

Competency-based apprenticeship models & alternative assessments in teacher preparation programs

Caroline D. Millen

Abstract

The traditional teacher preparation model and traditional assessments are outdated, necessitating flexible and accelerated pathways to address declining enrollment and educator shortages. Apprenticeships and competency-based education offer viable alternatives, emphasizing skill attainment over traditional timelines. Effective alternative certification programs require structured support to ensure teacher retention and preparedness, addressing critical gaps in education. Through a review of traditional and alternative certification pathways, key terminology is defined, current literature is reviewed, and practical, research-based solutions are proposed.

About the Author

Dr. Caroline Millen is an Assistant Professor, Program Director, and Academic Advisor for the Special Education (PK-12) certification program and the Early Childhood Education (PK-4) + Special Education (PK-12) dual-certification program at Keystone College. She earned her Ph.D. from Marywood University in Human Development and Organizational Leadership and two master's degrees and a bachelor's degree from Binghamton University: a M.A.T. in English Adolescence Education, a M.S. in Educational Studies, and a B.A. in English. Her doctoral research focused on "The Impact of Teaching Resilience, Goal Attainment, and Other Essential Leadership Skills to Young Adults via Virtual Instruction" through a trauma-responsive lens and was awarded the McGowan Medal for Excellence in Doctoral Studies; she continues to work on The Resilience Project which aims to make NEPA a community of resilience.

Direct correspondence by email to caroline.millen@keystone.edu.

Introduction

The Need for Alternative Certification Pathways

Declining enrollment in educator preparation programs and persistent teacher shortages require higher education institutions to reevaluate how they attract, prepare, and retain teacher candidates. Traditional teacher preparation models typically include four years of undergraduate coursework or additional years of post-baccalaureate/graduate coursework plus extended field and student teaching experiences. Traditional programs may not accommodate the realities of today's prospective educators, many of whom are working adults, parents, or career changers. Flexible, accelerated, and competency-based certification pathways are essential for ensuring both teacher quality and accessibility.

An alternative certification pathway refers to a non-traditional route to obtaining a teacher certification, typically designed for individuals who already hold a bachelor's degree in a subject area but lack formal teacher training. These pathways offer an expedited route into the classroom compared to traditional undergraduate programs, combining coursework with supervised teaching experience. A competency-based pathway, which can be integrated into traditional or alternative programs, focuses on demonstrating mastery in specific skills and knowledge rather than simply completing a set number of credit hours or seat time.

An early definition of competency-based education (Schalock, 1976) states: "The language of competence has come to represent an educational movement which places primary emphasis on the outcomes desired of learning, and evidence of outcome achievement, in contrast to the emphasis that has been placed historically in education on materials, procedures, curriculum organization, and other stratagems designed to facilitate learning" (p. 10). Schalock goes on to critique the disorganization and variance of procedures across institutions, which makes an attractive concept difficult to implement. The search for an operational definition continued with Spady (1977), who ultimately established competency-based education as, "a data-based, adaptive, performance-oriented set of integrated processes that facilitate, measure, record and certify within the context of flexible time parameters the demonstration of known, explicitly stated, and agreed upon

learning outcomes that reflect successful functioning in life roles" (p. 22). The importance of emphasizing outcomes over timelines remains relevant today.

Pennsylvania has adopted competency-based models, but they are primarily post-baccalaureate, such as the Residency Certificate which is for candidates who hold a master's or doctoral degree in the subject area, a bachelor's degree plus three years of work experience in the subject area, and satisfactory achievement on subject area content tests (PDE, 2012). There are additional accelerated certification and intern certification pathways utilizing an approved program of study for those who possess a bachelor's degree. These are beneficial options, but being contingent upon having at least a bachelor's degree, we need additional alternative pathways to achieve certification accessibility. Apprenticeship models that enable candidates to learn while they earn, to demonstrate mastery of teaching competencies while earning a paycheck, may be the solution.

