

LANDSCAPES

in teacher prep
UNDERGRADUATE SECONDARY

MAY 2017



powered by NCTQ's Teacher Prep Review



Introduction

High school represents an amazing opportunity for students and their teachers. For most Americans, the high school years played a pivotal role in shaping what they know about subjects such as U.S. history, world history, literature, geometry and biology. For many, the high school years provide one of the last opportunities to gain valuable life-enhancing insights, for example, reading a classic novel such as *To Kill a Mockingbird*; discovering what happened during historical events such as the French Revolution and the transformation of African nations through colonization and decolonization; learning about scientific theories that go beyond the students' own experience, ranging from nanotechnology to relativity; and understanding how numbers interact to form the backbone of the universe.

Even Americans who continue on to college will focus their coursework on one or two majors, and therefore, as adults, they will rely on their high school education for knowledge about most other academic subjects.

Top Programs

Contrary to some expectations, today's 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.

NCTQ's Top Tier: The Nation's Best Undergraduate Secondary Teacher Prep Programs

- Arizona State University (Phoenix)
- Clemson University (Clemson, SC)
- Coe College (Cedar Rapids, IA)
- Colorado Christian University (Lakewood)
- CUNY – Hunter College (New York, NY)
- Gordon College (Wenham, MA)
- Hope College (Holland, MI)
- Lipscomb University (Nashville, TN)
- Messiah College (Grantham, PA)
- Ohio Wesleyan University (Delaware, OH)
- St. Olaf College (Northfield, MN)
- University of Iowa (Iowa City)
- University of Minnesota – Duluth
- University of Southern Mississippi (Hattiesburg)
- University of Utah (Salt Lake City)
- University of Wisconsin – Platteville

The What and How of Teaching

Teachers' success at educating high school students depends in large part on the teachers' own comfort level with their particular subjects, and, if their students are lucky, having a genuine passion for what they teach. Arguably, the most important job of all higher education institutions that prepare high school teachers is to ensure that every teacher they graduate has obtained a sufficient degree of subject mastery.

With this analysis we offer distressing news. While our 2014 Review found that all institutions effectively meet the content needs of English and mathematics high school teacher candidates, the schools' preparation of science and social studies teachers is much more of a challenge. Fewer than three in five (57 percent) teacher prep programs adequately cover the subject content that both science and social studies teachers will need to teach. Programs are inconsistent in their attention to content; they often do well preparing science teachers but not as well preparing social studies teachers — or vice versa.

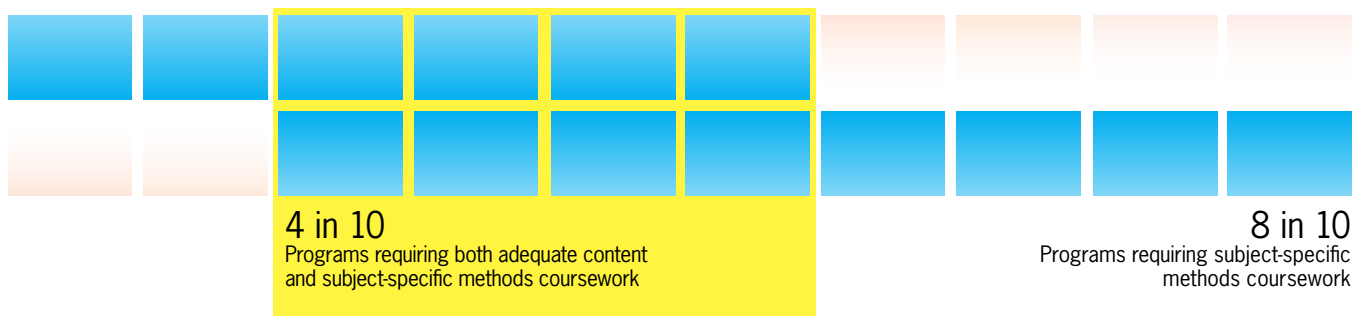
Added to the essential function of showing future teachers *what* to teach is the need for teacher prep programs to instruct and model *how* to teach their intended subjects. Here the results are better. Most programs (76 percent) provide courses on teaching methods tailored to specific subjects.

