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# ▶ 2018 Teacher Prep Review



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# INTRODUCTION

Not everyone catches the teaching bug as a teenager. Some take a bit of time, getting that initial Bachelor's degree, perhaps doing other things, maybe even having a complete other career, before that moment when they realize: I want to teach.

## Now what do I do?

Graduate teacher preparation and alternative route programs exist to answer this exact question. At first blush — they make perfect sense. Rather than requiring a prospective career-changer to go through another four-year undergraduate program, just incorporate the teaching related professional training into a shorter graduate program or create a certificate-only (no degree) alternative program. Voila.

What seems simple, however, quickly gets more complicated when you start to think about the constraints on time such programs face and the many and varied backgrounds applicants present.

For example, elementary teachers teach their students U.S. and world history; mathematics; physical and life science; literature; reading; and, writing. What is the “right” undergraduate degree an applicant to a graduate elementary program should have to make certain they have adequate background knowledge? Before you say “they had it all in high school,” not only is a high school education an inadequate benchmark for knowledge for elementary teachers, for someone changing careers high school may have been a long time ago — the organization of the periodic table, the causes of the War of 1812, and the reasons behind invert and multiply may have faded from memory.

Here's another example. A practicing biologist wants to teach high school biology and so enrolls in a graduate program. However, she's in a state with general science certification — a single certification which permits her to teach all possible high school sciences in her state. She could be hired to teach biology, chemistry, physics, earth science, astronomy, or oceanography. Is her biology degree (and subsequent experience) adequate subject knowledge?

If, like us, you think neither of the academic backgrounds presented above is sufficient to prepare future teachers to teach everything they may be required to teach, then another problem must be confronted. In a one- or two-year alternative route or graduate program, how do you fit subject matter courses (like basic

## Traditional, Alternative, Residency Prep Programs: What's the difference?

**Traditional programs** are offered by colleges and universities. In addition to coursework and earlier classroom practice, all include **student teaching**, a semester or more spent in the classroom of an experienced teacher who serves as a mentor and guide as candidates take increasing responsibility for instruction.

**Alternative Route programs** can take many forms, but are characterized by their lack of **student teaching**. Typically intended to get teachers rapidly into the profession, most are **internships** that place candidates in charge of their own classrooms almost as soon as the program starts. Support is provided by program staff, another teacher in a similar class in the same building, and coursework taken on evenings or weekends. A small number may include a brief experience in a mentor teacher's classroom before they lead their own. Alternative route programs can be sponsored by colleges and universities, school districts, nonprofits and, in some states, for-profit entities.

**Residencies** place candidates in a mentor teacher's classroom for up to a year, similar to **student teaching**. Residencies are typically offered by nonprofits, school districts, or charter management organizations. Coursework is often coordinated with the work that candidates do in their classrooms.

physics!) into a program that must teach instructional methods, planning, assessment, classroom management, how to accommodate students with special needs, and which may include a full time student teaching experience?

In short, there are severe structural problems with both graduate and alternative route programs that should make anyone considering them cautious.

In this update to our *Teacher Prep Review* data — which includes 567 graduate programs, 129 alternative route programs, and 18 residencies preparing elementary and secondary teachers — we detail some of the implications of these structural issues in:

### Practice teaching

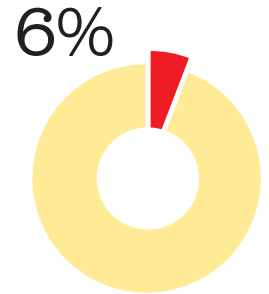
Too many programs provide inadequate practice before licensure — neglecting to take advantage of opportunities to place student teachers and residents in the classrooms of expert, effective mentor teachers, and failing to frequently observe the novices and provide constructive criticism focused on getting better. Residencies tend to do well in this area, while most internships place teachers in their own classrooms without the support they need to succeed and with inadequate preparation.

Only about six percent of graduate and alternate route programs incorporate two essential elements that contribute to an effective student teaching experience: checking the quality of the cooperating teachers who open their classrooms to student teachers, and providing frequent feedback to student teachers.

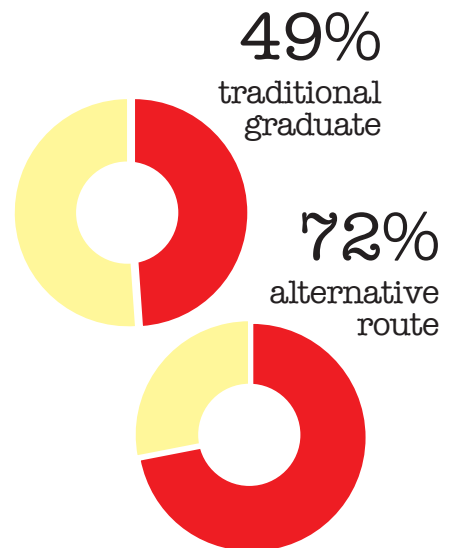
But when programs do provide this constructive criticism, they sometimes miss the opportunity to provide guidance to student teachers on the “big five” strategies of classroom management (identified by the Institute of Education Sciences based on their strong research support and broad applicability)<sup>1</sup>.

About half (49 percent) of traditional graduate and almost three quarters (72 percent) of alternative route preparation programs attend to all or nearly all of these five key strategies.

Two of the strategies are reinforced frequently: 1) the teacher establishes standards of behavior; and, 2) the teacher maximizes the amount of class time in which students are focused on learning. Two others are found about half the time: 3) the teacher redirects off-task students without interrupting instruction; and, 4) the teacher responds to serious misbehavior with consistent, appropriate consequences. Finally, despite its effectiveness, programs least often encourage 5) the teacher’s use of meaningful praise to encourage positive behavior.

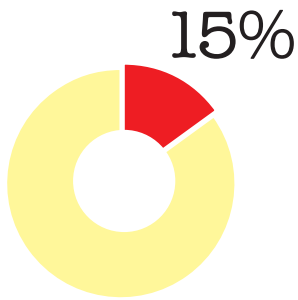


of graduate and alternate route programs incorporate two essential elements that contribute to an effective student teaching experience



preparation programs attend to all or nearly all of these five key classroom management strategies.

1 Epstein, M., Atkins, M., Cullinan, D., Kutash, K., and Weaver, R. (2008). Reducing Behavior Problems in the Elementary School Classroom: A Practice Guide (NCEE #2008-012). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from <https://ies.ed.gov/ncee/wwc/PracticeGuide/4>.



have adequate minimal expectations regarding the academic backgrounds in history, literature, and science applicants should bring to the program.

## Knowledge Elementary

We see how these constraints play out (or are worked around) in our review of post-baccalaureate elementary programs.

On the graduate side, just 15 percent have adequate minimal expectations regarding the academic backgrounds in history, literature, and science that applicants should bring to the program and, even worse, just one percent require adequate knowledge in mathematics.

But most of the 28 alternative route elementary programs we examined take a completely different tack — they ensure candidates have this knowledge by requiring applicants to pass the appropriate subject matter licensing tests *before* admission. In effect, they admit that there are some things the won't (can't) teach during the course of the program and require applicants to enroll with them.

This does not work in reading however: no one applying to a post-baccalaureate program to be a teacher will come in knowing how to teach reading. It's something the programs must teach. And both graduate and alternative route programs struggle to do so. While there has been some improvement — 23 percent provide scientifically based reading instruction now as opposed to 15 percent in 2014 — fully three quarters still fail to teach these methods.

## Secondary

Most graduate and alternative route secondary programs fail to prepare candidates adequately in science and social studies. Multiple-subject certifications like “general science” (available in most states) and “general social studies” (available in nearly all states), make it challenging for programs to ensure their candidates are prepared in all of the subjects they will be certified to teach.

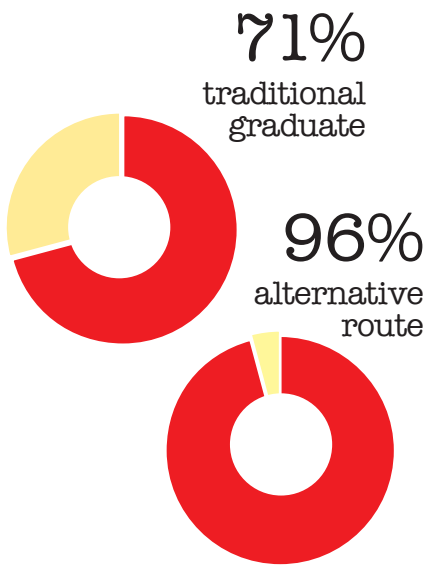
As a result, 71 percent of graduate and 96 percent of alternative route secondary programs offering a “general science” certification struggle to ensure that candidates possess the necessary content knowledge for this certification. Almost as alarming, more than half of graduate programs and 85 percent of the alternative route programs do not adequately prepare candidates for the ubiquitous “general social studies” certification.

While admissions testing is an option, few tests adequately measure content knowledge for multiple-subject certifications as most only yield one overall summative score, which may conceal gaps in candidate knowledge in particular subjects.

Finally, graduate secondary programs are more likely to prepare aspiring teachers in techniques and methods relevant to their subject area. Three-quarters of these programs offer subject specific methods courses while fewer than half of the 80 alternative route secondary programs we evaluated for this did so.

## Admissions

While nothing in the structure of graduate or alternative route programs inherently hinders them from being selective, too many simply are not. Too many imply that teaching is easy, that anyone can do it, by admitting almost everyone with minimal application requirements. Just 14 percent of traditional and 23 percent of alternative certification programs have rigorous admissions criteria.



offer a “general science” certification but struggle to ensure candidates possess the necessary content knowledge for this certification.

## RECOMMENDATIONS

Based on these findings, programs need to take several essential steps to provide stronger training to aspiring teacher.

- 1. Prescreen applicants to make sure they already know the core content they will teach — or be prepared to prescribe the necessary remediation.**
- 2. Better prepare candidates to handle the biggest challenge new teachers face: classroom management. Programs should use student teaching and internships as an opportunity to give constructive, targeted feedback in key management techniques.**
- 3. At the elementary level, focus relentlessly on the need for future elementary teachers to be ready to teach reading and math, the two most important aspects of their job.**
- 4. Provide high-quality practice opportunities that allow candidates to grow their skills under the guidance of an extraordinary teacher. All candidates should spend at least six weeks, preferably longer, in the classroom of an effective teacher.**

By taking these key actions, programs can send teachers into the classroom who are ready not only to achieve individual successes, but also to start a broader movement toward increased student learning and proficiency. As the new NAEP results suggest, the status quo in training teachers is simply insufficient for our students' needs.

### Top Programs

As has been the pattern in the past, the top-ranked teacher prep programs are not located on the most elite — and expensive — campuses; rather, some of the best programs are found in relatively small, not-widely-known colleges and universities or alternative route providers.

Both program types — graduate and alternative route programs — are ranked on the same scale.

### Methodology

Detailed information on our methodology can be found [here](#), but we note a few important aspects.

This report examines programs and policies in three key areas: knowledge (reading, literature, mathematics, history, and science for elementary programs and the sciences and social studies for secondary ones), practice (teaching methods and student teaching with a particular focus on classroom management) and admissions (selection criteria).

In determining program quality we adhere to a set of evidence-based criteria rooted in scientific research and the best practices of high-performing nations and states. For more on our standards, click [here](#).

In evaluating these programs, we look to the best available evidence to set a clear, reasonable definition for quality preparation, based on what research has found effective teachers need to know and be able to do. For each teacher prep program, our expert reviewers investigated whether programs have aligned their requirements and instruction with the scientific research on each area.<sup>2</sup>

Program grades are based on an extensive library of materials for each program, including course catalogs, degree plans, syllabi, observation forms, and student teaching agreements with districts. For more on what NCTQ examined, click [here](#).

We also provided programs with an opportunity to review their findings and submit additional information if they thought a grade was based on inaccurate data.

<sup>2</sup> An astute reader will notice that N sizes vary from area to area. Not all programs could be evaluated in all areas — either because of the nature of the program (for example, it does not teacher prospective secondary science teachers) or incomplete evidence (our analysts did not always have enough data to complete the evaluation in an area).