Redefining the Traditional College Student

The demographics of college students have shifted substantially. The 'traditional' college student who enters college directly after high school and studies full-time without external obligations is no longer the norm. According to data from the National Center for Education Statistics (NCES, 2020A), 40% of full-time and 74% of part-time college students are employed. Interestingly, these figures were higher twenty years ago, with 53% of full-time and 85% of part-time college students working (NCES, 2020B). The vast majority (87%) of college students receive financial aid (Hanson, 2025). Even twenty years ago, about 71% of college students received financial assistance (Hanson, 2025).

A significant number of college students, about 22%, are parents (70% mothers, 30% fathers), and more than half of those have children under the age of six (Institute for Women's Policy Research, 2020). If employment and/or parenting are full-time occupations, it makes sense that pursuing higher education would be more challenging. Unfortunately, these parenting students tend to "complete college at a much lower rate than other students, even though they earn comparable course grades" (Urban Institute, n.d.).

In Northeastern Pennsylvania specifically, private non-

profit colleges and universities are closing or fighting to remain open: “As many as 80 colleges and universities may close over the next five years...The share of high schoolers enrolling in college immediately after graduation began decreasing before the pandemic and fell from 70% to 62% over the last decade” (Buffer, 2025). Meanwhile, “The region’s only technical college had consistent growth in employment, enrollment and financial revenue...Net assets grew 39% in four years” (Buffer, 2025). Perhaps that institution’s success comes from its implementation of the apprenticeship model.

These are not new phenomena; the ‘traditional college student’ has not been in the majority for decades. Institutes of higher education can no longer afford to follow a traditional model and must respond to this evolution in student identity and need. Accessible, alternative, and accelerated certification pathways like competency-based education and apprenticeships are essential for teacher retention and effectiveness.

The Apprenticeship Model and Teacher Shortages

Apprenticeship models provide an opportunity for teacher candidates to learn through structured, paid, work-based education while receiving mentorship from experienced educators. Although typically associated with skilled trades, apprenticeships are an approved and underutilized pathway for educator preparation. In Pennsylvania, only about 5% of registered apprentices are in education fields (Commonwealth of PA, 2025; PA Career Link, 2023).

The need for alternative pathways to certification is underscored by significant teacher shortages. There are not enough certified teachers to fill open positions, and that number is expected to increase. There are not enough students enrolled in teacher preparation programs, and that number is expected to decrease (Esaki-Smith, 2024; Marcus, 2025; White, 2025). Over 400,000 teaching positions in the United States were either unfilled or held by individuals who were not fully certified (Tan et al., 2024). Comparatively, “38% of all postsecondary institutions awarded degrees and/or certificates in education. These institutions conferred more than 300,000 degrees and certificates in education” (AACTE, 2022). According to the Learning Policy Institute (Tan et al., 2024), “The Pennsylvania Department of Education reported 865 unfilled teacher

positions in October of the 2023–24 school year. The state reported that 17,003 teachers were teaching a subject or grade for which they were not fully certified (out of field) in the 2021–22 school year. Of those teachers, 2,499 were not fully certified and held an emergency certification.” By definition, apprenticeship programs “help employers recruit, build, and retain a highly-skilled workforce” (U.S. Department of Labor, n.d.). With teacher shortages on the rise, alternative certification pathways like the apprenticeship model can help fill the gap.

A response to the scarcity of teachers, particularly in high-need disciplines and marginalized neighborhoods, has resulted in the development of alternative certification programs. There are certain programs that place an emphasis on immersive, on-the-job training with mentorship, such as Teach for America and urban teacher residencies. On the other hand, there are some programs that give limited pre-service preparation, such as online or alternative licensure paths.