Yet, when we look for the intersection of these two functions — delivering content knowledge and how to teach that knowledge — the results are grimmer. Only a minority of programs (42 percent) systematically deliver on both functions for all of their teacher candidates — not just some — including those seeking certification to teach English, mathematics, science, or social studies.

Only four in ten programs deliver adequate content knowledge and how to teach it

6 in 10

Programs requiring adequate content coursework in the sciences and social studies



Closely related to how to teach subject matter is our examination of **practice** teaching, which every teacher preparation program should provide their teacher candidates. First, we checked to see if the methods course included a fieldwork component — that is, sending the prospective student into an actual classroom. Then we checked to see if the teacher practice opportunity included clinical practice in teaching the methods being learned, providing teaching experience before the aspiring teacher begins formal student teaching. Only 47 percent of the programs we examined required a high-quality practice-teaching experience as an integral part of their tailored methods courses.

As for student teaching, we focused on what the program does to ensure the quality of the student teaching experience. Specifically, we looked at the program's role in checking the suitability of the classroom teacher and providing regular oversight of the student teacher. Unfortunately, only six percent of programs perform well in both of these areas.

New teachers (and their supervisors) often cite classroom management as their most pressing challenge¹ and proper training in research-based strategies has been found to relieve the stress.² Student teaching is the last chance for future teachers to receive feedback on their classroom skills before taking charge of their own classrooms, so we examined evidence that programs evaluate teacher candidates on a full range of research-based classroom management strategies. We found that 44 percent of programs do so. The remaining programs may address proactive skills such as establishing classroom rules and routines, but almost never evaluate student teachers' ability to deal with misbehavior when it occurs, or provide feedback on their use of praise to motivate students.

Comparisons to Our December 2016 Findings on Undergraduate Elementary Programs

As expected, since rules and procedures for selectivity in admissions, student teaching, and classroom management cut across teacher prep programs at an institution, whether preparing elementary or secondary teachers, we did not find many notable differences between elementary and secondary programs. There was, however, a difference in the quality of content preparation. In spite of the challenges programs face in the broad categories of science and social studies, undergraduate teacher prep programs deliver better content preparation to secondary teachers than they do [to elementary teachers](#). In any given subject area, the number of programs that deliver strong content preparation ranges from a low of 65 percent for social studies to 99 percent for English and math at the secondary level. This is significantly higher than content preparation in the elementary grades, where only 13 percent of programs provide the preparation elementary teachers need in mathematics, and only 5 percent provide a well rounded liberal arts education.

Teacher preparation programs do far better at preparing secondary teachers than they do preparing elementary school teachers. While only six percent of programs preparing high school teachers have D or F grades in three or more of the five key standards, a majority (52 percent) of elementary programs have D or F grades in three areas.

The Critical Role of the State

The findings presented here demonstrate how the decisions and actions taken by higher education institutions are greatly influenced by state-level policies and requirements. Each state creates its own certification structure and determines what subjects each certification allows teachers to teach. For instance, each state determines whether to offer general science certification, allowing teachers to teach all science subjects (such as biology, chemistry, earth science, or physics); single-subject certification, allowing teachers to teach only one subject, such as biology; or some combination thereof. A similar choice must be made regarding the many subjects falling under the social studies umbrella. Programs in states that provide general science certification or general social studies certification tend to have a steeper climb to ensure that graduates know the broad subject matter for all the subjects covered under that certification.

- 1 Jones, V. (2005). How do teachers learn to be effective classroom managers? In C. Evertson, & C. Weinstein (Eds.). *Handbook of classroom management: Research, practice and contemporary issues* (pp. 888-889). Mahwah, NJ: Lawrence Erlbaum Associates.
- 2 Dicke, T., Elling, J., Schmeck, A., & Leutner, D. (2015). Reducing reality shock: The effects of classroom management skills training on beginning teachers. *Teaching and Teacher Education, 48*, 1-12.