## TOP PROGRAMS

### Elementary

- INSPIRE Texas: Educator Certification by Region 4 (99th)
- YES Preparatory Public Schools Inc.: Teaching Excellence Program, TX (99th)
- Johns Hopkins University, MD (99th)
- Lipscomb University, TN (98th)
- Houston Independent School District (ISD): Effective Teacher Fellowship (ETF), TX (98th)
- CUNY Hunter College: Childhood Education, Grades 1-6, MEd, NY (97th)
- University of Houston, TX (97th)
- College of Saint Rose, NY (96th)
- COMPASS: Alternative Certification Teacher Academy of the Dallas Independent School District (ISD), TX (96th)
- University of New Mexico: MA Elementary Education, Alternative Route to K-8 Licensure, NM (95th)
- Greensboro College, NC (94th)
- CUNY – Lehman College , NY (94th)
- Virginia Commonwealth University (94th)
- CUNY – Hunter College , NY (93rd)
- Region 13 Education Service Center: Educator Certification Program, TX (93rd)
- Touro College, NY (92nd)
- SUNY – Potsdam , NY (91st)
- Sage Colleges, NY (91st)
- St. Mary’s College of Maryland (90th)
- Arizona State University (90th)

Click [here](#) for the full list of elementary programs

### Secondary

- CUNY – Hunter College , NY (99th)
- Richmond Teacher Residency, VA (99th)
- CUNY – Lehman College , NY (99th)
- Arizona State University: Masters and Arizona Certification (InMAC) program, TFA Partnership (99th)
- Teach For America (DC Region) (99th)
- INSPIRE Texas: Educator Certification by Region 4 (99th)
- University of California – Irvine (98th)
- Memphis Teacher Residency, TN (98th)
- University of California – Santa Barbara (98th)
- Virginia Commonwealth University (97th)
- Aspire Teacher Residency, CA (97th)
- Boston Teacher Residency, MA (97th)
- Jacksonville Teacher Residency, FL (97th)
- Baltimore City Teaching Residency (BCTR), MD (97th)
- SUNY University at Buffalo, NY (96th)
- Arizona State University (96th)
- Teach For America (Connecticut) (96th)
- University of Notre Dame: ACE Teaching Fellows, IN (96th)
- CUNY – Brooklyn College , NY (95th)
- Teaching Residents at Teachers College, NY (95th)
- Johns Hopkins University, MD (95th)
- Claremont Graduate University, CA (94th)
- California Lutheran University (94th)
- Long Island University – C. W. Post, NY (94th)
- University of Missouri, St. Louis: Teach in 12 (94th)
- Relay Graduate School of Education (New York) (94th)
- Lipscomb University: Teaching License Program (Transitional License Option), TN (94th)
- Winthrop University, SC (93rd)
- University of California – Davis (93rd)
- University of California – Los Angeles (93rd)
- Indiana University – Bloomington, IN (92nd)
- College of William and Mary, VA (92nd)
- University of Arkansas (92nd)
- University of Wisconsin – Madison (92nd)
- University of Houston, TX (92nd)
- University of Pennsylvania (91st)
- Indiana University, Bloomington, Secondary Transition to Teaching, IN (91st)
- University of Michigan, Ann Arbor: Interim Certification Program (91st)
- NYC Teaching Collaborative (91st)
- Houston Independent School District (ISD): Effective Teacher Fellowship (ETF), TX (91st)
- SUNY – University at Albany, NY (90th)
- Oakland University, MI (90th)
- California State University – San Marcos (90th)
- McDaniel College, MD (90th)

Click [here](#) for the full list of secondary programs





# RESEARCH FINDINGS

## PRACTICE

### Student Teaching

**KEY FINDINGS:** When it comes to providing a positive clinical experience to their teacher candidates, most programs leave too much to chance. With only six percent of programs as the exception, traditional graduate programs give too much ground on two elements of an effective student teaching experience that should never fall victim to compromise: 1) the need to assign a great classroom teacher to mentor the student teacher and 2) ensuring that the teacher candidate gets frequent feedback on their progress. Residencies perform much better, with about a third paying attention to both of these basic, but crucial elements of a great clinical experience. Alternate route programs do not fare much better than traditional programs, in part constrained by quickly placing their candidates in charge of their own classrooms. Only two percent of these programs consider these two elements nonnegotiable. For-profit alternative programs are most cavalier — 90 percent of those we evaluated took neither of these crucial steps.

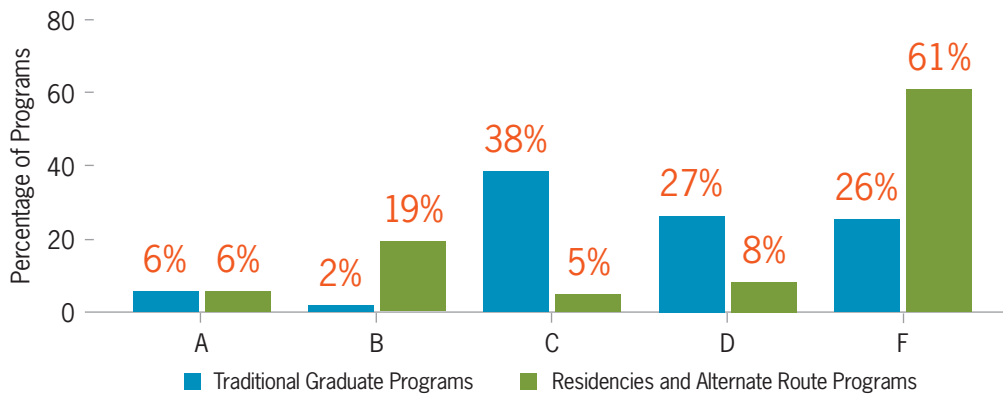
Teachers often say that their clinical experiences were the most important part of their training. Candidates in traditional, university-based, programs spend a semester or more as a student teacher in another teacher’s classroom, an experience that — at its best — gives candidates the opportunity to learn how to teach from a “pro.” For their part, alternate route programs include a variety of supervised practice experiences, but we make an important distinction between the two main types. In residency models, (which many argue are not actually an alternate route) teacher candidates work in a mentor teacher’s classroom for up to a year. Internships, which we regard as pure alternate routes, quickly plunge participants into the responsibility of guiding their own classroom, sometimes with steady support and sometimes not.

To increase the quality of the clinical experience, programs should, at minimum, take two actions that have been shown to be effective by research.<sup>3</sup> First, programs should play an active role in identifying qualified mentor teachers by collecting meaningful information that allows the programs to confirm the skills of each mentor teacher, instead of leaving their selection entirely in the hands of principals or other school district staff. Mentors should be effective instructors (as measured by evidence of student learning<sup>4</sup>) and capable mentors of adults. Second, programs should require supervisors to provide candidates with frequent observations accompanied by written feedback.

3 Boyd, D., Grossman, P., Lankford, H., Loeb, S., & Wyckoff, J. (2009). Teacher Preparation and Student Achievement. *Educational Evaluation and Policy Analysis*, 30(4), 319-343.

4 Positive impact on student learning may be determined by a number of means, including — but not restricted to — standardized test scores. For example, teacher-written tests or portfolios of student work would be acceptable.

## How many programs systematically deliver high quality practice and support? (N=545 traditional graduate programs; N=147 all alternate route programs)



In total, only about six percent of traditional programs earn a grade of “A,” signifying that they make an effort to match their student teachers with strong mentor teachers and that they provide an acceptable frequency of observation and feedback to their candidates. Most programs earn lower grades because they do not play an active role with school districts in verifying the suitability of potential mentor teachers.

Residencies stand out in our analysis, because more than a third earn “A”s for their clinical experience. They do this by providing candidates up to one year of experience in the classroom of a mentor who is a strong instructor and able to mentor adults, and by sending program staff to observe the teachers frequently. In contrast, internships, in which participants quickly become teachers in their own classrooms, almost never provide this type of experience.

Internships run by for-profit companies are particularly lacking. More than 90% earned an F because they systematically fail to provide adequate feedback from program staff and ensure that mentor teachers were qualified. Most of these programs are located in Texas, where they produce a large fraction of the state’s new teachers. We noted similar trends in Texas programs in our [2014 analysis](#) of alternative programs.

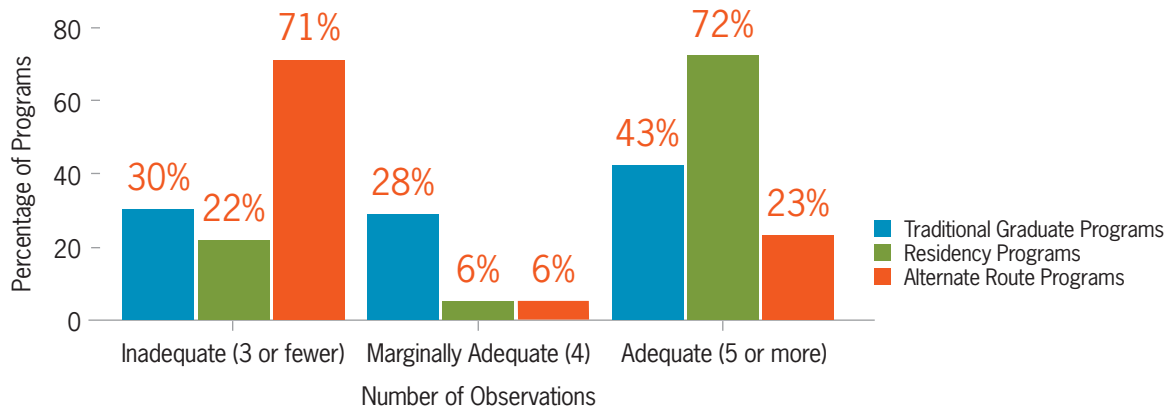
### Essential features of a high quality experience

#### Frequent observations by a university supervisor

Observations allow program supervisors to evaluate teacher candidates’ performance and provide feedback that can lead to improvement. Research finds that when student teachers are observed at least five times by their supervisors over the course of the student teaching placement, they are more effective when they have classrooms of their own. It’s reasonable to think that teachers in alternate route programs also benefit from being observed at least five times. However, we give partial credit to traditional, residency, and alternative route programs that provide four observations. If teacher candidates in alternative programs begin teaching without spending time in another teacher’s classroom, it is particularly important that they are given feedback early in the school year, defined here as within the first 12 weeks. While feedback from mentor teachers is also extremely valuable, there is no research of comparable strength to determine how often mentor teachers should formally observe student teachers, so we only focus on supervisor feedback.

## Do programs observe and give feedback to candidates?

(N=545 traditional graduate programs; N=18 residency programs; N=129 alternate route programs)



With regard to feedback, there is a large difference between traditional programs, residencies, and alternate route programs. About 70 percent of traditional graduate programs and residencies require that their supervisors observe their assigned student teachers at least four times and provide them with written feedback based on each observation.

However, the findings are reversed for internships and other types of alternate route programs: More than 70 percent failed to ensure that novice teachers be frequently observed during the crucial first twelve weeks of the school year.

### The opportunity to learn from a great mentor teacher

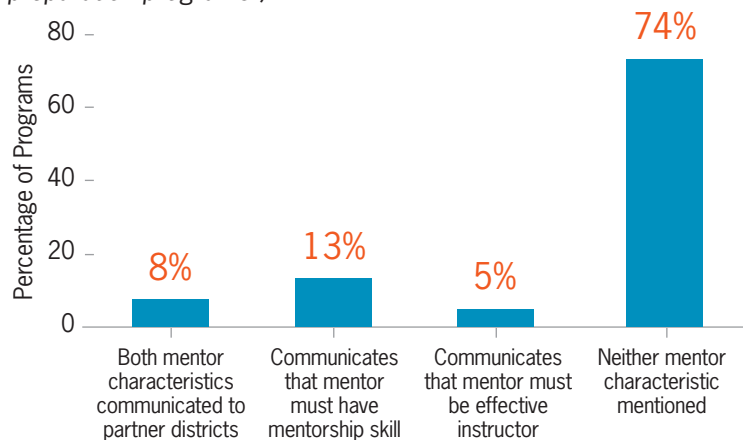
Traditional teacher preparation programs and residencies, with a small number of exceptions, include a clinical experience of a semester or more in which teacher candidates spend full days in a mentor's classroom. Teacher candidates in these programs are therefore guaranteed what we have to assume is adequate time with a mentor. However, traditional programs often do not insist that mentor teachers meet high standards. Residencies do better in this regard, but still have room for improvement.

In contrast, while alternate route programs are more likely than traditional programs to screen mentor teachers to ensure that they have appropriate skills, they struggle to provide sufficient practice. Most are internships in which the mentee and mentor are full-time teachers in their own classrooms, with limited opportunities to see each other teach. To ensure that candidates receive enough guidance, internship programs should include time spent in a mentor's classroom (perhaps during summer school), a period of co-teaching at the beginning of the year, or a combination of the two. We look for at least six weeks of time to work under the guidance of another teacher, which we fully acknowledge may not be altogether adequate. However, few programs meet even this low bar.

