibility, and a lack of design tailored to adult learners or working professionals. Students also forgo the earnings typically provided through apprenticeship roles, making the traditional path less financially sustainable for many.

Examples. Most healthcare apprenticeship programs in the study followed this model[5], with variations in when the apprenticeship component begins and ends. For example, a nursing apprenticeship in Alabama allows students to apply for the apprenticeship in the second semester of their first year. Meanwhile, the surgical technology apprenticeship at Dallas College has a longer foundational period, with students beginning the apprenticeship in the second semester of their second year. During that semester, apprentices also earn certification as surgical technicians and continue working in their roles even after completing the degree program. Many healthcare apprenticeship programs also serve incumbent workers seeking to upskill, in which case the foundational coursework may be shortened or waived based on the individual's prior education and experience.

Model 3 — Apprenticeship-Staggered Degrees

Degree (used for RTI)

Apprenticeship (may continue beyond degree completion)

Description

- Degree starts first, followed by apprenticeship after completing foundational coursework (e.g., semester 2 or year
- Common in licensed fields where prerequisites are required for clinical work.

Advantages

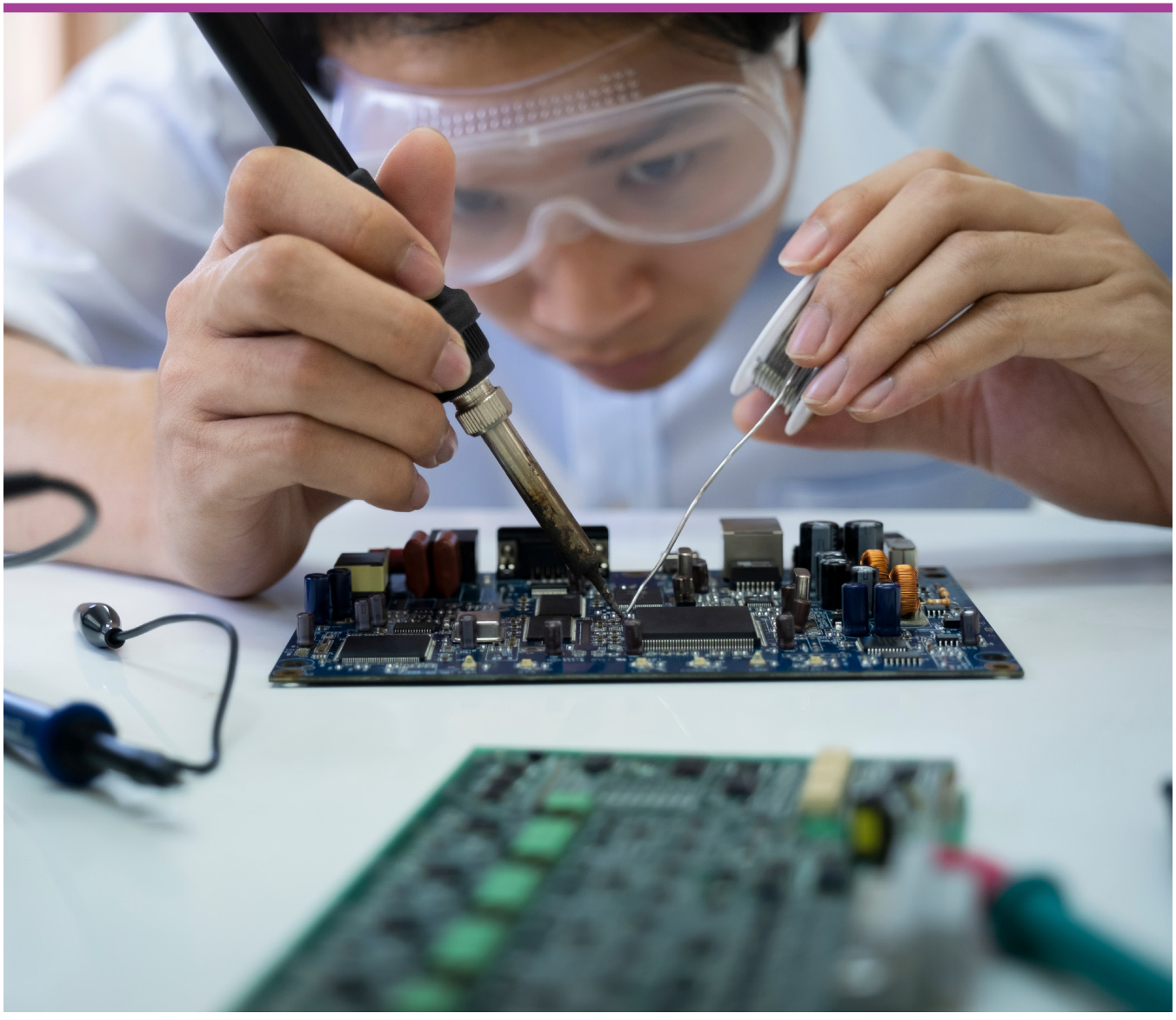
- The first part of degree serves as pre-apprenticeship
- Since the degree is often mandatory for the field, integrating apprenticeships reduces financial barriers for students entering the profession.