While apprenticeships are commonly perceived as outside of academia, especially in the skilled trades, apprenticeship models of teacher preparation can operate as formal partnerships between institutions of higher education and PK-12 schools. All apprentices are required to complete a minimum number of hours of Related Technical Instruction (RTI), or coursework, while demonstrating competencies on the job under the mentorship of an experienced ‘journeyworker’, or someone who already possesses the credential/degree/certification sought. In education, for example, a 9-12 credit Child Development Associate (CDA) credential requires at least 144 hours of coursework plus 2000 hours of on-the-job learning. An associate degree requires at least 740 hours of coursework plus 4000 hours of on-the-job learning. A bachelor’s degree requires at least 1372 hours of coursework plus 4000 hours of on-the-job learning. Typical associate and bachelor’s degree programs already surpass those hourly requirements which creates an opportunity to replace approximately 20-30% of what would typically happen in class (e.g., lectures, tests, writing assignments) with practical, on-the-job learning experiences that cement understanding and create opportunities to demonstrate proficiency in the competencies. For example, a bachelor’s degree typically requires 120

credits/1800 hours, which surpasses the minimum requirement of 1372 hours. Apprentices are eligible to receive scheduled wage increases as they achieve milestones and complete courses, which motivates them to continue their education and stay in their position, both upskilling the profession and preventing additional teacher shortages.

Effectiveness & Challenges of Alternative Certification Programs

Alternative certification programs offer accessible routes to teaching for candidates who may not follow conventional undergraduate journeys, supporting career changers, individuals with subject-matter expertise, and/or those seeking to teach in high-need areas. Alternative programs vary widely in structure, ranging from university-based programs to residency models and online certification pathways. While alternative certification programs aim to address teacher shortages and increase workforce diversity, concerns persist regarding their effectiveness, retention rates, and the preparedness of alternatively-certified teachers compared to their traditionally-trained counterparts. It is necessary to find a way to strike a balance between the competing demands of expedited teacher preparation and the imperative to maintain rigorous standards. Even though alternative pathways have also been subjected to scrutiny due to concerns over the quality and breadth of their training, traditional university-based programs have been attacked for what is believed to be their inflexibility and alienation from the realities of the classroom and of their students.

There has been a lack of consensus regarding the effectiveness of alternative certification programs. According to some findings, these models are effective in recruiting people who might not have otherwise entered the teaching profession, particularly in areas of urgent shortage such as STEM and special education (Swanson & Ritter, 2018; Cannon et al., 2022). The alleviation of teacher shortages is one of the key motives for the implementation of alternative certification programs.

Even though these alternative programs have the potential to attract a wide pool of candidates, including people from backgrounds that are underrepresented, research indicates that they frequently fail to meet expectations in terms of the retention of teachers over

the long term. Studies have shown that alternatively-certified teachers do not exhibit significantly lower attrition rates compared to their traditionally prepared counterparts; this suggests that the rapid training that is provided to them may not adequately equip them for the challenges that they will face in the classroom (Robertson & Singleton, 2010; Hellman et al., 2010; Marder et al., 2020). Furthermore, concerns have been raised regarding the preparation of these instructors to give effective instruction because of the absence of thorough pedagogical training in several alternative certification pathways (Cannon et al., 2022; Bowling & Ball, 2018). Intentional, competency-driven fieldwork is essential in either alternative or traditional programs to ensure authentic classroom environments are experienced.

When it comes to the learning outcomes of students, there is evidence to suggest that the effectiveness of teachers who have alternative certifications might vary greatly. According to the findings of a few studies (Swanson & Ritter, 2018; Schmidt et al., 2018), instructors who enter the profession through alternative pathways may have a strong content understanding, particularly in areas such as mathematics and science, which can have a favorable influence on the accomplishment of their students. However, additional research demonstrates that the quality of training and assistance that is offered within these programs is not consistent, which raises doubts regarding the overall influence that these programs have on the learning of students (Mentzer et al., 2019; Marder et al., 2020; Bowling & Ball, 2018).

Furthermore, the professional motivations of alternatively-certified teachers frequently differ from those of traditionally-certified teachers. Many individuals enter the profession for extrinsic reasons, such as job security or financial incentives, rather than a passion for teaching (Xu et al., 2024; Antonetti & Sauers, 2023). Scheduled wage increases associated with apprenticeship models or funding opportunities to support these initiatives, which are not necessarily available in traditional certification programs, may be a factor.