## How many programs ensure that teacher candidates spent time in the classroom of a strong mentor teacher?

### Traditional programs

(N=506 graduate teacher preparation programs<sup>5</sup>)



Only eight percent of traditional graduate programs hold mentor teachers to high standards by telling partner school districts that mentors must be effective instructors and strong mentors. Because partner school districts usually play a large role in mentor selection, it's important for programs to establish a shared understanding of the qualities expected in a mentor, but most traditional programs seem reluctant to use this opportunity to insist that mentor teachers be the best of the best.

State regulations appear to influence requirements that programs set for their mentor teachers: In the eight states whose regulations require that mentor teachers have mentorship skills, 55% of programs ask school partners to be sure that nominated mentors comply with this requirement, compared with 17% of programs in states without the requirement. However, the low level of compliance even in states with regulations shows that many programs ignore state regulations.

Beyond communicating expectations about the qualities mentor teachers should have, teacher prep programs should play an active role in screening mentor teachers to verify that they meet the program's criteria. Only about nine percent of traditional graduate programs collect any meaningful information on each mentor teachers' skills, including about one percent that screen mentor teachers for both their mentorship and instructional skills.<sup>6</sup>

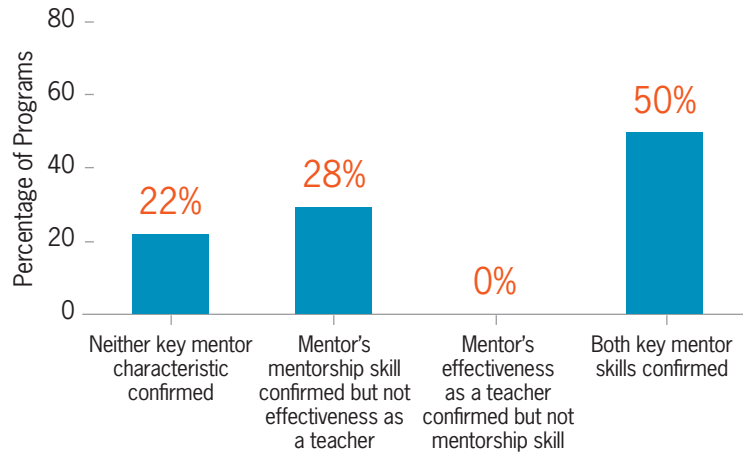
### Traditional graduate programs that screen mentor teachers for both mentorship and instructional skill:

- AZ – Arizona State University
- GA – Berry College
- NY – CUNY – Lehman College
- CA – University of California – Los Angeles
- AK – University of Alaska Fairbanks

5 These data are based on the subset of programs for which we could clearly identify the expectations for mentor teachers that the program communicated to partner school districts.

6 Meaningful information is not restricted to information about a teacher's instructional and mentorship skills. For example, a principal might be asked to comment on a teacher's classroom management or communication skills. However, information on the individual's skills as a teacher, beyond number of years of experience or area of certification, must be obtained.

**Residencies**  
(N=18 programs)

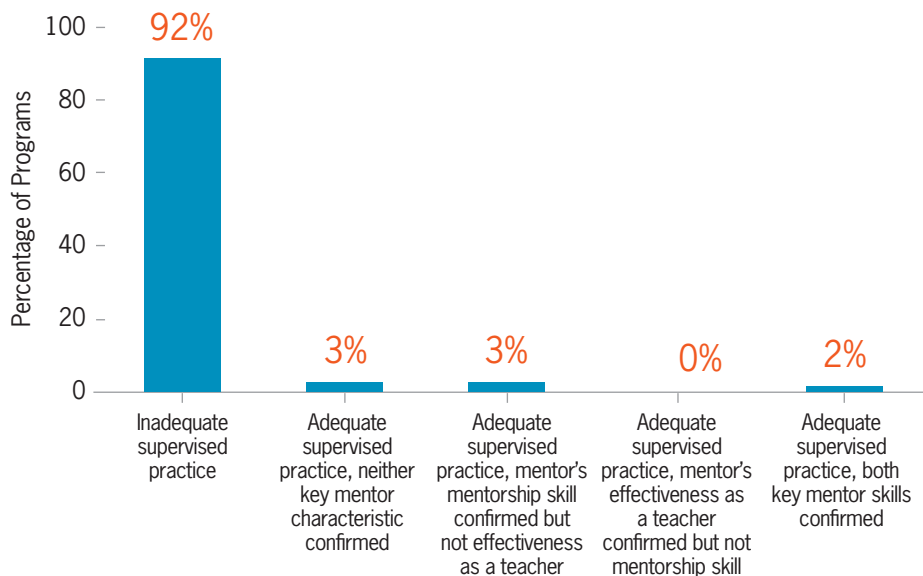


Residencies are often created in partnership with — or by — school districts, making the communication of mentor criteria less one-sided. Our analysis of these programs therefore focuses on whether they screen mentor teachers for their mentorship and instructional skills, an issue that is also important for alternate route programs, regardless of their structure. While residencies are more likely than other types of programs to screen for these two key skill sets, only about half of residencies do.

**Residency programs that offer a substantive experience with a strong mentor:**

- CA – Aspire Teacher Residency
- CO – Boettcher Teacher Residency
- MA – Boston Teacher Residency
- TN – Memphis Teacher Residency
- NY – Relay Graduate School of Education
- TX – Relay Teaching Residency – Houston
- VA – Richmond Teacher Residency

**Alternative route programs**  
(N=129 programs)



In comparison with residencies, most of which follow a similar structure, the amount and kind of supervised practice provided by alternate route certification programs varies by type. Although about a quarter of alternate route programs screen mentor teachers for both their mentorship skill and effectiveness as teachers, very few arrange for candidates to spend six weeks or more teaching alongside a mentor. Most are internships, in which the mentor’s support is limited to meetings during non-instructional hours and the occasional visit to observe the mentee. Only three of the more than 120 internship programs we examined arrange for participants to spend significant time in a mentor’s classrooms, in two of the three cases during summer school, before leading their own classrooms.

### Alternate route programs that offer a substantive experience with a strong mentor:

- TX – COMPASS: Alternative Certification Teacher Academy of the Dallas Independent School District (ISD)

### Comparison with other types of programs and previous years

The findings discussed here for traditional graduate programs are very similar to those we reported for traditional undergraduate programs in the fall of 2016. Traditional graduate and undergraduate programs generally perform similarly on this standard because many institutions use the same methods to recruit mentor teachers and have the same policies on observations for all types of teacher candidates.

The findings for this standard have not changed substantially since we last looked at traditional programs in 2014. Looking only at the 425 elementary and secondary graduate programs we were able to evaluate in both the 2014 *Teacher Prep Review* and the current *Teacher Prep Review*, over a quarter of programs — 26 percent — now score differently on this standard than they did two years ago. However, these programs were almost evenly split between programs whose score increased and those whose score decreased, resulting in almost no net effect.

See the research support and methodology for [Student teaching](#).

Detailed findings for this standard can be found [here](#).

## Classroom Management

**KEY FINDINGS: About half (49 percent) of traditional graduate teacher preparation programs attend to all or nearly all of the five key classroom management strategies. Almost three quarters of residencies and alternate route programs (72 percent) reach the same mark. Looking for evidence that programs require candidates to apply five research-based strategies in the classroom, we found the most evidence for these two strategies: 1) the teacher establishes standards of behavior and 2) the teacher maximizes the amount of class time in which students are focused on learning. Found least frequently is the teacher’s use of meaningful praise to encourage positive behavior.**

We can report some significant progress in this standard since our last ratings in 2014.

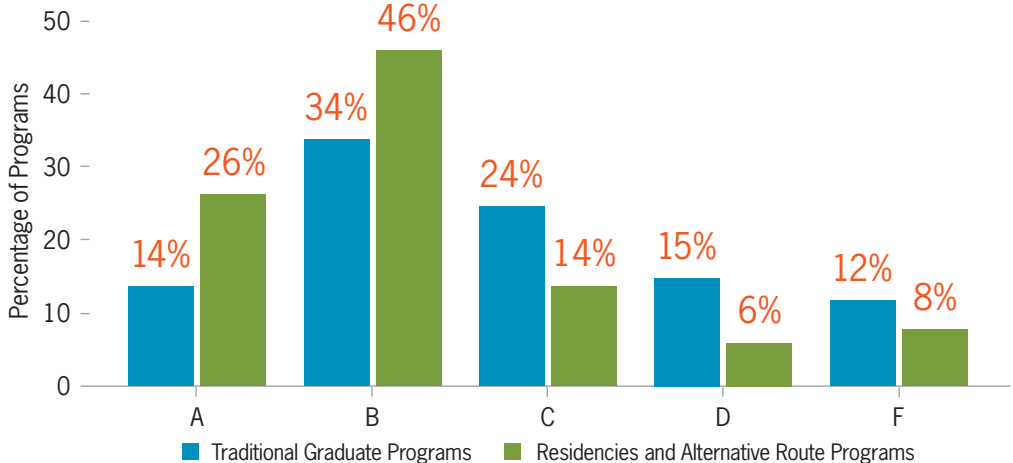
New teachers and their principals consistently report that classroom management is one of their greatest challenges. Given that students learn best in an orderly, well-run classroom, teacher candidates should be trained in a coherent management approach focusing on the five strategies identified by the Institute for Education Science as having conclusive research support and being useful with all students.<sup>7</sup> These strategies are:

1. Establishing classroom rules and routines that set expectations for behavior;
2. Maximizing the time that students are engaged in learning by pacing lessons appropriately, managing class materials and the physical setup of the classroom, and teaching interesting lessons;
3. Using meaningful praise and other forms of positive reinforcement to encourage appropriate behavior;
4. Using unobtrusive means that do not interrupt instruction to prevent and manage minimally disruptive behavior; and,
5. Addressing more serious misbehavior with consistent, appropriate consequences.

<sup>7</sup> For more on the research underpinning this analysis, see our [Classroom Management](#) report and our [Standard Book](#) for the Classroom Management Standard.

Our evaluation examines the feedback that teacher candidates receive from their supervisors and cooperating teachers regarding their use of these five classroom management strategies. For traditional programs, we focus on student teaching. Similarly, participants in residencies and alternate route certification programs — whether they spend time in the classroom of a mentor teacher or immediately take over their own classroom — need guidance on crucial classroom management skills, and we check to see that they receive feedback from the program on their use of these strategies in the classroom.

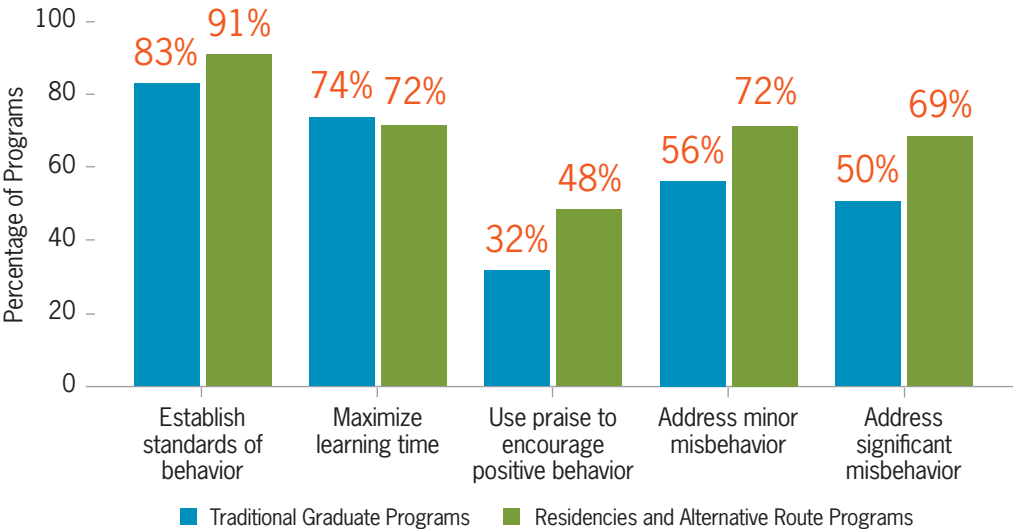
**How many programs provide feedback to aspiring teachers on proven classroom management strategies?**  
*(N=438 traditional graduate programs; N=65 alternative programs)*



About half of all traditional graduate programs (49 percent) earn an “A” or “B,” meaning that they provide feedback on all or nearly all of the key classroom management strategies. That performance is exceeded by residencies and alternative route programs, with more than two thirds (72 percent) reaching the same mark.