Examples

- Healthcare apprenticeships (e.g., nursing, surgical technician)

Challenges

- If students fail to secure an apprenticeship position, they will remain in a traditional degree pathway



(Model 4) Apprenticeship-Embedded Degrees

Description. This model uses a competency-based approach to embed credit-earning opportunities directly into RTI and/or OJT through targeted syllabus modifications. Faculty assess how specific course competencies—whether from general education or major-specific courses—can be demonstrated in apprenticeship learning. By intentionally embedding these competencies with RTI and/or OJT experiences, apprentices can avoid redundant coursework. To assess mastery of embedded competencies, faculty create course-specific rubrics that workplace mentors or RTI instructors can use to evaluate student performance. This results in a structured yet flexible system for awarding college credit based on real-world, job-embedded learning.

Advantages. This model represents a highly innovative approach to blending academic and work-based learning—enhancing both the efficiency and relevance of degree pathways for apprentices. It also embodies the core spirit of apprenticeship degrees, which view apprentices as full-time learners rather than full-time workers and part-time students. While apprenticeship credits are typically earned through RTI, this model extends credit-earning opportunities into on-the-job learning. Given that apprentices spend the majority of their time in the workplace, this approach unlocks the full potential of work-based learning by formally recognizing and credentialing competencies developed through real-world experience. This can significantly reduce both the time and cost required to complete a degree. Another advantage is that, although this model may require curriculum committee approval to modify course syllabi, it generally does not require new approval from accreditors or the state, since course outcomes remain unchanged.

> **this approach unlocks the full potential of work-based learning by formally recognizing and credentialing competencies developed through real-world experience.**

Challenges. The primary challenge of this model lies in the significant upfront effort and resources required to modify course syllabi, as well as the potential for faculty resistance. Implementing this approach requires bridging subject matter experts from two distinct domains—traditional degree programs and apprenticeship training—to collaboratively review curricula and identify which course competencies can be demonstrated through apprenticeship learning. This process requires a paradigm shift from conventional credit-granting methods and involves training faculty to assess learning in non-traditional, work-based settings. These efforts can face resistance, making this model the most disruptive compared to others identified in the study. As Foothill College—an institution that recently succeeded in embedding general education competencies into building trades apprenticeship RTI—observed, approval for such changes is subject to the review and discretion of faculty and the curriculum committee.

The complexity is further amplified when modifications involve multiple departments, as in the case of general education courses, which span diverse disciplines such as English, math, history, and humanities. Coordinating across these academic silos can require extensive negotiation and alignment.

As a new, innovative approach, this model is still in the "prototype" stage, as the Launch Apprenticeship Network described, requiring ongoing iteration, institutional buy-in, and sustained investment in faculty development, curriculum alignment, and evaluation to scale effectively.

Example. A key question for HEIs implementing this model is: What should be embedded? The answer depends on the specific goals of the program and the barriers apprentices face in completing a degree alongside their apprenticeship.

Foothill College, as noted above, focused on embedding general education competencies into the RTI component of its building trades apprenticeship programs. Historically, the absence of general education content in RTI had prevented apprentices from earning a degree concurrently. To address this, Foothill embedded all general education course competencies into RTI—except for English and humanities, which proved too difficult to fully integrate. Instead, faculty travel to apprenticeship training centers to deliver these two courses. Embedding apprenticeship learning into degree pathways has been a gradual and intentional process. As Foothill described it, "All these pieces have really been the work of the last five years. It's like brick by brick to really build out this pathway."

Similarly, the Machinists Institute, with support from The Council for Adult and Experiential Learning (CAEL), embedded all general education competency requirements from Renton Technical College into its RTI, enabling apprentices to earn an associate of applied science degree upon completing their apprenticeships. To accomplish this, a few additional assignments were developed within the Machinists apprenticeship program's RTI to meet Renton Technical College's general education requirements. This partnership also provides apprentices with access to campus resources and wraparound services at Renton, as well as the opportunity to enroll in additional courses. Building on this model, the Machinists Institute, CAEL, and Renton Technical College are now working to extend the approach to other registered apprenticeship occupations offered by the Institute.