Available secondary certifications and licensing test adequacy by state

State	Mathematics	English	Biology	Chemistry	Physics	Earth Science	Physical Science	General Science	History	Political Science	Economics	Geography	Psychology	Sociology	Anthropology	Social Studies
Alabama																
Alaska																
Arizona								*								
Arkansas																
California								*								
Colorado																
Connecticut																
Delaware																
District of Columbia																
Florida																
Georgia																
Hawaii																
Idaho																
Illinois			✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	
Indiana																
Iowa																
Kansas																
Kentucky																
Louisiana																
Maine																
Maryland																
Massachusetts										✓						
Michigan																
Minnesota																
Mississippi																
Missouri								+								
Montana																
Nebraska																
Nevada			✓													
New Hampshire																
New Jersey																
New Mexico																
New York																
North Carolina																
North Dakota																
Ohio																
Oklahoma																
Oregon			✓	✓	✓											
Pennsylvania																
Rhode Island								*								
South Carolina																
South Dakota																
Tennessee																
Texas																
Utah																
Vermont																
Virginia																
Washington									✓							
West Virginia								*								
Wisconsin																
Wyoming																

■ Certification adequately tested
 ■ Certification not adequately tested
 □ Certification not offered
 * General Science certification limited to fundamental science courses
 + Offers a "teach everything" certification and a General Science certification limited to fundamental science courses
 ✓ Certification permits instruction in multiple subjects

Ultimately, it falls on both the program (through course requirements) and the state (through licensing tests) to ensure that every high school teacher who enters the classroom has the deep content knowledge needed to teach any course to which she may be assigned.

Nearly all states test candidates for subject-matter knowledge, including licensing tests designed for general science or general social studies certification. In most, but not all, states the tests aimed at these broad subject areas are not sufficient, as they usually report one overall score and not separate scores for each subject the teacher can teach. This means that a teacher could do poorly in one or two subjects and still pass the test, provided a strong performance on other areas of the test compensate.

Only **Missouri** has adopted tests that genuinely evaluate the subject-matter knowledge of teachers intending to teach general science and those intending to teach general social studies.³

Due to the shared responsibility between prep programs and states, we checked the adequacy of the policies that serve as the final gateway for teachers, regardless of whether they are policies of the prep program or the state. Consequently, for programs located in states with sufficiently rigorous licensing tests measuring teachers' knowledge of each subject they will teach (with separate tests or cut-scores for each subject), we did not evaluate programs' coursework requirements. Instead, all affected programs in these states earn an A for the tested subject's content preparation.

Methodology

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

This report examines programs and policies in three key areas: knowledge (in the sciences and social studies), 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 secondary school 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. For more information, see the [methodology](#).⁴

Program grades are based on an extensive library of materials for each program, including course catalogues, 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.

3 Our analysis of the adequacy of state tests for their intended purposes can be found [here](#).

4 An astute reader will notice that N sizes vary from area to area. Not all programs offer all routes to certification. In fact 11 percent of the programs in our sample offer either science or social studies, but not both. Also, as we must depend upon program cooperation to turn over the necessary materials, there are instances where our analysts did not always have enough data to evaluate a program in a given area.

Research Findings

NCTQ's *Spring 2017 Landscape in Teacher Preparation* examines traditional undergraduate programs that prepare future secondary teachers, an examination we conduct on two-year cycles. In the Spring 2017 edition we examined 717 programs across all 50 states and the District of Columbia. Our next release, in Fall 2017, will examine graduate and nontraditional (e.g., alternative) elementary teacher prep programs, followed by graduate and nontraditional secondary programs in Spring 2018. The two-year cycle will close in 2018 with the release of our analysis of special education programs.

WHAT to Teach: Program Requirements in Subject-Matter Knowledge

The first task of any institution of higher education in preparing undergraduates to be teachers is to ensure, either through coursework completion or testing, that candidates leave their program knowing WHAT to teach in their certification subject. States commonly differ in the certifications and tests they require.