The findings discussed here for traditional graduate programs are very similar to those we reported for traditional undergraduate programs in the fall of 2016. This is unsurprising because many institutions use the same or similar evaluation forms to give feedback to undergraduate and graduate students in programs leading to certification.

**What percentage of programs provide feedback on each key skill?<sup>8</sup>**

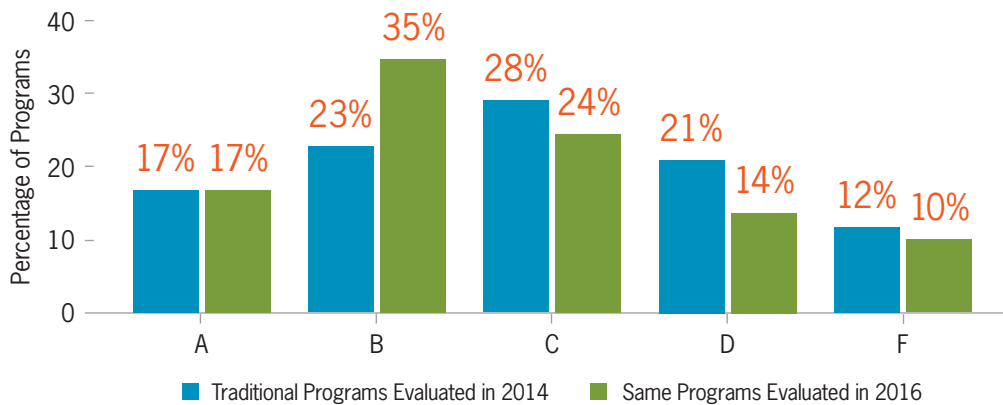


8 Maximizing learning time is the only area in which our evaluation is divided among separate skills: 1) maintaining student engagement, and managing 2) time, 3) materials, and 4) the physical classroom environment. Programs are included in the graph if their student teachers receive feedback on at least three of the four skills.

Most notable in this graph is the inattention to the strategy with the strongest research basis, the teacher’s use of praise and other reinforcements to encourage positive behavior. This finding is concerning because praise, delivered meaningfully and appropriately (both of which require training), has been shown to be a powerful tool that can instill in students the motivation to improve their own behavior.

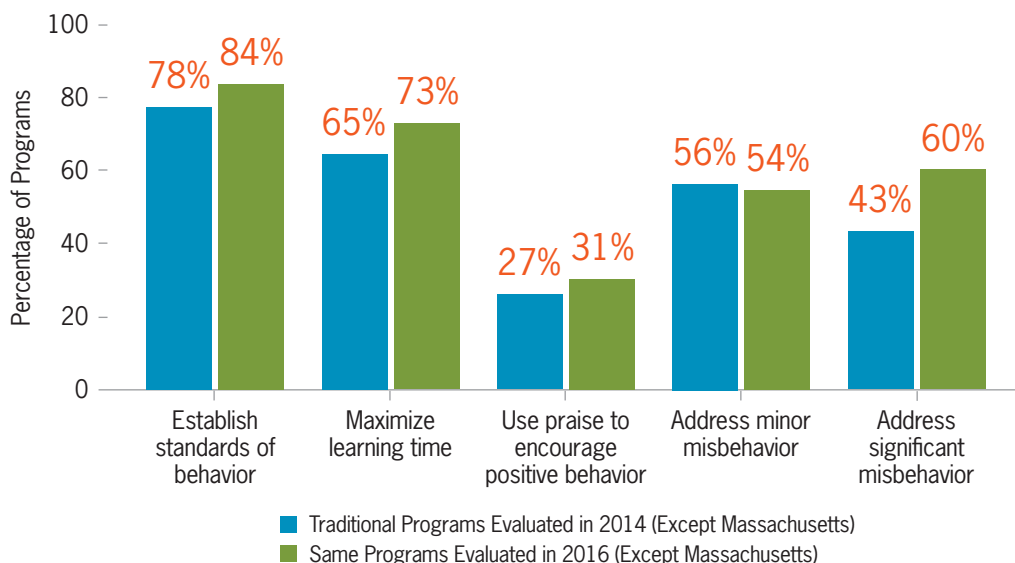
### Improvement since the last edition of the *Teacher Prep Review*

The overall grade distribution for this standard is somewhat better than that for traditional graduate programs in the 2014 *Teacher Prep Review*. Examining the 260 traditional graduate programs that were evaluated in both the 2014 *Teacher Prep Review* and the current edition of *Teacher Prep Review* shows improvement: in 2014, 36 percent of programs earned an “A” or “B”, while in 2018, 49 percent now receive those grades.



Most of this change can be explained by a change in Massachusetts under a new version of its mandatory, statewide teacher performance assessment. It offers feedback on more of the key strategies of classroom management than the previous version. Most programs in the state of Massachusetts now earn a B instead of a D or F.

Still, looking at the 249 programs evaluated in both 2014 and 2016 in states other than Massachusetts, small but noticeable improvements have occurred in almost all strategies of classroom management. In particular, the fraction of programs giving candidates feedback on the way in which they address significant misbehavior has grown from 43 percent in 2014 to 60 percent in 2016.



See the research support and methodology for [Classroom management](#). Detailed findings for this standard can be found [here](#).



## KNOWLEDGE – ELEMENTARY

Three different standards evaluate program preparation in the subjects prospective elementary teachers will teach: Early Reading, Elementary Mathematics, and Elementary Content, which focuses on the core remaining elementary subjects — literature, history, and science.

### Elementary Content

**KEY FINDINGS:** None of the 247 graduate elementary programs reviewed under this standard screen candidates for prior knowledge of the content needed to teach elementary grades. Absent basic screening practices, few graduate programs (15 percent) ensure that their candidates possess the content knowledge needed to teach elementary grades through content coursework completed before or during the program.

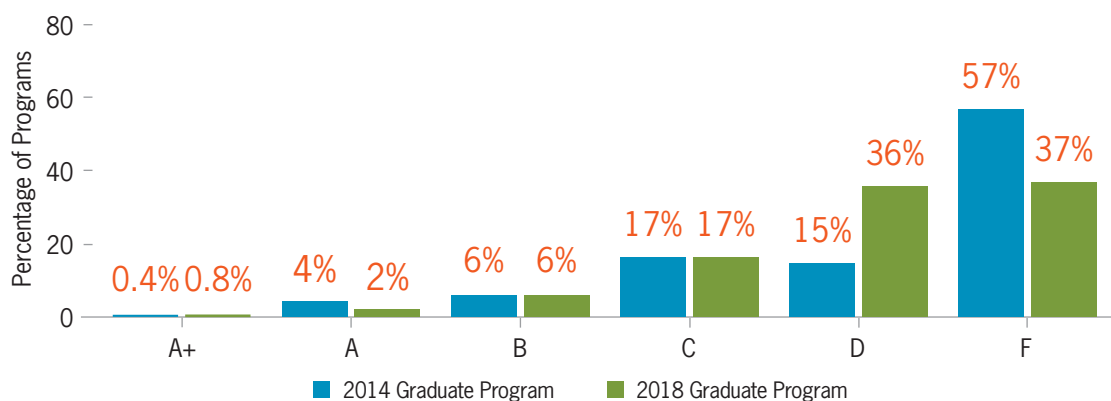
Elementary teachers have to plan lessons, guide students to understanding, and answer the question “why?” on a broad array of topics. In contrast to most middle and high school teachers, elementary teachers must have a foundational understanding of mathematics, social studies, language arts, and the sciences.<sup>9</sup> A fifth-grade teacher, for instance, may have to present the basic concepts of geometry and elements of biology, while also teaching reading fluency, American history, and geography. To prepare a teacher to provide this well-rounded education, elementary teachers’ training should mirror the subjects that they will be expected to teach.

Accepting candidates who will be unable to pass state content knowledge licensing tests is an inefficient use of program resources. To fill gaps without extending the length of the graduate program, programs need to provide targeted direction to candidates who demonstrate weaknesses in specific areas certain to be on the licensing test.

We review course and admissions requirements to determine whether programs ensure aspiring teachers know the subjects that they will teach. Specifically, elementary teachers need grounding in literature and composition, history and geography, and the sciences (mathematics knowledge is reviewed under a separate standard). We also consider whether aspiring teachers are required to have a concentration in a subject area that they could teach. To earn an A on this standard, a graduate program needs to verify that applicants enter the program possessing basic content knowledge. Admissions requirements and content knowledge licensing tests taken prior to admission into the teacher prep program all count toward these content areas. Click [here](#) for more information.

### How many graduate programs either screen for prior knowledge or require minimal coursework in the essential content for teaching elementary grades?

(N=281 graduate programs in 2014; N=247 graduate programs in 2018)



<sup>9</sup> Teacher prep programs’ coursework in training teachers to teach elementary math is explored in a separate findings report, [A Closer Look at Elementary Mathematics](#). Coursework in training teachers to teach reading is explored in [A Closer Look at Early Reading](#).

Compared to the previous review of graduate elementary programs, there was little to no movement on the part of programs in area. The high number of programs moving from an F to a D in this edition is explained by a change to in our methodology to accommodate more variations in how programs can earn each grade. The three percent of graduate programs earning an A in this edition of the *Teacher Prep Review* represent a slight decline from the nearly five percent of programs receiving a similar grade in 2014. Little difference was found in the distribution of grades for undergraduate and graduate programs under this standard.

A sample of 28 alternative route programs was reviewed under this standard. The results were encouraging, as a sizable majority of programs required passing scores on content knowledge tests as a condition of program admission, though this is largely due to state requirements that licensing tests must be passed prior to becoming a teacher of record.<sup>10</sup> In total, 21 alternative route programs earned an A, three programs earned a C, and four programs earned an F.

### Key components of analysis

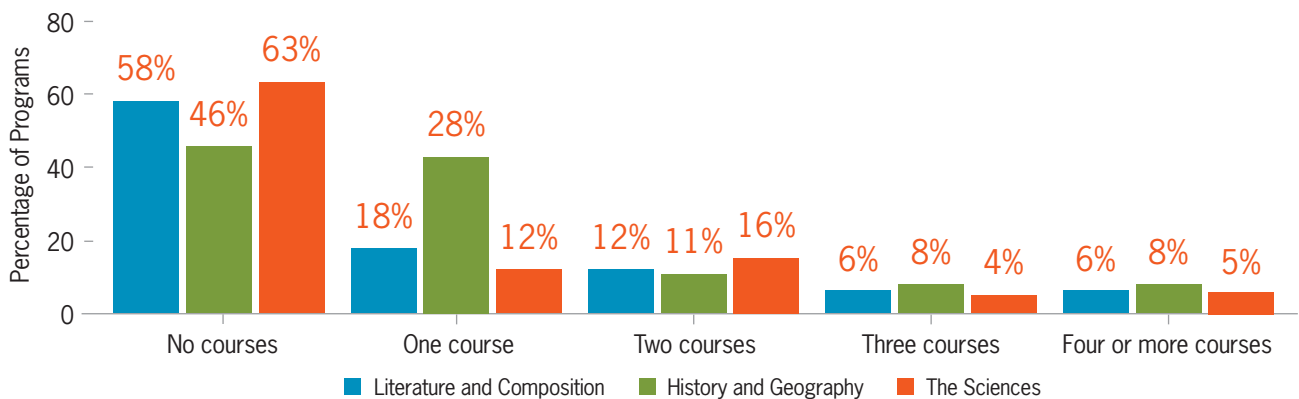
As is it uncommon for graduate programs to conduct a transcript review that would require applicants to complete additional coursework to address gaps in content knowledge, this standard primarily considers the number of credits required for program admissions in each of three content areas that are comprised of *literature and composition*, *history and geography*, and *the sciences*. Programs satisfy this standard through the requirement of at least nine credits in each of these three subject areas for a total of 27 credits, and by additionally requiring either a concentration in one teachable subject area or specific courses in all three subject areas.

### A closer look at graduate elementary content subjects

Graduate programs set a low bar for program admission. None of the 247 programs in the sample require applicants to pass a licensing test prior to enrollment. As seen below, more than half of programs do not require applicants to have completed even a single English or science course. Further, only four programs (less than two percent) require program applicants to have earned an undergraduate major in one teachable elementary subject.