Model 4 — Apprenticeship-Embedded Degrees

Description

- It utilizes competency-based learning to embed course competencies directly into OJT or RTI
- Faculty members assess how course competencies can be demonstrated through apprenticeship learning and modify syllabi.

Advantages

- Enhances learning efficiency and shortens the time to degree attainment.
- Represents the most innovative model, recognizing apprentices as full-time learners rather than full-time workers and part-time students.

Examples

- General education competencies embedded in RTI in building trade apprenticeships
- Major course competencies embedded in OJT in teacher and healthcare apprenticeships *(Based on occupation specific goals and barriers to degree attainment, strategically determine which degree components should be embedded in apprenticeship learning.)*

Challenges

- Significant initial effort and costs for syllabus modifications and faculty training.
- Faculty resistance to awarding credits for courses not taught in a traditional way.
- Considered the most disruptive model

Embedding Major Course Competencies into Apprenticeship OJT at Reach University

Founded in 2020, Reach University is a new four-year institution built on the foundation of apprenticeship degrees. It has successfully implemented an apprenticeship-embedded degree model in education and is now expanding this approach to healthcare.

What sets Reach apart is its use of OJT—rather than primarily relying on RTI—to embed major course competencies. This approach is guided by two key principles:

First, Reach targets paraprofessionals working in schools and incumbent healthcare workers who can readily demonstrate many course competencies through their day-to-day work. This approach enables these individuals to accelerate degree attainment and upskill by applying workplace experience toward academic credit.

Second, recognizing the complexity of cross-departmental curriculum alignment, Reach intentionally embeds major-specific competencies by working within a single academic department. This focused strategy avoids the more difficult task of modifying general education curricula across multiple departments.

With this model, Reach aims to award up to 50% of academic credit through workplace-embedded learning. It is also partnering with other HEIs to pioneer the development of apprenticeship-embedded degrees in education and healthcare across the U.S.

6. Challenges for Implementing Apprenticeship Degrees

While implementing apprenticeships comes with many challenges—such as employer and instructor recruitment, and scheduling—this section focuses specifically on those related to connecting apprenticeships with degree programs.

Transferability and Permeability of 2-Year Apprenticeship Degrees into Bachelor's Programs

Most apprenticeship degrees in the U.S. are offered by community colleges as Associate of Applied Science (AAS) degrees. These degrees are often considered terminal, as they typically include fewer general education courses and are less transferable to four-year institutions than Associate of Arts (AA) or Associate of Science (AS) degrees.

While some community colleges have taken steps to bridge this gap by establishing direct credit articulation agreements with four-year universities, current efforts are developed on a case-by-case basis and remain fragmented and difficult to scale. For example, apprentices in the Engineering Advanced Technology Department at Macomb Community College can transfer to local state universities such as Ferris State or Wayne State. Declining enrollment has made some universities more open to accepting AAS credits—even when apprenticeship-related courses are taught by journeymen who do not hold a bachelor's degree. Similarly, Harper College has established credit articulation agreements with nearby four-year universities and provides an academic coordinator to support apprentices seeking to transfer. In one instance, banking and finance apprentices successfully transferred to the University of Illinois at Chicago after completing two additional math courses.

Transfer becomes more difficult in programs that award credits through nontraditional means such as credit for prior learning (CPL) or competency-based education—approaches often associated with Model 4. While these models enhance learning efficiency by allowing apprentices to earn college credit without completing traditional coursework, the credits earned are not widely accepted for transfer. For instance, although Foothill College successfully embedded general education

competencies into RTI in its building trades apprenticeship programs, the associate degrees earned through this approach are not transferable within California. To support apprentices in continuing their education, Foothill is developing a bachelor's degree program. While the State of California actively promotes credit for prior learning (CPL), the University of California system does not accept CPL credits for transfer, as they do not align with its research-focused mission. California State Universities (CSUs) are generally more receptive; however, when no relevant major exists within the CSU system, transfer opportunities remain limited.

Lack of Understanding of Apprenticeships Among Faculty and Accreditation Bodies

Connecting apprenticeship learning—whether through RTI or OJT—to academic credit requires close collaboration with faculty to map learning experiences and determine appropriate credit awards. However, a lack of understanding among faculty about how learning occurs within apprenticeships can pose a significant barrier to implementing apprenticeship degree programs. As mentioned previously, this challenge is especially pronounced when developing Model 4 apprenticeship degrees, which require rethinking traditional credit assignment through competency-based assessments and modifications to existing course syllabi.