Since teachers' content knowledge needs vary according to the subject they will teach, we evaluated teacher prep programs' certification routes and requirements for single-subject certifications separately from those authorizing the teaching of multiple subjects. Certification routes are a college major, minor, or other defined sequence of courses that the prep program mandates to satisfy state requirements for a specific secondary teacher certification. Certification routes must be analyzed separately from the programs as a secondary prep program often encompasses multiple certification routes to prepare teachers in different subjects; programs may do better in one route than another.

Also, because we found in 2014 that almost all institutions (99 percent) successfully prepared English and mathematics teacher candidates in their subject area — by requiring a straightforward major in these subjects and/or passing a licensing test — in this edition, we turned our attention to the more complex areas of content for science and social studies.

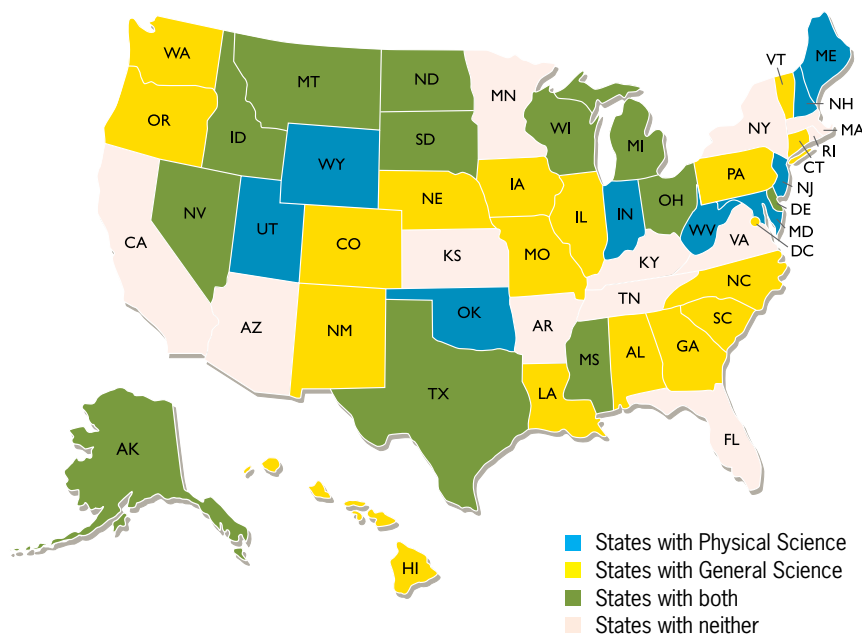
Secondary Content in the Sciences

Key Findings: Almost all programs (81 percent) ensure that science candidates will graduate having demonstrated reasonable knowledge of the subjects they will be certified to teach, either because programs require candidates to take sufficient coursework or because their candidates must pass the state's licensing tests (if our analysis determines the tests to be of sufficient quality). These programs earn an A in this area.

Not surprisingly, the number of A-rated programs plummets when programs — with the blessing of their state — try to prepare teacher candidates to teach different subjects under the science umbrella rather than as a single subject. While virtually all programs do well at preparing a teacher candidate to teach a single subject, the task becomes more complicated when the teacher will be certified to teach not only biology but physics and chemistry as well. When teachers pursue certification that would allow them to teach more than one subject, the risk is higher that their program will not have adequate coursework requirements — and that the state's test will not identify where candidates lack essential content knowledge.

If multiple-subject certification is so challenging for institutions, why then do so many states allow it? The answer is that districts, dependent on flexibility in staffing, clamor for these certifications. The reality is that about three-quarters of all states allow science teachers to be certified to teach more than one science subject.