### How many courses do graduate programs require elementary teacher candidates to have completed in each subject area?

(N=247 graduate secondary programs)



On average, just a quarter of graduate programs require two or more courses in each of the three content areas. This paints an overly optimistic picture, though, as only 15 percent of programs independently meet a two course threshold for each subject. This suggests these programs simply presume college graduates possess adequate knowledge to teach each of the core subjects, as basic thresholds are typically not established.

<sup>10</sup> By virtue of the structure of alternative route programs, many teacher candidates are considered the teacher of record (the teacher responsible for a classroom) while still in their training program, necessitating the need to pass state licensing tests at the onset of the program.

The lack of oversight is further highlighted by the finding that no graduate programs require content knowledge licensing tests to be passed as a condition of program admission, even while such tests are required in many states in order to be certified. This would be understandable if graduate programs required content coursework to be completed while enrolled, but that is very rarely the case.

### Exemplary programs

Programs earning an A+ satisfy the requirements for this standard and additionally meet the criteria for undergraduate programs, which includes:

#### Literature and composition content

Courses covering world literature, American literature, composition, and children's literature provide elementary teachers with broad-based knowledge in writing and literature. Where detailed transcript review information is available, graduate programs should require program applicants to demonstrate knowledge in at least two of these four topics, either through undergraduate coursework or a test taken prior to admission.<sup>11</sup>

#### History and geography content

The five topic areas considered include early American history, modern American history, early world history, modern world history, and world geography. In a review of applicants' undergraduate coursework, graduate programs should require coverage of at least three of these five topics. It is important that these courses focus on content rather than methods of instruction.

#### Science content

Content in the sciences is comprised of biology, chemistry, and physics (which, for the purpose of analysis, includes physical science, geology, earth science, astronomy, climatology, geology, and oceanography). Requiring coursework (including one lab course) in at least two topic areas is considered adequate to ensure that aspiring teachers have the science knowledge they will need.

Only two graduate programs check all of those boxes to earn an A+ under this standard:

- UT – **Western Governors University**
- WA – **Evergreen State College**

See the research support and methodology for [Elementary content](#).

Detailed findings for this standard can be found [here](#).

## Elementary Mathematics

**KEY FINDINGS: Just one percent of the 201 graduate elementary programs cover the critical topics elementary teachers need including numbers and operations; algebra; geometry; and data and probability. This figure compares unfavorably with the coverage of undergraduate programs coverage that stands at 13 percent as of 2016. The systematically poor preparation of elementary teachers in mathematics may stand as one of the most staggering weaknesses in teacher preparation, contributing to the chronically low standing of American schoolchildren in mathematics internationally. The lack of appropriate content in this area may well be attributed to a false assumption that mathematics coursework aimed only at teachers would imply coursework that is too easy, in spite of clear guidance to the contrary by mathematicians, math associations such as NCTM and the practices of other nations.**

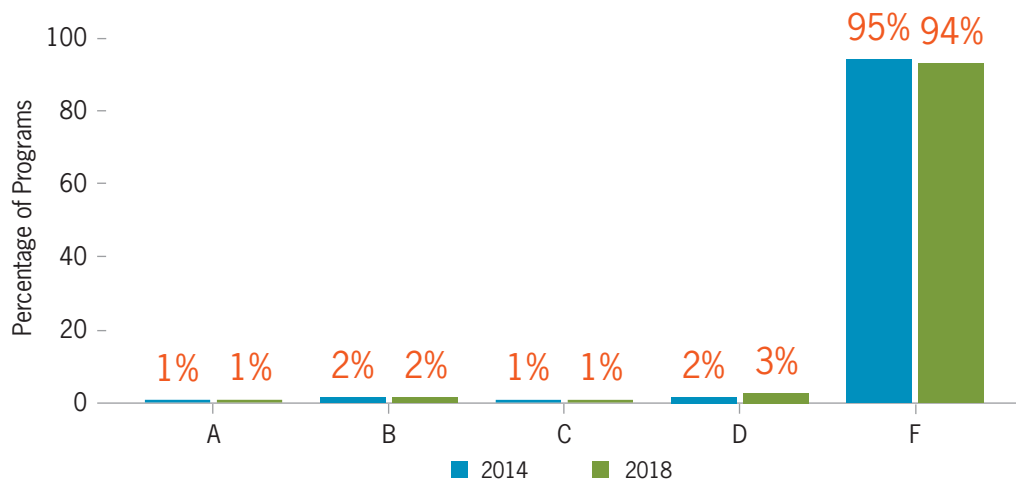
11 For each subject area, programs can also ensure that candidates master content if they require a general knowledge exam with subject-specific scores prior to admission into the program, such as the Missouri Educator Gateway Assessments (MoGEA) or the College Basic Academic Subjects Examination (C-BASE) prior to admission to the graduate program. Credit was applied only if the programs accepted or exceeded the qualifying score set by the state.

Teaching elementary children the fundamentals of arithmetic — dividing fractions, operations with signed numbers, or basic probability — requires a deep understanding of the underlying mathematics. For elementary teachers, it is simply not sufficient just to know rules such as “invert and multiply.” One must be able to explain why rules work, building upon the more fundamental whole number operations. To do so requires specialized mathematics coursework designed specifically for prospective elementary teachers. Such coursework cannot be simply a repeat of teachers’ own elementary mathematics lessons, but one that takes a deep, conceptual approach to the content. Typical college-level coursework (such as calculus) does not address this need.

To earn an A in elementary mathematics, a program must dedicate sufficient time to adequately cover the majority ( $\geq 75$  percent) of essential math content. It should also require a methods course in teaching mathematics to elementary-aged children.

### Percentage of graduate elementary programs and adequacy of coverage of the critical topics of elementary mathematics

(N=201 graduate elementary programs in 2018; N=167 graduate elementary programs in 2014)



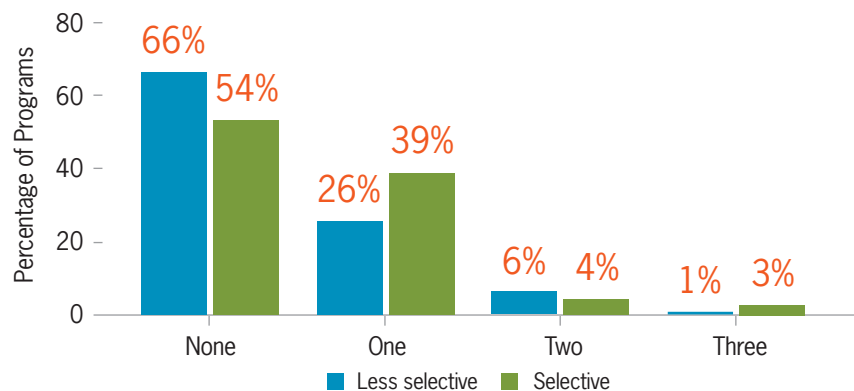
In an area yielding some of the lowest performance by programs, 94 percent of graduate elementary programs do not dedicate sufficient time to the necessary content.

Overall, there has been no change in our graduate elementary mathematics results between 2014 and 2018. Of the 167 graduate programs we evaluated in both releases, 96 percent earned the same grade.

We reviewed a limited sample of elementary alternative certification programs. Of the 28, 23 earned an A in elementary mathematics because they require an adequate test of elementary mathematics knowledge as a part of admissions, an option that any of the traditional graduate program could also pursue.

### Mathematics content coursework expectations explain these grades

(N=201 graduate elementary programs)



Almost two-thirds of all the graduate programs do not require a single course in the necessary content — even though mathematicians recommend three courses for candidates of average math ability and two courses for candidates who have a strong background in mathematics.

### Textbooks used in elementary mathematics programs

Unlike elementary reading, where there appears to be no end of possible textbooks, a relatively small number of textbooks are used in elementary mathematics. This Review evaluates 138 texts. Below are the two textbooks most commonly used in courses evaluated in graduate elementary programs that comprehensively and rigorously cover the mathematics concepts that elementary teachers need to know. Names of additional acceptable textbooks can be found [here](#).

### The best textbooks most used in graduate programs

Title	Author	Edition	Count
(Billstein) A Problem Solving Approach to Mathematics for Elementary School Teachers (thru 12th ed)	Billstein, R.; Libeskind, S.; Lott, J.W.	11	10
(Beckmann) Mathematics for Elementary Teachers (thru 4th ed)	Beckmann, S.	4	4

See the research support and methodology for [Elementary mathematics](#). Detailed findings for this standard can be found [here](#).

## Early reading

**KEY FINDINGS: One in four (23 percent) of 210 graduate elementary programs teach scientifically based methods of early reading instruction. As low as that percentage is, it represents improvement since our last release of ratings when only 17 percent did so. Since 2014, a third of programs (33 percent) made progress in this critical area.**

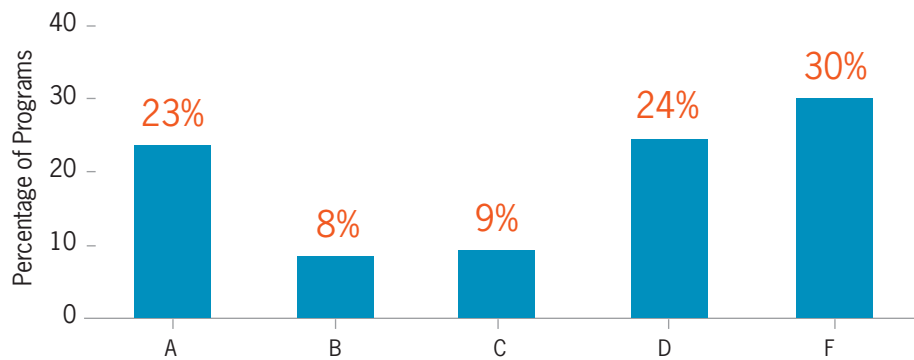
Reading proficiency underpins all later learning. Unfortunately, some 30 percent of all children do not become capable readers.<sup>12</sup> Using the knowledge gained from decades of research, research under the auspices of the National Institutes of Health has shown that this unacceptable rate of failure could be cut by two-thirds or even more, if only schools used scientifically based methods of reading instruction.

To earn an A on this standard, programs must adequately address all of the five essential components of reading which are explicit and systematic instruction in phonemic awareness, phonics, fluency, vocabulary, and reading comprehension. Programs could meet this standard through a combination of relevant lectures; high quality textbooks; course assignments, tests, and teaching practice.

12 The most recent NAEP results find that 31 percent of 4th grade students are “below basic” on this reading assessment. U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), various years, 1992–2015 Reading Assessments. Retrieved March 12, 2018 from [http://www.nationsreportcard.gov/reading\\_math\\_2015/#reading/acl?grade=4](http://www.nationsreportcard.gov/reading_math_2015/#reading/acl?grade=4).

## How many programs teach elementary teacher candidates about the five key components of early reading instruction?

(N=210 graduate elementary programs in 2014)



*Not shown in this chart are the 7 percent of programs we could not determine a score for due to incomplete information.*

The distribution of scores here provides insight into the divergent approaches that teacher prep programs take to early reading instruction, illustrating the polarization among teacher educators regarding how to teach reading. One in four programs are clearly designing instruction based on the best research available about what works in reading instruction. These programs are likely drawing from findings by the National Reading Panel as well as updated research from the Institute for Education Sciences,<sup>13</sup> the most authoritative source on how children learn to read. This research asserts that teachers need to know and be able to teach the five components of effective reading instruction. On the other hand, half of the programs (54 percent earning a D or F) teach at most two components of reading instruction, ignoring much of the scientific evidence on how most children best learn to read. Fewer programs fall in the middle, choosing to teach some elements of good reading instruction, but not others. However, the research is clear that it is not possible to omit or favor some components over others.

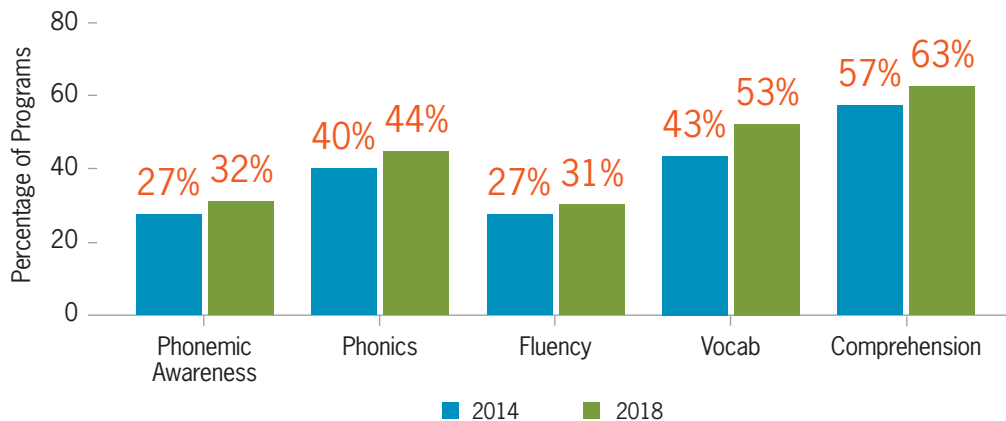
We reviewed a limited sample of 28 elementary alternative certification programs. None earned an A in elementary reading preparation: four earned a B, one earned a C, seven earned a D, and the remaining 16 earned failing marks.