A lack of understanding of apprenticeships among accreditation bodies in regulated fields can also create significant obstacles to implementation. In healthcare occupations, for example, licensing or accreditation bodies establish specific guidelines that training programs must follow to ensure student eligibility for state or national certification. However, Trident Technical College, which offers a Medical Laboratory Technician (MLT) apprenticeship program, faced challenges getting OJT hours recognized as fulfilling traditional clinical requirements. Although apprentices exceed the standard number of clinical hours through their OJT, the accrediting body still required them to complete additional, unpaid clinical coursework—creating unnecessary duplication and inefficiency in the apprenticeship degree pathway.

Lack of Consistent Funding to Cover RTI and Wraparound Services

The lack of consistent funding is a major barrier to scaling apprenticeships in the U.S.—a challenge that also applies to apprenticeship degrees. Typically, employers cover the cost of RTI in addition to apprentices' wages and benefits. When a full degree program is used as RTI, it drives up tuition costs, which can be particularly burdensome for small- and medium-sized businesses. Some employers are unwilling to pay for general education courses, leaving apprentices to cover those costs themselves, creating a barrier to the seamless integration of apprenticeships and degree programs. To ease the burden on employers, community colleges frequently rely on short-term grants to fund RTI. However, the need to constantly secure and manage multiple funding sources is inefficient and unsustainable.

The Launch Apprenticeship Network also noted that recent competitive DOL grants—the primary source of apprenticeship funding—have offered limited incentives to develop degree pathway programs. While the most recent Apprenticeship

Building America (ABA) 2 grant emphasized connections to higher education as a priority, earlier grants primarily focused on expanding the number of apprentices. Since registered apprenticeships require only 144 hours of RTI—far fewer than what a degree program demands—using these grants to support degree-based apprenticeships can seem inefficient or even counterproductive when measured against grant performance metrics.

Small-Scale Programs, Big Institutional and Curricular Challenges

Since apprenticeship programs remain relatively small in many fields—despite their potential to boost student enrollment and degree completion—advocating for institutional and curricular changes that benefit only a limited number of students can be an uphill battle. For example, California permits up to 14 semester credit hours to be awarded for work experience. While this policy supports awarding credit for apprenticeship OJT, applying these credits toward degree requirements often requires complex negotiations and adjustments within colleges. As the Launch Apprenticeship Network observed, "Getting cooperative education units from apprenticeship OJT is only half the battle, because you can earn as many units as you want in some areas, but they won't necessarily count toward a degree—they may just become extra credits that don't apply to graduation requirements." When employers request specific coursework, designing new classes for a small cohort can also be difficult to get approved.

As a result, the degree component of apprenticeships is often built piece by piece, making the process labor-intensive and difficult to scale. As Launch aptly noted, "It almost requires a revolution to make it work. To grow apprenticeship degrees in a meaningful way, we need a more coordinated system—as opposed to just running thousands of pilots everywhere."

the degree component of apprenticeships is often built piece by piece, making the process labor-intensive and difficult to scale.

7. Implications for Practice and Policy

7.1. Organizational Strategies

Strategically Evaluate the Potential of Offering Apprenticeship Degrees

Before committing to the development of an apprenticeship degree—which requires close collaboration across academic departments and strong leadership support—colleges should carefully assess whether the model aligns with the specific occupation and whether there is sufficient employer demand and apprentice interest to sustain it. While it is important to offer the option of continuing with further education, some programs may not be substantial enough in duration to align with degree requirements.

When conditions are right, embedding apprenticeships into degree programs can be a compelling approach to advancing learner outcomes and driving institutional innovation. As described previously, Trident Technical College has successfully offered apprenticeship degrees for over two decades, thanks in large part to the president's leadership and commitment to making them a core institutional priority. Some colleges have also created dedicated apprenticeship divisions to support program development and ensure alignment with academic and workforce goals.

Integrate and (then) Embed

To implement apprenticeship degrees, we recommend first integrating existing coursework, then gradually moving toward embedding apprenticeship learning into the degree structure. This phased approach is exemplified by Foothill College. For new programs, the college begins by building the foundation of apprenticeships using existing courses. As programs mature, they strategically identify areas where embedding learning can enhance alignment with program-specific needs and goals.

Community colleges already have a wealth of courses that can be leveraged to design apprenticeship degrees. Depending on the occupation and specific industry needs, a few new courses may need to be developed. For example, Harper College created four new insurance specialization courses for their insurance degree apprenticeship

program, while the rest of the curriculum was drawn from their existing Business Associate degree program. This approach offers a relatively accessible entry point for launching apprenticeship degrees.

As programs mature and resources allow, we recommend advancing toward Model 4: the apprenticeship-embedded degree, which promotes greater efficiency and alignment between work-based learning and academic attainment. A central strategy in embedding apprenticeships in degrees is the use of competency-based learning (CBL). CBL shifts the focus from time spent in the classroom to demonstration of mastery of clearly defined learning outcomes, making it especially well-suited for apprenticeship contexts where much of the learning occurs on the job. Depending on the specific goals and barriers associated with different apprenticeship pathways, HEIs can strategically prioritize which components of a degree—such as general education or major courses—to embed into the apprenticeship experience.