Research-Informed Practical Solutions & Evidence of Impact

Successful programs, whether traditional or alter-

native, share certain characteristics: comprehensive mentoring, ongoing professional development, and robust field experiences (McKinney et al., 2017; Yildizer et al., 2018). On the other hand, programs that place a greater emphasis on speed rather than depth of training may be associated with higher rates of teacher turnover and a decrease in overall teacher effectiveness (Redding & Smith, 2016; Sass, 2015). To improve the quality of alternative certification programs, policymakers and institutions must invest in thoughtful program design to ensure quality and sustainability. (McKinney et al., 2017; Evans, 2010). The potential for alternative certification programs to act as a long-term solution to the persistent problem of teacher shortages is contingent upon their ability to properly prepare and retain quality teachers. If these initiatives lead to fewer teacher candidates or a decline in the quality of education, reforms are required to enhance the training and support structures.

Competency-based education emphasizes demonstrated mastery of skills rather than time-based benchmarks that align with the completion of courses and semesters. This model is particularly promising in teacher preparation where skills such as lesson planning, differentiation, and inclusive instruction must be practiced and assessed in context. Hao (2024) highlights the fact that a competency-based curriculum design brings an improvement in educational quality by concentrating on the practical competence of students. This method not only clarifies competency goals, but it also makes use of task-driven teaching strategies and comprehensive assessments, which ultimately results in students having a better understanding of the material and being able to apply it more effectively.

Mazzye et al. (2023) did a comparison study between the traditional model of teacher preparation and the residency model. According to the results of their investigation, applicants who participated in a residency model demonstrated a greater level of self-efficacy for literacy teaching when compared to those who participated in a traditional model. Additionally, candidates from the residency model were judged by mentor teachers as being better capable of teaching literacy. This finding suggests that competency-based education frameworks have the potential to generate stronger alignment between teacher preparation programs

and practical classroom competencies, especially with the support of a mentor.

In addition, Harkins-Brown et al. (2024) addressed the urgent requirement for general educators to successfully include students with disabilities in their classroom environment. According to the findings of their research, a competency-based continuing education program was established with the intention of providing general educators with the knowledge and abilities required to implement inclusive practices. Significant improvements were seen in the participants' grasp of professional standards and their sense of self-efficacy in the implementation of inclusive practices. Not only does this illustrate the ability of competency-based education to improve teacher competencies, but it also highlights the potential of this approach to address major gaps in special education, which is particularly important considering the national teacher shortage.

Kadji-Beltrán (2024) makes an additional contribution to the discussion by utilizing a living-lab methodology to investigate the development of sustainability skills among preservice preschool teachers. Students were able to participate in projects that were based in the real world thanks to this forward-thinking approach, which encouraged critical thinking, collaboration, and a feeling of purpose in the context of teaching sustainability. The findings of the study demonstrated that participants experienced increased levels of self-assurance and effectiveness in their teaching jobs, highlighting the transformative impact that competency-based education has on the development of important competences for future educators.

Not only can competency-based education in teacher preparation improve preservice teachers' self-efficacy and practical abilities, but it also tackles broader educational concerns, such as inclusion and sustainability. These studies collectively demonstrate that this type of education is beneficial. The data demonstrates that competency-based education is an essential foundation for developing educators who are competent to handle the different requirements of today's classrooms, which will ultimately result in the development of an educational system that is more effective and responsive. It is important that future studies continue to investigate the optimization of competency-based educational frameworks to significantly improve educa-

tional outcomes and the level of readiness of teachers.

Alternative Assessments for Inclusive Practice

At the very least, it is time to develop new approaches to teacher training, methods, and assessments. My experience as a faculty member and as a leader of apprenticeship programs in the field of education has demonstrated the value and impact of competency-based learning and new ways to demonstrate proficiency outside of more traditional assessments like multiple-choice tests or essays. Following a model well-established in the medical community (i.e., residencies), future educators need to master their pedagogical practice with skills around understanding, applying, analyzing, evaluating, creating, and strategizing more than just memorizing basic facts. However, the go-to assessments tend to be the types that focus on this skill of recall. With a significant population of college students having learning disabilities themselves and/or (in my case) planning to teach PK-12 students with learning disabilities, prioritizing the skill of memorization is especially problematic and does them a great disservice. After implementing best practices and progressions, like a competency-based apprenticeship model, future teacher educators will be prepared and empowered to implement their own pedagogy that is accessible and approachable for all in their classrooms.