13 National Reading Panel (US), National Institute of Child Health, & Human Development (US). (2000). Report of the national reading panel: Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction: Reports of the subgroups. National Institute of Child Health and Human Development, National Institutes of Health; Foorman, B., Beyer, N., Borradaile, K., Coyne, M., Denton, C. A., Dimino, J., Furgeson, J., Hayes, L., Henke, J., Justice, L., Keating, B., Lewis, W., Sattar, S., Streke, A., Wagner, R., & Wissel, S. (2016). Foundational skills to support reading for understanding in kindergarten through 3rd grade (NCEE 2016-4008). Washington, DC: National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S. Department of Education. Retrieved from <http://ies.ed.gov/ncee/wwc/practiceguide/21>.

## A closer look at program adherence to the five essential components of effective reading instruction

Percentage of graduate programs addressing each component throughout the years

(N=215 graduate programs in 2014; N=210 graduate programs in 2018)



Compared with 2014, programs are showing marked improvement — a higher proportion of programs are teaching each component.

More programs' course designs include comprehension (63 percent) than any other reading component.

In addition, about half of programs' course designs include vocabulary and phonics (53 percent and 44 percent, respectively). However, only around one-third include fluency or phonemic awareness (31 percent and 32 percent, respectively). As we wrote in 2006, fluency and phonemic awareness are the two components which surfaced most recently in the academic research. However given that consensus behind this research is at least twenty years old, we hope it does not take another twenty years to see them in a majority of programs.

### Textbooks used in early reading programs

Unlike in the field of elementary math preparation, where a relatively small number of textbooks are used, there appears to be no end of possible elementary reading texts. We evaluated 159 new texts for the 2018 Review. Over five years of teacher prep releases, we have examined 859 different assigned by teacher prep reading course.

Almost half (49 percent) of these textbooks are inadequate, because they do not convey scientifically based early reading instruction.

Below are the ten textbooks most commonly used in courses evaluated in the Review that comprehensively and rigorously cover the scientific basis and instructional elements of the five essential components of effective reading instruction. Names of additional acceptable textbooks can be found in the [list](#) of recommended texts.

## Texts covering all five elements of effective reading instruction

Title	Author	Edition	# courses in graduate elementary programs using this text
Creating Literacy Instruction for All Students	Gunning, Thomas G.	9	28
Teaching Children to Read: The Teacher Makes the Difference	Reutzel, D. Ray; Cooter, Robert D.	7	13
Assessment for Reading Instruction	McKenna, Michael C & Dougherty Stahl, Katherine A.	3	9
Teaching Reading in the 21st Century	Graves, Michael F; Juel, Connie F; Graves, Bonnie B; Dewitz, Peter F	5	8
Striking a Balance: A Comprehensive Approach to Early Literacy	Cecil, Nancy Lee	5	8
Literacy: Helping Students Construct Meaning	Cooper, J.D., Robinson, M.D., Slansky, J.A., & Kiger, N.D.	9	7
The Essentials of Teaching Children to Read: The Teacher Makes the Difference	Reutzel, D.R. & Cooter, R.B. Jr.	3	6
CORE: Teaching Reading Sourcebook Updated Second Edition	Honig, Bill, Linda Diamond, and Linda Gutlohn	2	6
Teaching Reading and Writing: The Developmental Approach	Templeton, S. & Gehsmann, K.M.	1	6
Literacy's Beginnings: Supporting Young Readers and Writers	McGee, Lea M., Richgels, Donald J.	6	5

See the research support and methodology for [Early reading](#). Detailed findings for this standard can be found [here](#).

## KNOWLEDGE – SECONDARY

Three different standards evaluate program preparation in specific subjects prospective secondary teachers will teach: Content in the Sciences, Content in the Social Studies, and Secondary Methods.

### Content in the Sciences

**KEY FINDINGS:** Only a quarter (25 percent) of graduate programs which offer a certification route — a path to a specific certification — that qualifies teachers to teach all science subjects have the right guardrails in place. Worse still are alternative route programs, for which only 4 percent do enough to ensure candidates seeking certification to teach all of the sciences have adequate content knowledge. This is primarily due to the inability to provide courses to remediate content gaps.

Compared to the 69 percent of undergraduate programs that manage to provide adequate preparation for general science certification, it is clear that post-baccalaureate certification routes — be they graduate or alternative route — are not doing enough to make up for candidates' potential gaps in content knowledge, a problem that is exacerbated by state licensing tests which are themselves inadequate.

Fewer issues arise when programs prepare candidates to teach a single science subject, as the vast majority of states employ adequate licensing tests for these certifications. Where such licensing tests are not required, all programs were found to require a certification-specific major.



In the latter half of the 20th century there was considerable debate over secondary teachers' need to earn a certification area major over and above their teacher preparation coursework. That debate officially ended in 2001 when that requirement was embedded in ESEA's reauthorization. Since that time, even though ESEA no longer makes a content major a requirement, no state has backpedaled, with all essentially requiring secondary teachers to complete an academic major or at least pass a licensing test of content knowledge.<sup>14</sup> These tests are particularly important to graduate and alternative route programs which do not typically build in room for subject matter coursework. However, not all licensing tests can deliver. With only a few exceptions, the various tests used to assess the multiple-subject physical science and general science certifications fail to *separately* measure content knowledge in each of the subjects teachers will be certified to teach. Information about the adequacy of licensing test requirements for every state can be found [here](#).

## Methodology

States offer one or more certifications in the sciences. Each certification defines what subjects a teacher can teach. For example, a certification in biology allows a teacher to teach biology courses, while general science certification allows a teacher to teach all science courses including biology, chemistry, earth science, and physics. In turn, teacher preparation programs offer certification routes that lead to some or all of the available certifications in the state.<sup>15</sup>

In the 29 states and the District of Columbia where general science certification is found, we look for one of the following requirements:<sup>16</sup>

- The candidate has completed or will complete as part of the program 15 semester credit hours (SCH) of coursework in each of two subjects (biology, chemistry, earth science, or physics); or,
- The candidate has completed or will complete as part of the program 50 SCH of coursework across the sciences; or,
- The candidate will complete 15 SCH of graduate-level science coursework, which includes courses in at least two science subjects; or,
- The program requires the candidates to pass an adequate licensing test.

Unfortunately, other than in Missouri, the licensing tests that are used to assess content knowledge for general science certification yield only a single overall score, not a score for each subject. This problem makes it possible for a teacher candidate to incorrectly answer most or all of the chemistry questions, for example, but still score well enough on questions for the other science subjects to pass the test and be assigned to teach chemistry.

This is the first edition of the *Teacher Prep Review* to break out analysis of science preparation as its own standard. Previously, analysis of secondary science certification routes was completed under the High School Content standard. We made this move to report with more detail on the complexity both programs and states face when general science certification is offered.

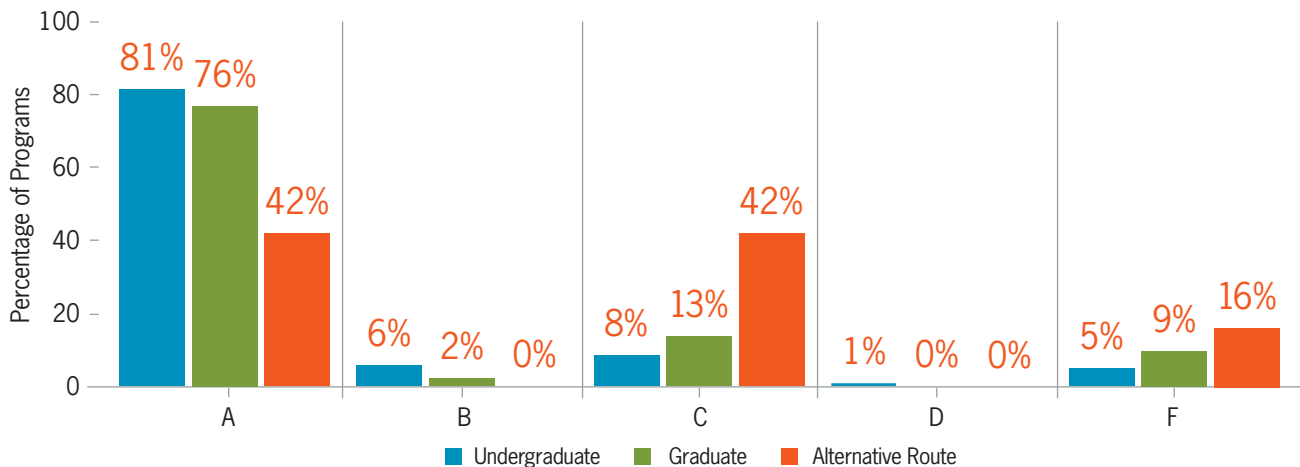
14 States set different credit threshold for academic majors. In many cases, the threshold is set below 30 semester credit hours, what institutions commonly define as the coursework required to complete a major.

15 In some cases, graduate programs offer a single route that allows teacher candidates to choose between two or more certifications. For example, a program may offer a “science education” route that allows candidates to choose between certifications in chemistry, physics, physical science, etc.

16 For physical science certification, which allows for instruction in chemistry and physics courses, programs earn an A on this standard with the requirement of at least a minor in each subject or by requiring licensing tests for which candidates must independently pass chemistry and physics sub-tests.

## How many programs ensure that secondary science teacher candidates know the content they will be certified to teach?

(N=664 undergraduate; N=310 graduate; N=119 alternative route)



*Program grades represent the average of the lowest scoring single-subject route and the lowest scoring multiple-subject route. If each single-subject certification route were to earn an A and the general science route received an F, the resulting program grade under this standard would be a C.*

This graph shows that 76 percent of graduate programs earn an A under this standard, which falls short of the 81 percent of undergraduate programs to earn the same grade. The limited difference between the two program types is, in part, due to a greater concentration of graduate programs in states with general science certification.<sup>17</sup> Still, it is not surprising that graduate programs still lag behind. Undergraduate programs, which have four years to do what graduate programs do in one or two years, typically dictate which content courses must be completed in order to be recommended for certification.

Alternative route programs are subject to the many of the same constraints as graduate programs. Additionally, alternative route programs not affiliated with a higher education institution lack the ability to offer remediation where knowledge gaps exist. On a positive note, due to when alternative route candidates become the teacher of record (the teacher responsible for a classroom), programs typically require candidates to pass state licensing tests as a condition of program admission; however, this is still not a sufficient screen in states requiring inadequate licensing tests. Because so few alternative route programs offer coursework that can make up for inadequate licensing tests, only 42 percent earn an A.

### A closer look at graduate science content preparation

Where teacher candidates pursue a narrow certification in a single subject such as physics, we employ a straightforward rubric. We look for the requirement of at least 30 SCH of certification-specific coursework; 15 SCH of graduate-level certification-specific coursework; or an adequate licensing test. As the vast majority of states employ adequate licensing tests for these certifications, almost all single-subject certification routes satisfy this standard under that criterion. In the few states that require either inadequate licensing tests or no tests at all, every program (14 in total) was found to require at least 30 SCH in the subject.

The rubric used to analyze general science certification routes is more involved and is summarized with program results below.

<sup>17</sup> An extrapolation of the data suggests that if graduate programs offered general science certification at an equal frequency as undergraduate programs, 69 percent of graduate programs would receive an A.

## Analysis of graduate programs offering general science certification

(N=85 programs)<sup>18</sup>

Grade	Criteria	Programs	
A	At least 15 SCH of coursework is required in two science subjects selected from biology, chemistry, earth science, and physics - or - At least 50 SCH of coursework is required across the sciences - or - At least 15 SCH of graduate-level certification-specific coursework is required, including courses in at least two different science subjects	20%	Total: 25%
	Adequate general science licensing test is required	5%	
C	At least 42 SCH of coursework is required across the sciences - or - At least 15 SCH of graduate-level certification-specific coursework is required, without including courses in at least two different science subjects	5%	
F	Failure to satisfy any of the above criteria	71%	

The 71 percent of graduate programs earning an F clearly exceeds the 16 percent of undergraduate programs earning an F as reported by NCTQ in 2017. This is due primarily to graduate programs frequently requiring no more than a major in any one science field in pursuit of general science certification. For example, a “content area major” is a common admissions requirement for graduate programs. While such a requirement is adequate for biology, where it can be reasonably assumed a major in biology is required for admission, that same requirement falls short for general science certification, because there is no undergraduate major that covers all of the sciences.