Utilizing Credit for Prior Learning

Given that apprentices are often older and come with prior learning experiences—including having taken some general education courses after high school—some community colleges proactively support them in identifying potential credit for prior learning (CPL). This recognition can help apprentices make meaningful progress toward a degree. CPL can also make it easier for experienced tradespeople to earn a degree and transition into leadership roles. While still in early stages, the use of AI holds promise for streamlining the CPL process. For example, Santiago Canyon College is exploring how AI tools could support the evaluation of résumés and job experience—an often time-consuming and labor-intensive task. By leveraging AI tools, the college aims to accelerate and scale this process—expanding opportunities for journeyworkers to earn credit toward a degree more efficiently.

Awarding Credits for On-the-Job Training

OJT remains an underutilized source of academic credit in apprenticeship degree programs. This study highlights how Reach University leverages OJT to demonstrate course competencies, enabling faster degree attainment for working learners. At a minimum, awarding experiential learning or cooperative education (co-op) credits for OJT provides a relatively straightforward way to offer additional academic credit. For example, in Lake Region State College's simulation technology apprenticeship degree program, apprentices can earn up to nine co-op credits through their OJT experience, helping reduce the amount of additional coursework required. These courses are structured with faculty oversight—as required by accreditors to ensure they qualify for credit hours—including guided reflection assignments and verification of work hours by supervisors. However, a representative from the Bay Area Community College Consortium (BACCC) noted that credits for work experience—up to 14 semester credit hours allowed in California—remain underutilized. Since each 3-credit course typically accounts for about one-quarter of a full-time equivalent (FTE) faculty load, colleges that have not historically prioritized work-based learning often have instructional budgets already committed to traditional academic courses. This can make it difficult to shift resources toward the development and oversight of courses dedicated to work experience education. Foothill

navigates this challenge by leveraging part-time adjunct faculty to oversee co-op work experience courses within its building trades apprenticeship programs.

In addition to creating courses for work experience, it is important to ensure that these credits are recognized as fulfilling degree requirements so they meaningfully contribute toward graduation. This often requires coordination and negotiation with academic departments.

Strategies for Integrating General Education Courses

One of the key challenges in designing apprenticeship degrees is determining how to integrate general education requirements since they comprise 30–50% of a U.S. degree. When general education courses are not integrated into apprenticeship learning, but instead left for apprentices to complete independently, degree completion rates tend to decline significantly.

Colleges have adopted different strategies to address this challenge:

- **Include general education courses as part of RTI**—When colleges sponsor apprenticeships, they can incorporate general education courses into RTI as seen in Model 2, ensuring that apprentices take these courses as part of their apprenticeship requirements.
- **Embed general education competencies in RTI (or OJT)**—some colleges embed general education competencies within RTI coursework as seen in Model 4. This approach allows apprentices to demonstrate general education competencies in applied, work-based contexts.
- **Align General Education with Occupational Contexts**—Another strategy is to develop new general education courses or assignments that are intentionally aligned with occupational contexts. This approach increases the relevance of coursework to apprentices' day-to-day work, boosting both engagement and learning outcomes. For example, Metropolitan State University of Denver (MSU) developed a Spanish language course tailored for the construction industry, focusing on practical workplace communication for building trades apprentices. The course provides immediately applicable skills, making it both relevant and useful. However, designing entirely new courses can be resource-intensive and require sufficient enrollment to be viable. As an alternative, institutions can adapt existing general education courses by incorporating assignments linked to apprentices' fields of work—a lower-lift strategy that still makes a meaningful impact. For instance, a literature course might include readings on John Locke for property management apprentices or explore Sigmund Freud in ways that connect to behavioral health settings.

While general education requirements can be seen as a barrier in apprenticeship degree pathways, they also present an opportunity: when thoughtfully applied, they can provide a stronger intellectual foundation for apprentices and deepen their understanding of their field through broader academic lenses.

Flexible Schedule and Delivery

Because apprentices are full-time employees (though not all work a full 40-hour week), finding time to take classes toward a degree

can be challenging—especially when courses are traditionally scheduled during daytime hours when apprentices are typically on the job. However, community colleges have led the way in offering flexible scheduling, and the programs observed in this study reflected that adaptability. Examples included offering evening and weekend course sections, providing hybrid and online learning options to reduce or eliminate the need to travel to campus, and ensuring that required courses—including general education courses needed for graduation—were available in these flexible formats.