One form of assessment that shifts slightly from a traditional method to an accessible, modern method is open-book and resource-based assessments which reduce stress and improve performance. According to Wood et al. (2016), citing others, “Between 10-40% of all students experience some level of test anxiety, with these rates varying, depending on factors such as gender, race and socio-economic status” (McDonald, 2010; Segool et al., 2013; von der Embse et al., 2013). The stress and expectation of regurgitating memorized information within a time constraint is not productive, especially for this population.

Not only are open-book tests better for reducing test anxiety, but they may also lead to better performance, and have other benefits. According to Green et al. (2016), “Findings indicated that students taking open-book pre-quizzes performed better on open-book final exams, but not other major exams. Our research approach also revealed preliminary indications that our

students value their textbooks more, and used them more frequently and extensively, to prepare for class using open-book testing protocols as opposed to using traditional closed-book testing procedures. Also, preliminary indications reveal that alternatives to traditional closed-book testing enhance student satisfaction with courses and textbooks and provide the potential to improve students’ experiences in the workplace” (p. 19). In addition, Eilertsen et al. (2000), “Studied the effects of open-book testing on instruction and student learning in an action research project involving 13 teachers and approximately 350 secondary school students in Norway. Results show open-book testing to be instrumental in strengthening understanding in both cooperative learning and more traditional classrooms” (p. 91).

There are other ways to measure proficiency aside from traditional assessments (e.g., multiple choice, essays, true/false, matching, completion). It is important that future educators are competent and have a thorough understanding of their content areas and pedagogical foundations, but it is equally important that they know where to find an answer and are humble enough to check their resources when in doubt. Educator preparation programs must include intentional, inclusive, and practical assessments that encourage future teachers to know when and how to use their resources, and model that continuous learning for their own students. Competency-based assessment allows for a wider range of methods, including portfolios, performance tasks, simulations, observations of practice, and project-based assessments which can better capture a candidate’s ability to apply knowledge and skills in authentic teaching scenarios.

Conclusion: Toward a Responsive and Rigorous Future

Designing a competency-based teacher preparation program involves several key steps. First, programs must clearly define the specific competencies future teachers need to master, often aligned with state or national teaching standards. These competencies should encompass not only subject matter knowledge but also pedagogical skills, classroom management, assessment strategies, inclusive practices, and professional dispositions. Second, learning experiences must be designed to help candidates develop these competencies through varied activities, including coursework,

fieldwork, simulations, and collaborative projects. Third, assessment methods must directly measure the demonstration of these competencies, moving beyond traditional tests to include performance assessments, portfolios showcasing student work and teacher reflection, observed teaching practice, and feedback from mentors and supervisors. Finally, competency-based education requires flexible pacing and individualized support, allowing candidates to progress as they demonstrate mastery and providing targeted assistance where needed. This approach, particularly when integrated with extensive clinical practice like residency or apprenticeship models, ensures that candidates are not just accumulating credits but are actively developing and demonstrating the complex skills required for effective teaching.

Alternative certification pathways such as competency-based education, apprenticeships, residencies, and alternative assessments provide promising avenues for reimagining teacher preparation and addressing teacher shortages. Their overall efficacy remains contingent upon the quality of training, support structures, the motivations of the individuals entering the profession, and a commitment to both equity and excellence. Ongoing research, policy adjustments, and financial incentives are necessary to optimize these programs and ensure that they contribute positively to the educational landscape and those in need can access the opportunities. There are likely opportunities within every program to adopt aspects of competency-based education, including alternative assessments and intentional mentorship, to facilitate proficiency and mastery. By focusing on demonstrated competence rather than solely on time or credit accumulation, teacher preparation programs can better equip future educators with the practical skills and confidence needed to succeed in today's complex classrooms, ultimately contributing to a more effective and sustainable teaching force.

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