### A closer look at alternative route science content preparation

While the majority of states offering single-subject certifications require adequate licensing tests, alternative route programs receive credit for that requirement only if candidates pass the tests before they become the teacher of record. Among the 103 alternative route programs offering single-subject science certifications, 97 percent satisfy the standard through the requirement of a licensing test or transcript review as a condition of program admission.

With the deficiencies of general science certification licensing tests previously noted, alternative route programs other than those in Missouri must independently require tests with separate cut scores or administer a transcript review to satisfy this standard. Programs offering general science certification are graded using the criteria detailed in the table below. As can be seen, only 4 percent of alternative route programs ensure general science candidates have adequate content knowledge.

## Analysis of alternative route programs offering general science certification

(N=69 programs)

Grade	Criteria	Programs
A	At least 15 SCH of coursework is required in two science subjects selected from biology, chemistry, earth science, and physics - or - At least 50 SCH of coursework is required across the sciences - or - Adequate general science licensing test is required	4%
F	Failure to satisfy any of the above criteria	96%

See the research support and methodology for [Content in the sciences](#). Detailed findings for this standard can be found [here](#).

18 Due to rounding, the reported figures add to 101 percent.

## Content in Social Studies

**KEY FINDINGS: Only 44 percent of graduate programs have guardrails in place to ensure teacher candidates are prepared in all of the social studies subjects they will be certified to teach. Alternative route programs, lacking the ability to provide courses to remediate content knowledge gaps, struggle even more in this area, with only 25 percent ensuring aspiring teachers have adequate preparation.**

**It appears that post-baccalaureate certification routes — be they graduate or alternative route— have more difficulty serving the content needs of secondary social studies teachers compared to undergraduate programs, for which 57 percent of programs meet this standard.**

In the latter half of the 20th century there was considerable debate over secondary teachers' need to earn a certification area major over and above their teacher preparation coursework. That debate officially ended in 2001 when that requirement was embedded in ESEA's reauthorization. Since that time, even though ESEA no longer makes a content major a requirement, no state has backpedaled, with all essentially requiring secondary teachers to complete an academic major or at least pass a licensing test of content knowledge.<sup>19</sup> These tests are particularly important to graduate and alternative route programs which do not typically build in room for subject matter coursework. However, not all licensing tests can deliver. With only a few exceptions, the tests that determine if someone qualifies for general social studies certification fail to separately measure content knowledge in each of the individual social studies subjects.

### Methodology

States offer one or more certifications in social studies. Each certification defines what subjects a teacher can teach. For example, a certification in history allows a teacher to teach history courses, while a general social studies certification allows a teacher to teach all social studies courses including economics, geography, history, political science, and psychology. In turn, teacher preparation programs offer *certification* routes — paths to specific certifications — that lead to some or all of the available certifications in the state.<sup>20</sup>

In the 47 states and the District of Columbia where there is a general social studies certification, we look for one of the following requirements:

- The candidate has completed or will complete as part of the program 15 semester credit hours (SCH) of coursework in history — the most common subject social studies teachers will teach — along with an additional 15 SCH in one of economics, geography, political science, or psychology; or,
- The candidate has completed or will complete as part of the program 30 SCH of coursework in history;<sup>21</sup> or,
- The candidate has completed or will complete as part of the program 50 SCH of coursework across the social studies; or,
- The candidate will complete 15 SCH of graduate-level social studies coursework, including at least one history course; or,
- The program requires the candidates to pass an adequate licensing test.

Unfortunately, the licensing tests most commonly used in these 47 states only yield a single score, not a score for each subject. This problem makes it possible for a teacher candidate to incorrectly answer most or all of the political science

19 States set different credit threshold for academic majors. In many cases, the threshold is set below 30 semester credit hours, what institutions commonly define as the coursework required to complete a major.

20 In some cases, graduate programs offer a single route that allows teacher candidates to choose between two or more certifications. For example, a program may offer a “social studies education” route that allows candidates to choose between certifications in history, political science, general social studies, etc.

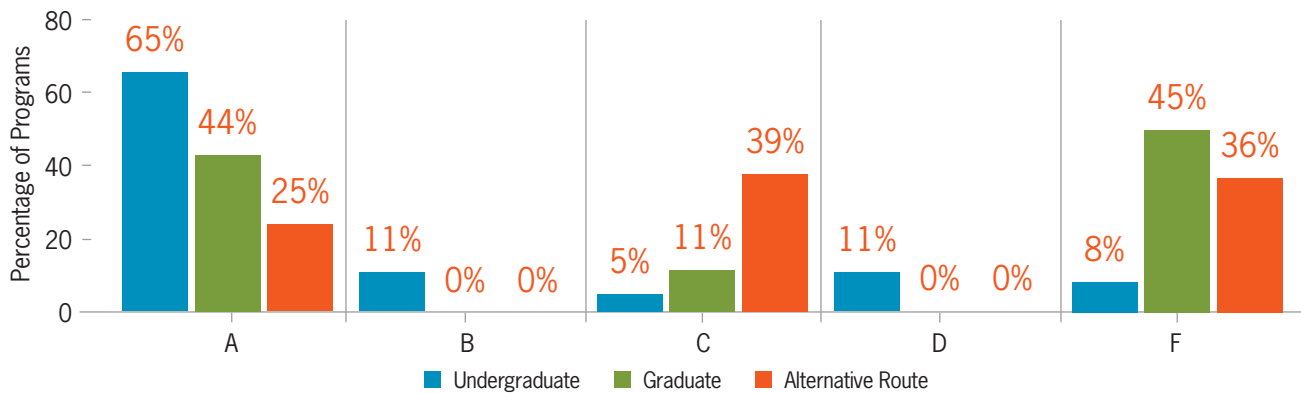
21 History receives special consideration because it is the subject teachers are most likely to teach with general social studies certification. A review of high school graduation requirements in the 50 states and the District of Columbia found that states require an average of three years of social studies. Where state requirements identify course topics, history is most often required for two of those three years.

questions, for example, but still score well enough to pass the test and be assigned to teach political science. Only California, Minnesota, and Missouri offer licensing tests that require candidates to pass independent sub-tests.

This is the first edition of the *Teacher Prep Review* to break out analysis of social studies preparation as its own standard. Previously, analysis of secondary social studies certification routes was completed under the High School Content standard. We made this change to report with more detail on the complexity both programs and states face when a general social studies certification is offered.

### How many programs ensure that secondary social studies teacher candidates know the content they will be certified to teach?

(N=667 undergraduate secondary programs; N=300 graduate; N=102 alternative route)



*Program grades represent the average of the lowest scoring single-subject route and the lowest scoring multiple-subject route. If each single-subject certification route were to earn an A and the general social studies route received an F, the resulting program grade under this standard would be a C.*

This graph shows that 44 percent of graduate programs earn an A under this standard, which falls 21 percentage points below undergraduate programs. The gap between undergraduate and graduate programs is striking, but not surprising. Undergraduate programs, which have four years to do what graduate programs do in one or two years, typically dictate which content courses must be completed in order to be recommended for certification.

Alternative route programs are subject to the many of the same constraints as graduate programs. Additionally, alternative route programs not affiliated with a higher education institution lack the ability to offer remediation where knowledge gaps exist. On a positive note, due to when alternate route candidates become the teacher of record (the teacher responsible for a classroom), programs typically require candidates to pass state licensing tests as a condition of program admission; however, this is still not a sufficient screen in states with inadequate licensing tests. Because so few alternative route programs offer coursework that can make up for inadequate licensing tests, only 25 percent earn an A.

### A closer look at undergraduate social studies content preparation

Where teacher candidates pursue a narrow certification in a single subject such as history, we employ a straightforward rubric. We look for the requirement of at least 30 SCH of certification-specific coursework; 15 SCH of graduate-level certification-specific coursework; or an adequate licensing test. As the vast majority of states employ adequate licensing tests for these certifications, almost all single-subject certification routes satisfy this standard. In the states that require either inadequate licensing tests or no tests at all, six of twelve programs fall short because they do not require at least 30 SCH in the subject.<sup>22</sup>

The rubric used to analyze general social studies certification routes is more involved and is summarized with program results below.

<sup>22</sup> These twelve programs are located in Alaska, Montana, Nevada, New Jersey, New Mexico, North Carolina, Utah, and Wisconsin. Information about the adequacy of licensing test requirements for every state can be found [here](#).

## Analysis of graduate programs offering general social studies certification

(N=267 programs)

Grade	Criteria	Programs	
<b>A</b>	At least 15 SCH of coursework is required in history and at least 15 SCH is required in either economics, geography, political science, or psychology - or - At least 30 SCH of coursework is required in history - or - At least 50 SCH of coursework is required across the social studies - or - At least 15 SCH of graduate-level certification-specific coursework is required, including at least one history course	<b>21%</b>	<b>Total: 38%</b>
	Adequate general social studies licensing test is required	<b>17%</b>	
<b>C</b>	At least 42 SCH of coursework is required across the social studies - or - At least 15 SCH of graduate-level certification-specific coursework is required, without including at least on history course	<b>6%</b>	
<b>F</b>	Failure to satisfy any of the above criteria	<b>56%</b>	

The 56 percent of graduate programs earning an F vastly exceeds the 13 percent of undergraduate programs earning an F as reported by NCTQ in 2017. This is due primarily to graduate programs requiring no more than a major in any one social studies field in pursuit of general social studies certification.

### A closer look at alternative route social studies content preparation

While the majority of states offering single-subject certifications require adequate licensing tests, alternative route programs receive credit for that requirement only if candidates pass the tests before they become the teacher of record. Among the 57 alternative route programs offering single-subject social studies certifications, 93 percent satisfy the standard through the requirement of a licensing test or transcript review as a condition of program admission.

With the deficiencies of general social studies certification licensing tests previously noted, alternative route programs outside of California, Minnesota, and Missouri must independently require tests with separate cut scores or administer a transcript review to satisfy this standard. Programs offering general social studies certification are graded using the criteria detailed in the table below. As can be seen, only 15 percent of alternative route programs ensure general social studies candidates have adequate content knowledge.

### Analysis of alternative route programs offering general social studies certification

(N=93 programs)

Grade	Criteria	Programs
<b>A</b>	At least 15 SCH of coursework is required in history and at least 15 SCH is required in either economics, geography, political science, or psychology - or - At least 30 SCH of coursework is required in history - or - At least 50 SCH of coursework is required across the social studies - or - Adequate general social studies licensing test is required	<b>15%</b>
<b>F</b>	Failure to satisfy any of the above criteria	<b>85%</b>

See the research support and methodology for [Content in the social studies](#).

Detailed findings for this standard can be found [here](#).

## Secondary Methods – Coursework and Practice

**KEY FINDINGS:** Three quarters (77 percent) of 315 graduate secondary teacher prep programs require all teacher candidates to take a methods course that will prepare them to teach their intended subject. Alternative route programs are less apt to provide such training with only 43 percent of the 80 programs requiring similar methods coursework.

Aspiring teachers need to learn how to deliver content to students, as it is one thing to know a subject and quite another to teach it. While some elements of instruction are common to all subjects, secondary teacher candidates should take at least one course focusing on the methods of instruction relevant to their subject area. This allows beginning teachers to enter the classroom with an understanding of specific content-area practices that have proven effective. Preparation should include an opportunity to practice techniques and receive feedback from a content area expert.

### Methodology

In this edition of the *Teacher Prep Review*, the Secondary Methods Standard considers both English and mathematics for all programs in the sample.<sup>23</sup> While analysis under the standard is unchanged from 2014, the results are now reported under two separate standards: Secondary Methods: Coursework and Secondary Methods: Practice.

We look at course catalogs, degree plans, and course syllabi under this standard for two purposes. First, does the program require methods courses specific to core secondary subjects? For example, is there an English methods course rather than a general methods course for those who will teach high school English? Second, will aspiring teachers receive feedback on a practice teaching experience in a secondary classroom?