Available multiple-subject certifications in the sciences



Although 29 states and the District of Columbia offer general science certification that permits teachers to teach all of the sciences, only one state, Missouri, uses a series of licensing tests to ensure that candidates separately demonstrate knowledge of each subject they will teach.⁵

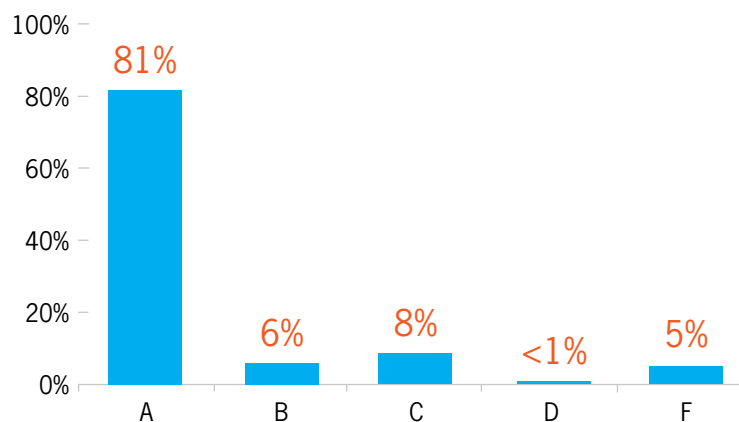
Because it would be impractical to require teacher candidates to earn a 30-credit-hour major in each science subject they will be certified to teach, we looked for one of the following three pathways to competency for multiple-subject certifications:

- At least a minor (15 credit hours) in two of the core sciences they will be certified to teach
- At least 50 semester credit hours across the sciences
- A state certification test or multiple tests that provide separate scores for each subject they will be licensed to teach.

Most programs with multiple-subject certifications were able to pass our test by virtue of this second option, providing at least 50 semester credit hours across the sciences.

Programs' attention to subject-matter knowledge in science

(N=664 undergraduate secondary programs)



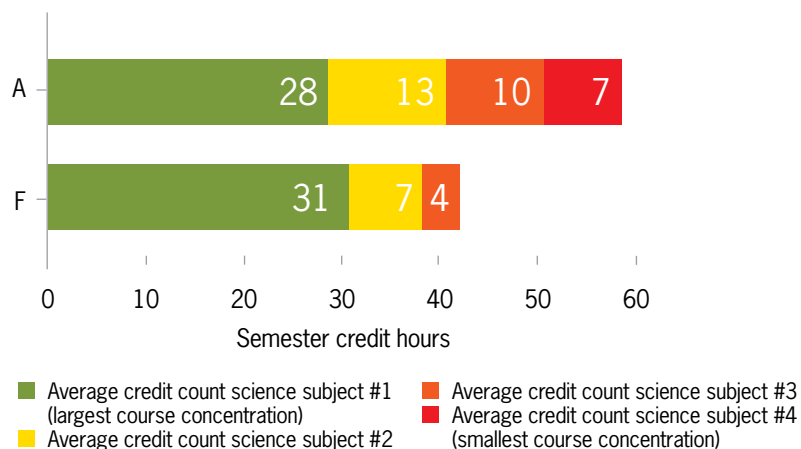
Four out of five (81 percent) of the programs offering certification in the sciences earned an A by virtue of being located in states with adequate licensing tests or because they have adequate coursework.

5 Missouri requires a series of tests that differ depending on the primary concentration. For these Unified Science certifications, candidates must pass separate tests in biology, chemistry, earth science and physics.

When we compare certification routes earning an A to those earning an F, we find the key difference is breadth, the number of science subjects covered, and depth, the number of credits in each subject.

Analysis of general science certification routes under Secondary Content in the Sciences

(N=250 certification routes earning A and 72 certification routes earning F)



F-rated routes essentially treat general science certification as though it were a single-subject certification, rather than prepare teacher candidates to teach all the subjects the certification will allow. This means that the program can improve its breadth of coverage by shifting some of its required credit hours from the first subject to the other subjects.

See the research support and methodology for [Secondary Content in the Sciences](#).

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

Secondary Content in the Social Studies

Key Findings: More teacher prep programs offer sufficient content preparation for aspiring science teachers than they do for future social studies teachers. Programs maintain this lower standard for social studies even though one would logically expect science standards to be lower to accommodate shortages of science teachers, especially since there is rarely a reported shortage in the supply of social studies teachers.⁶

Although the number of programs preparing social studies teachers is about the same as for science, only 65 percent qualify for an A in this area compared to 81 percent of programs in science. One key reason for this difference is that more states rely exclusively on multiple-subject certification in the social studies than in the sciences.