7.2. Policy Recommendations

Consistent and Targeted Funding

Currently, due to the lack of consistent funding for apprenticeships, HEIs often seek multiple funding sources—including Pell Grants—to cover tuition for apprenticeship degrees, aiming to make them more affordable for both employers and apprentices. However, to scale apprenticeship degrees beyond niche programs, consistent and sustainable funding is essential. California offers a compelling example through its Related and Supplemental Instruction Reimbursement (RSI) Program, which funds tuition for apprenticeship degrees. This funding has made it easier to integrate apprenticeships with degrees, as it does not incur additional tuition costs for apprentices or employers. California also launched the Apprenticeship Pathways Demonstration Project in 2023, an initiative designed to establish policies and system infrastructure to enable community colleges to award credit for both RTI and prior learning gained through OJT.

Grant funding supported key start-up costs, including faculty engagement, development of a CPL framework, and alignment of existing apprenticeship programs with associate degree requirements. Foothill College, for instance, utilized this grant to successfully convert its building trades apprenticeship programs into degree pathways. Together, the Apprenticeship Pathways Demonstration Project and the RSI program illustrate how initial start-up grants, when paired with ongoing tuition coverage, can effectively support the design and implementation of apprenticeship degrees.

Because apprenticeship degrees involve multiple stakeholders—such as HEIs, training providers, employers, unions, and state agencies—targeted funding solutions can be created to address specific barriers to implementation of apprenticeship degrees. As previously mentioned, Indiana's Special Employment & Training Services Fund provides targeted funding to cover tuition for general education courses—costs not funded by unions. Another example is North Dakota's Career Builders scholarship and loan repayment program, which is focused on helping employers recruit and retain talent in high-need occupations. The program provides scholarships to students enrolled in qualifying certificate or degree programs, contingent upon a three-year commitment to work in-state in a high-demand field. Scholarships cover up to $17,000 in tuition, fees, and books, and require a matching contribution from employers or another entity. This program is well-suited to support apprenticeship degrees by reducing tuition costs for RTI while building a pipeline of skilled, locally retained talent.

Improve Transferability and Permeability of Apprenticeship Degrees

The current limited transferability of apprenticeship degrees in the U.S. is largely due to the lack of a dedicated bachelor's degree pathways that integrate applied learning. Many existing bachelor's degrees are highly prescriptive and may require 30–50% of coursework in general education. This structure does not align well with apprenticeships or with the nature of apprenticeship degrees, which emphasize technical, occupation-specific training. Rethinking the course requirements for bachelor's degrees could create pathways for two-year apprenticeship degrees to transfer more effectively within the existing system. A useful precedent can be found in Switzerland, which faced a similar challenge in the 1980s. At the time, apprenticeships—traditionally offered at the secondary level—did not provide a path to higher education. In response to growing demand for academic progression, Switzerland undertook major reforms and established Universities of Applied Sciences, thereby opening pathways for apprentices to pursue bachelor's degrees and beyond—particularly in technical fields (Meyer, 2009).

Some of the issues around transferability stem from the perception that technical credits earned at community colleges are not on par with the academic rigor of credits offered at four-year institutions. Part of this misconception arises from the fact that many faculty at two-year colleges do not hold terminal degrees (e.g., Ph.Ds). However, these instructors often bring extensive industry experience and practical expertise to the classroom, enriching students' applied learning in ways that traditional academic instruction may not.

Suggestions for improving the transferability and permeability of current two-year apprenticeship degrees include expanding Bachelor of Applied Science (BAS) programs and developing clear transfer pathways through supportive policy. The BAS degree in the U.S. is gaining traction, particularly in fields where applied skills are in high demand. However, it remains relatively limited in scope, and adoption varies widely across institutions. Some four-year institutions may be hesitant to offer or accept BAS degrees due to concerns about academic rigor or adherence to traditional baccalaureate structures. Nonetheless, expanding and investing in BAS programs can help build a more robust work-based learning ecosystem by creating clear pathways to upward mobility for individuals with technical associate degrees, minimizing credit loss during transfer, and better aligning higher education with labor market needs. BAS degrees also represent a more accessible and practice-oriented model of baccalaureate education by valuing applied learning and industry experience, thereby broadening degree access for working adults and nontraditional students.

At the same time, stronger policy-level interventions are needed to formally recognize the academic value of coursework completed through apprenticeship degrees and improve their transferability into bachelor's programs. Some states are beginning to lead in this area. In 2023, Rhode Island enacted the Apprenticeship Pathways to Earning a Bachelor's Degree Act, which requires the state's public colleges and universities to award academic credit for registered apprenticeship experiences. These policies, which took effect in August 2024, aim to establish intentional,

credit-bearing pathways from apprenticeship programs into four-year degree programs, particularly in high-demand fields.