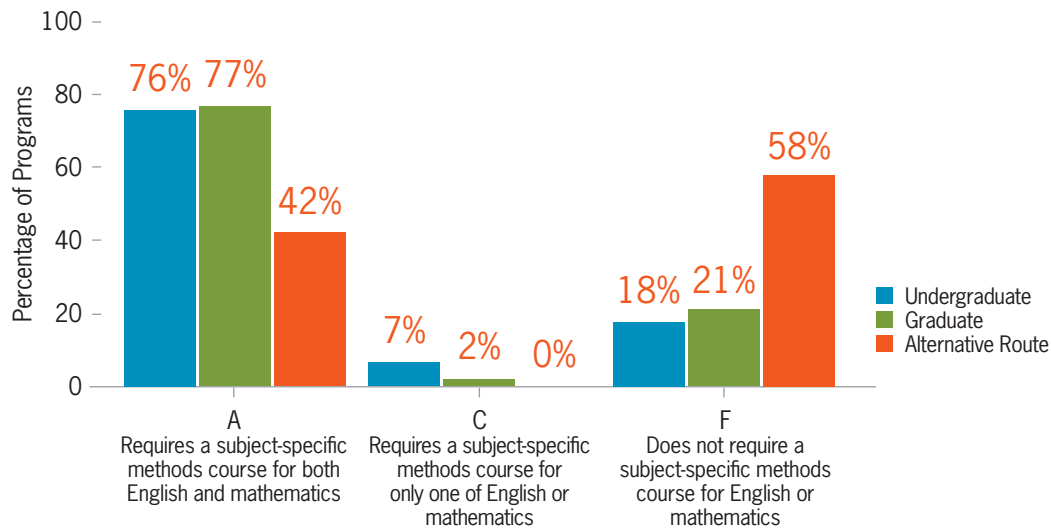
To assess the approaches taken by programs, under Secondary Methods: Coursework, we look for the requirement of a subject-specific methods course for candidates preparing to teach either English or mathematics. If institutions provide methods coursework in both certification areas, it can be reasonably assumed that the other certification areas also require methods courses.

For Secondary Methods: Practice, we review if aspiring teachers receive feedback from their supervising teacher or methods course instructor on a practice teaching experience in a secondary classroom. It is not enough for candidates to teach a lesson and write a reflection, professional feedback must be provided by an expert who observes the lesson.

23 Where certification in either English or mathematics is not offered, the program score reflects the analysis of the available certification route. Where neither English nor mathematics is offered, analysis is completed using a certification route in the sciences.

## How many programs require secondary teacher candidates to take a subject-specific methods course?<sup>24</sup>

(N=716 undergraduate; N=315 graduate; N=80 alternative route)



### A closer look at Secondary Methods: Coursework

This edition of the *Teacher Prep Review* finds 77 percent of graduate programs to earn an A, which is in-line with the 73 percent of graduate programs to earn the same grade in 2014. As can be seen in the table above, there is little difference between undergraduate and graduate programs under this standard.

While only two in five alternative route programs require all candidates to take subject-specific methods courses, differences exist between *residency* and *internship* programs.<sup>25</sup> Among the 17 *residency* programs reviewed, 59 percent were found to require single-subject methods courses. In comparison, of the 63 *internship* programs, only 38 percent required such coursework.

### A closer look at Secondary Methods: Practice

As can be seen in the figure below, only about half of graduate secondary programs with subject-specific methods courses require both English and mathematics teacher candidates to practice instruction and receive feedback during a fieldwork experience. This again is in-line with the findings for undergraduate programs.

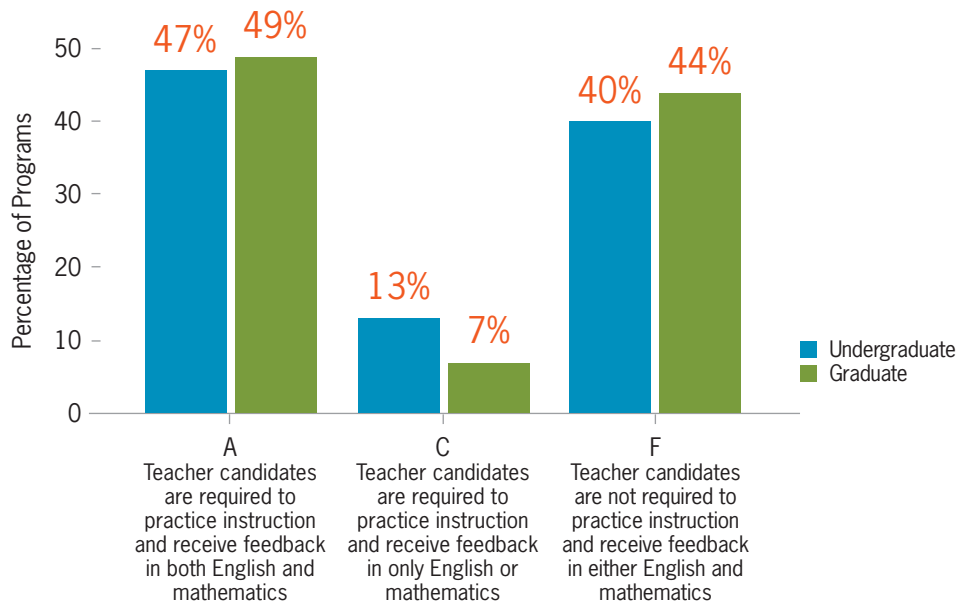
24 Secondary Methods: Coursework independently considers the requirements for English and mathematics with each subject potentially earning a grade of A or F. The grades for the two subjects are then averaged. When a subject-specific methods course is found for one subject, but not the other, the program earns a grade of C.

25 Two key components of alternative certification programs are program duration and when individuals become the teacher of record. *Internships* are generally one-year programs with limited coursework requirements that immediately place candidates as the teacher of record. Conversely, *residencies* are most often multiple-year programs that require coursework on par with traditional preparation programs and include a year of observation/student teaching before candidates become the teacher of record in the second year of the program.



## How many programs with a subject-specific methods course also require practice?

(N=239 undergraduate<sup>26</sup>; N=134 graduate<sup>27</sup>)



See the research support and methodology for [Secondary methods](#).

Detailed findings for this standard can be found [here](#).

## Admissions

**KEY FINDINGS: Too few graduate and alternative route teacher preparation programs screen elementary and secondary applicants rigorously for their academic caliber. Just 15 percent of traditional and 24 percent of alternative certification programs do so.**

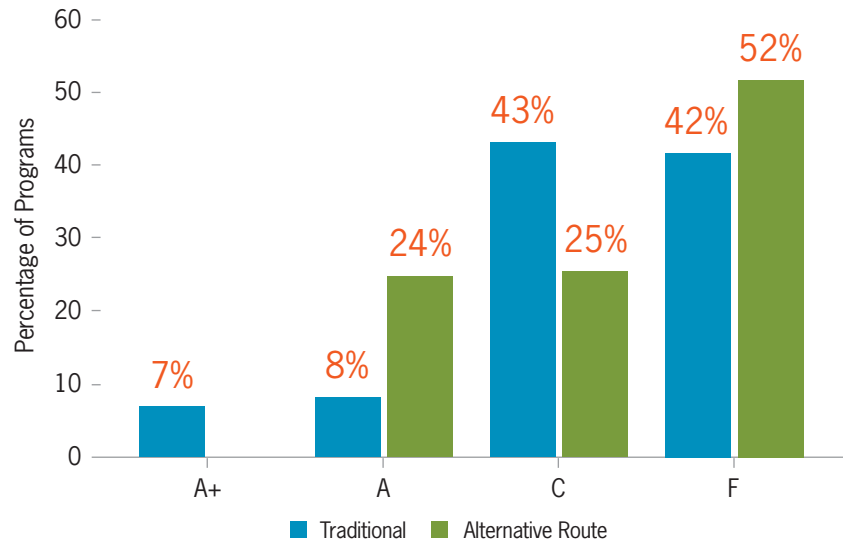
Sixty years of research and evidence from nations whose students outperform American students demonstrate the benefits of teachers who have reasonably strong academic aptitude, a strong indicator that a teacher will be able to swiftly and wisely handle the thousands of decisions made in the course of a single school day. Because there is no single indicator of academic aptitude which is failsafe, this analysis provides a number of options that demonstrate a program's own commitment to selecting the candidates most likely to be successful in the classroom.

To earn an A in selection criteria, a program requires a GPA of 3.0 for admissions (or the most recently admitted cohort has an average GPA of 3.3) and requires either the submission of a graduate-level admissions test (like the GRE) or a rigorous audition.

26 For the undergraduate sample, the 126 programs earning a grade of F under Secondary Methods: Coursework automatically earn a grade of F for Secondary Methods: Practice and were removed from this sample because these programs are not directly analyzed under this Secondary Methods: Practice. Also excluded are the 351 programs for which the necessary documents were not made available for analysis.

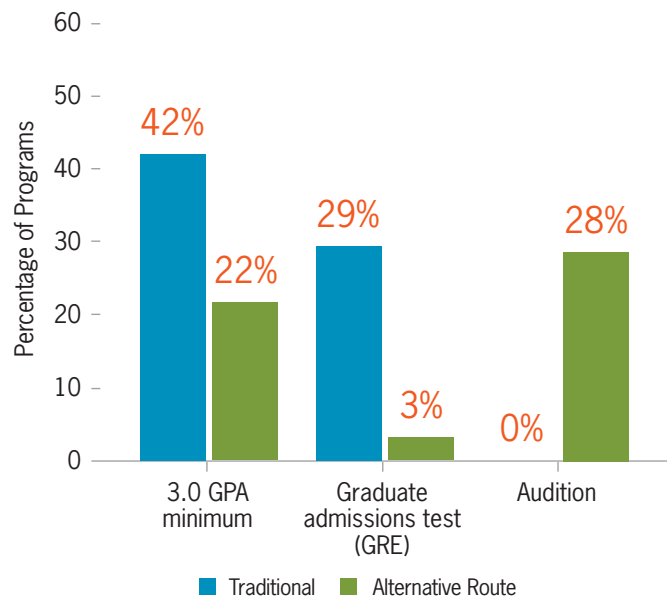
27 For the graduate sample, the 67 programs earning a grade of F under Secondary Methods: Coursework automatically earn a grade of F for Secondary Methods: Practice and were removed from this sample because these programs are not directly analyzed under this Secondary Methods: Practice. Also excluded are the 114 programs for which the necessary documents were not made available for analysis.

Screening for academic caliber in graduate and alternative route programs  
 (N=564 graduate programs; N=148 alternative route programs)



The distribution of traditional scores is substantially similar to what we found in our 2014 release.

How are graduate and alternative route programs selective?  
 (N=564 graduate programs; N=148 alternative route programs)



*We look for a program to have a 3.0 admissions GPA minimum and either the submission of a graduate-level admissions test (like the GRE) or a rigorous audition which assesses the applicant's (1) classroom presence, (2) problem-solving and interpersonal skills, and (3) capacity to persevere in the pursuit of improved student outcomes.*

Both graduate and alternative route programs make common use of a 3.0 minimum GPA requirement. Traditional programs are more apt to pair that benchmark with a graduate admissions test (like the GRE), while alternative certification programs are more apt to use an audition.

None of the three criteria are used in a plurality of programs, however.

### Traditional programs that are selective and diverse earn an A+

Traditional programs earn an A+ when they are both selective and maintain a level of racial diversity that is the same or greater than that of the institution itself, or of the teacher workforce in the state. Of the 79 graduate elementary and secondary programs that earn an A on selection criteria, 27 programs earned an A+:

- CA – University of California – San Diego
- MD – Coppin State University
- NC – Greensboro College
- NC – University of North Carolina at Chapel Hill
- NY – Adelphi University
- NY – Bank Street College of Education
- NY – Clarkson University (Capital Region Campus)
- NY – Columbia University
- NY – CUNY – City College
- NY – CUNY – Hunter College
- NY – CUNY – Lehman College
- NY – CUNY – Queens College
- NY – Long Island University – C. W. Post
- NY – Mercy College
- NY – Metropolitan College of New York
- NY – Pace University
- NY – Syracuse University
- NY – Touro College
- OH – Kent State University
- OK – Oral Roberts University
- SC – Winthrop University
- TN – Lipscomb University
- TN – Vanderbilt University
- VA – University of Virginia
- VA – Virginia Commonwealth University
- WA – Saint Martin’s University
- WA – Seattle Pacific University

See the research support and methodology for [Selection Criteria](#).

Detailed findings for this standard can be found [here](#).



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