As with science, the number of A-rated programs falls drastically when programs, with the permission of states, permit or are limited to preparing teacher candidates to teach multiple subjects in social studies rather than a single subject. When programs prepare someone to be a history teacher or an economics teacher, the solution is simple: major in the subject and pass a state test. Usually, state tests are the reason nearly all programs score well on these straightforward certification routes. Only when programs prepare teachers for all subjects (e.g., a general social studies certification that allow a teacher to teach history *and* economics) do we see a big drop in the quality of preparation, with roughly two in five certification routes coming up short.

6 Cowan, J., Goldhaber, D., Hayes, K., & Theobald, R. Missing elements in the discussion of teacher shortages. National Center for the Analysis of Longitudinal Data in Education Research. Retrieved from <http://www.caldercenter.org/missing-elements-discussion-teacher-shortages>

Only four states do not allow multiple-subject certifications in Social Studies: Arizona, Georgia, Indiana and Tennessee.

While almost every state has a general social studies certification, only three (California, Minnesota, and Missouri) have a licensing test with separate scores for each subject teacher candidates will be certified to teach. Most state tests for general social studies certification are inadequate because teachers can pass by achieving a high score in one area of social studies that compensates for a low score in another. In states that lack these testing “guardrails,” prep programs have a responsibility to make sure candidates learn the content they will teach through the successful completion of coursework. Unfortunately, only about half do so.

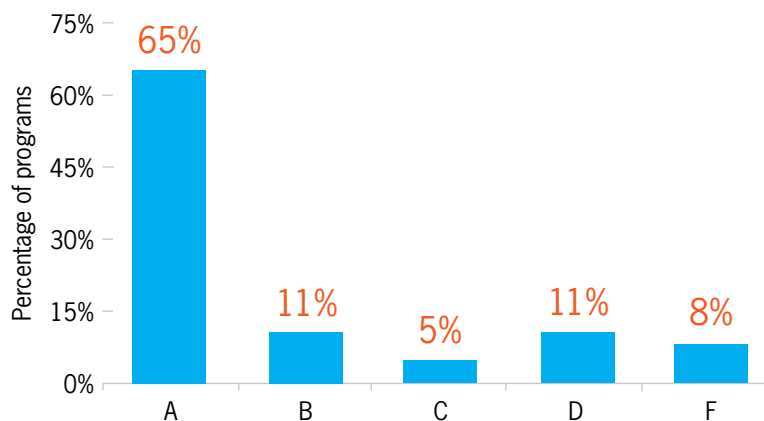
Practical options for preparing teachers to teach multiple subjects in social studies

Programs and their states can pursue one of four options that would better meet the needs of schools:

1. A major in history, as that is the most common subject taught by teachers with general social studies certification
2. A minor in history and in one other core social studies area
3. 50 credit hours across the social studies, with at least a minor in history
4. A requirement for a licensing test that provides subject-specific scoring.

Program attention to subject-matter knowledge in social studies

(N=667 undergraduate secondary programs)



Two-thirds of the reviewed programs in social studies (65 percent) earn an A. While those programs allowing only single-subject routes pass at a rate of 98 percent, it is the multiple-subject routes that challenge both programs and states.

Programs earn an A for adequate licensing tests or, in the absence of such tests, adequate content requirements. For single-subject certifications, a candidate must have a major or close to a major and significant supporting coursework. For multiple-subject certifications, a candidate must have a major in history; a minor in history and one other social studies subject; or, a minor in history and at least 50 credit hours of total social studies coursework. Please see the detailed grading criteria in our [“Closer Look”](#) at social studies content.

In spite of the fact that history is the most commonly taught subject in the social studies, we found a not insignificant number of programs where history is relegated to the back seat. Roughly one out of five programs offers a certification route that requires less than even a minor (15 credits) in history for general social studies certification. More troubling still, among these are 28 programs that require just a single history course — or none at all.