At the federal level, the National Apprenticeship Act of 2020 (H.R. 8294), passed by the House in November 2020, proposed the creation of a Registered Apprenticeship College Consortium to standardize credit recognition for apprenticeship learning and support articulation into two- and four-year degree programs. Although the bill did not advance in the Senate, a similar idea resurfaced in the Apprenticeships to College Act (S.758), introduced in 2025, which also calls for establishing a national consortium to facilitate credit transfer and alignment between registered apprenticeship programs and postsecondary institutions.

Promote an Ecosystem to Enable Embedding Apprenticeships into a Degree

As discussed previously, credit for prior learning (CPL) and competency-based education (CBE) are primary tools that can be used to bridge apprenticeship learning with traditional academic pathways. Many states have introduced policies and regulatory frameworks to support CBE and CPL; however, the reach and efficacy of these policies vary significantly across states. Some have robust infrastructures and incentives to support CBE, while others lag due to fragmented guidance or limited institutional capacity. Additionally, key barriers persist, including misalignment with accreditation standards, rigid financial aid rules that favor seat-time models, and difficulties in credit transferability—particularly from applied or nontraditional learning sources like apprenticeships.

For example, while California has a supportive policy environment for CPL (§55050) and credit for experiential learning (§55253), two programs in California featured in the study reported challenges in transferring these credits and applying them toward degree requirements. Similarly, Washington State has established strong credit for prior learning (CPL) policies (RCW 28B.77.230), which mandates collaboration among the Washington Student Achievement Council (WSAC), the State Board for Community and Technical Colleges (SBCTC), and other educational institutions to develop transparent policies and practices for awarding academic credit based on work and life experience. However, as noted by the Council for Adult and Experiential Learning (CAEL), significant challenges remain in making apprenticeship degrees—such as those in manufacturing offered through Renton Technical College—fully transferable to four-year degree programs. This indicates a gap where supportive frameworks exist but are not consistently implemented in practice.

To promote wider adoption and equity, sustained collaboration among policymakers, institutions, employers, and accrediting agencies is essential. This includes aligning regulatory and funding models to support CBE, encouraging innovation in credit recognition, and ensuring apprenticeships are fully embedded and stackable within degree pathways.

Remove License Barriers to Implementing New Apprenticeship Programs

Healthcare is one of the fastest-growing fields for apprenticeship degrees. Since many

healthcare degree programs already require clinical hours, integrating apprenticeships can enhance training quality and better prepare students for the workforce. A major barrier, however, is licensure—students must be licensed to work in clinical settings. To address this, many healthcare apprenticeships incorporate the attainment of a basic, adjacent license early in the program, allowing apprentices to legally participate in hands-on training. For example, in nursing apprenticeships, students often earn their Certified Nursing Assistant license first, enabling them to legally work in healthcare settings while continuing their apprenticeship.

Alabama has taken a different, innovative approach. Through collaboration between the state, the Alabama Board of Nursing, and colleges, a new license category was established: Student Nurse Apprentice (SNA). This official designation legally authorizes SNAs to work in healthcare settings as a nurse apprentice with a clearly defined scope of practice. Unlike other nursing apprenticeship programs that often place students in adjacent roles, Alabama's model intentionally supports SNAs in building nursing-specific competencies before passing the National Council Licensure Examination (NCLEX), ensuring more targeted and relevant preparation. This is a significant example of how state-level collaboration can lead to innovative policy solutions that remove structural barriers to implementing degree apprenticeships.

8. Future Research Recommendations

For future research, we offer two recommendations. First, we suggest research focused on specific occupations to better understand occupation-specific challenges, strategies, and outcomes of apprenticeship degrees. As an exploratory study, this report presents a broad landscape of apprenticeship degrees across fields; however, challenges and best practices vary significantly by occupation. Since these programs remain relatively new, several interviewees highlighted the need for more targeted research—including longitudinal studies—that demonstrate the positive impacts of apprenticeship degrees on talent development. Such studies can support employer engagement and help expand apprenticeship pathways. For example, an outcomes study comparing job satisfaction and turnover rates among healthcare workers or teachers who completed a traditional degree pathway versus those who completed an apprenticeship degree could offer compelling evidence of the long-term benefits of apprenticeship degrees for both employers and learners.