Programs that allow some aspiring teachers to prepare for general social studies certification with less than a minor in history

AL – Troy University*	NJ – College of New Jersey	PA – University of Pittsburgh at Johnstown
CO – Colorado State University – Pueblo	NJ – Kean University	PA – University of Scranton
CO – Metropolitan State University of Denver	NJ – William Paterson University of New Jersey*	PA – Villanova University
CO – University of Colorado Denver	NM – New Mexico State University	PA – Wilkes University
CO – University of Northern Colorado	NM – University of New Mexico*	PA – Wilson College
DC – American University*	NY – CUNY - Brooklyn College	SC – College of Charleston
FL – Florida Gulf Coast University	NY – Hobart and William Smith Colleges*	TX – Huston-Tillotson University*
FL – University of Miami	NY – St. Lawrence University	TX – St. Mary’s University
HI – University of Hawaii at Manoa	NY – SUNY – New Paltz	TX – Texas Lutheran University
IA – Cornell College*	OH – Bowling Green State University	VT – Castleton University*
IL – Eastern Illinois University	OH – Capital University	VT – Saint Michael’s College*
IL – Elmhurst College	OH – University of Mount Union*	VT – University of Vermont
IL – Illinois State University	OR – Linfield College*	WA – Seattle Pacific University
IL – Knox College	OR – Warner Pacific College*	WI – Cardinal Stritch University*
IL – Lewis University	OR – Western Oregon University	WI – Carthage College*
IL – Loyola University Chicago*	PA – Bucknell University	WI – Lakeland College
IL – North Park University*	PA – Cedar Crest College	WI – Lawrence University*
IL – Northern Illinois University*	PA – DeSales University	WI – University of Wisconsin – Eau Claire*
IL – Southern Illinois University Edwardsville	PA – Eastern University*	WI – University of Wisconsin – La Crosse*
IL – University of Illinois Springfield*	PA – Elizabethtown College	WI – University of Wisconsin – Milwaukee*
KY – Murray State University	PA – Geneva College	WI – University of Wisconsin – Oshkosh*
MA – Mount Holyoke College*	PA – Indiana University of Pennsylvania	WI – University of Wisconsin – Stevens Point
ME – University of Maine at Fort Kent	PA – King’s College*	WI – University of Wisconsin – Superior
ME – University of Maine at Machias	PA – Locoming College	WI – University of Wisconsin – Whitewater*
ME – University of New England	PA – Pennsylvania State University – Harrisburg	WI – Wisconsin Lutheran College*
MI – Calvin College	PA – Shippensburg University of Pennsylvania	
NC – University of North Carolina at Asheville	PA – Susquehanna University	
NC – University of North Carolina at Charlotte		

* Program offers at least one route requiring one or fewer history courses

For more information on licensing tests in each state, see our [guide to secondary content analysis](#).

See the research support and methodology for [Secondary Content in the Social Studies](#).

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

How to Teach: Program Expectations in Practice Teaching

Secondary Methods: Coursework and Practice

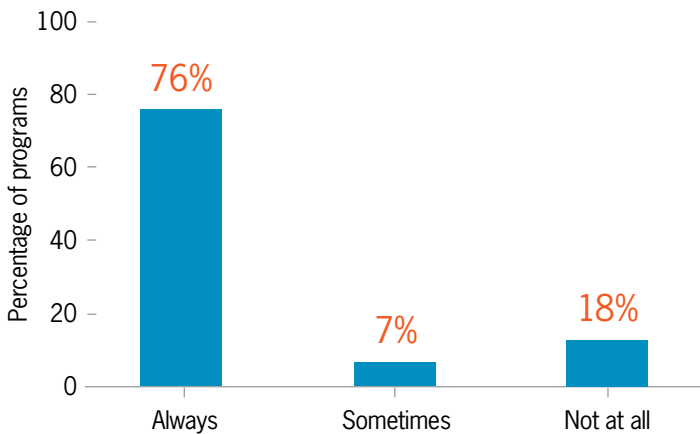
Learning the best methods for teaching high school students how to write a research paper has little in common with teaching students how to factor quadratic equations. That’s why when it comes to what programs are doing to prepare teachers how to teach, it’s important to see more than just a general methods course on the list of course requirements.