Second, we recommend further research on employers' involvement in implementing apprenticeship degrees. While this study primarily focused on how higher education institutions (HEIs) and intermediaries bridge the worlds of work and academia, employers remain critical stakeholders in these programs. Key questions include: How do employers perceive apprenticeship degrees? What value do these programs bring to employers? Are there particular models of apprenticeship degrees preferred by employers? What challenges do employers face in participating? And how can HEIs best engage, support, and collaborate with employers to effectively implement apprenticeship degrees? Addressing these questions will provide valuable insights to inform strategies for scaling apprenticeship degree programs.

As this nontraditional degree continues to evolve, its success will depend on intentional collaboration between employers and educational institutions, the willingness of colleges and universities to embrace learning that occurs outside the classroom, and supportive policies that promote credit recognition and program alignment. Apprenticeship degrees are not merely a new program model; they represent a broader reimagining of what it means to earn and learn in today's economy.

Appendix:

Apprenticeship Degree Programs Included in the Study

Organizations	States	Since	Active Programs	Model
Columbus State Community College	OH	1999	Building Trades	Model 1
Macomb Community College	MI	1996	Building Trades, Manufacturing Trades	Model 1
Santiago Canyon College	CA	2000s	Building Trades	Model 1
Metropolitan State University of Denver	CO	2025	Building Trades	Model 1
Front Range Community College	CO	2019	Automotive Technology	Model 1
Trident Technical College	SC	2007	Management, Paralegal, Mechatronics Building Trades, Medical Laboratory Technician	Model 2
TX FAME (partnering with Alamo Colleges District)	TX	2017	Advanced Manufacturing Technician	Model 2
Harper College	IL	2015	Banking and Finance, General insurance, CNC Precision Machining, Graphic Arts Design & Technology, IT Generalist, Marketing and Sales Management, Mechatronics Technician	Model 2
Howard Community College	MD	2018	Biomedical Equipment Technology, Hospitality Management	Model 2
			Licensed Practical Nursing	Model 3
Dallas College	TX	2019	Surgical Technician	Model 3
			Teaching	Model 2
Ivy Tech Community College	IN	1990s	Building Trades	Model 2 (hybrid)
		2023	Teaching	Model 2
Lake Region State College	ND	2015	Simulation Technology, Information Technology, Electrical Assembler	Model 2
			Practical Nursing, Registered Nursing	Model 3
Launch Apprenticeship Network	CA	2018	Information Technology, Cyber	Model 2
Healthcare Career Advancement Program (H-CAP)	Multiple States		Nursing	Model 3
Alabama Office of Apprenticeship	AL	2022	Nursing	Model 3
Foothill College	CA	2019	Building Trades	Model 4
		2025	Process Technician (Semiconductor Engineering)	Model 2
Council for Adult and Experiential Learning (Supporting Machinists Institute and Renton Technical College)	WA	2024	Manufacturing	Model 4
Smith Family Foundation (Jointly with Accelerate the Future Foundation, supporting Bunker Hill Community College, MassBay Community College, Middlesex Community College, Quinsigamond Community College)	MA	2025	Teaching, Practical Nursing, Behavioral Health Technician	Model 4
Reach University	AL, AR, CA, CO, LA	2020	Teaching	Model 4

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Endnotes

[1] As of June 2025, at the time of writing, IfATE is being incorporated into Skills England, a new government body designed to coordinate skills policy and delivery across education and workforce systems. The core functions of apprenticeship standard setting and quality assurance are expected to continue under the new structure.

[2] This data was retrieved from the UK government website in July 2025.

[3] Data source: Higher Education Student Statistics: UK, 2023/24

[4] The lead author visited DHBW in June 2025, which provided additional contextual insights into dual studies at the institution. According to the Head of International Relations at DHBW, the number of dual study programs has grown significantly since the institution became a state university in 2009, with offerings more than doubling. Today, DHBW serves approximately 34,000 degree apprentices. Programs are initiated by employers to meet local business needs, and companies are actively involved in both the design and delivery of instruction. For example, employers participate in curriculum committees to provide feedback and suggest updates, and about half of all instruction is delivered by external lecturers from participating companies, who receive pedagogical training from the university. Company mentors also play a central role in evaluating on-the-job training project reports, which account for roughly 30% of the credits required for graduation. This close university-employer collaboration helps cultivate an "exceptional labor force" deeply acclimated to company culture— one of the primary reasons companies invest in developing long-term talent through dual studies in Germany.

[5] While most healthcare apprenticeships follow the "apprenticeship-staggered" model, there are some exceptions. At Lake Region State College in North Dakota, the Board of Nursing allows students—regardless of prior healthcare experience—to begin apprenticeships based on employer preference. For those without prior experience, apprentices may start working from day one, typically by shadowing or assisting with basic, non-clinical tasks, while earning their CNA certification early in the program. This arrangement reflects a more flexible entry point into healthcare apprenticeships, shaped by employer needs and state-specific regulations.

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