Teacher practice is crucially important in learning how to be a good teacher, and that is why some form of clinical experience must be associated with a methods course. While virtually all aspiring teachers participate in student teaching, a required teaching fieldwork experience as part of the methods coursework provides the opportunity to practice methods as they are learned before taking over a classroom full of teenagers in student teaching. Fieldwork as part of the methods course helps to move teacher candidates from the theoretical to the practical.

Key Findings: Most programs (76 percent) require methods courses specific to teachers' intended certification subjects. The remaining programs either do not do this systematically or they do not do it at all, instead requiring only a generic methods course.

Program requires subject-specific methods courses

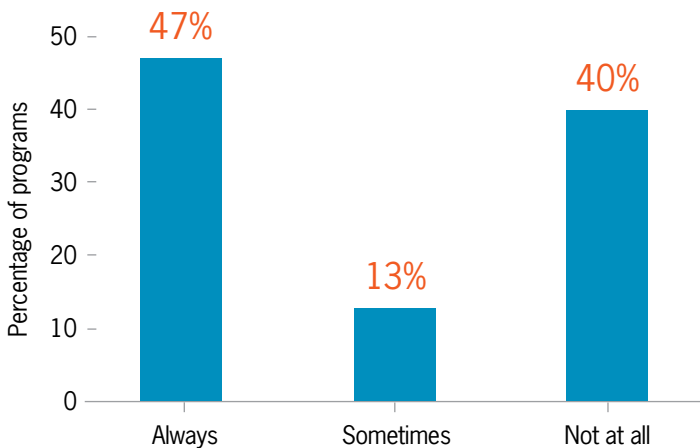
(N=716 undergraduate secondary programs)⁷



Four out of five subject-specific methods courses we could examine⁸ require a fieldwork experience in which aspiring teachers spend time in high school classrooms, while just 47 percent require the aspiring teacher to teach as part of that fieldwork.

Program requires subject-specific methods courses that include fieldwork in which the future teacher teaches a lesson and is evaluated for it

(N=239 undergraduate secondary programs)



Related to practice, nearly half of evaluated programs that require subject-specific methods coursework (47 percent) earn an A in this area because those courses include practice teaching actual students, and there is explicit mention that these teacher candidates will receive a formal analysis of how well they did. The remaining programs do not appear to have this requirement systematically (13 percent) or do not have it at all (40 percent).⁹

7 Sum of percentages do not add to 100 because of rounding.

8 The 126 programs earning a grade of F under Secondary Methods: Coursework (based on whether they require a subject-specific methods course) automatically earn a grade of F for Secondary Methods: Practice (based on whether the course requires fieldwork with feedback on a practice-teaching opportunity). Because these programs are not directly analyzed under this Secondary Methods: Practice, they are removed from this sample. Also excluded are the 351 programs for which the necessary documents were not made available for analysis.

9 It is important to note that the sample of this measure was reduced due to availability of materials (N=239).

While the vast majority of programs that do not require methods courses specific to a teacher's subject area are small, most small programs (74 percent) do require subject-specific methods courses.

When looking for which programs are less likely to offer subject-specific methods courses, it seemed likely that smaller programs¹⁰ would have the most trouble doing so. And, indeed, size appears to be the distinguishing factor, with small programs comprising almost all 88 percent of the programs that fall into this category. **However, most small programs still manage to find a way to provide such subject-specific methods courses. In fact, 74 percent of small programs achieve this important measure.**

See the research support and methodology for [Secondary Methods: Coursework and Practice](#).

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

Student Teaching

Key Findings: As NCTQ has documented previously, teacher prep programs generally leave too many of the components that lead to a high-quality student teaching experience to chance. Unfortunately, the new evidence we've found in this regard indicates that little has changed.

We look at programs' approach to two essential elements that can increase the likelihood that a student teacher will have a positive experience:

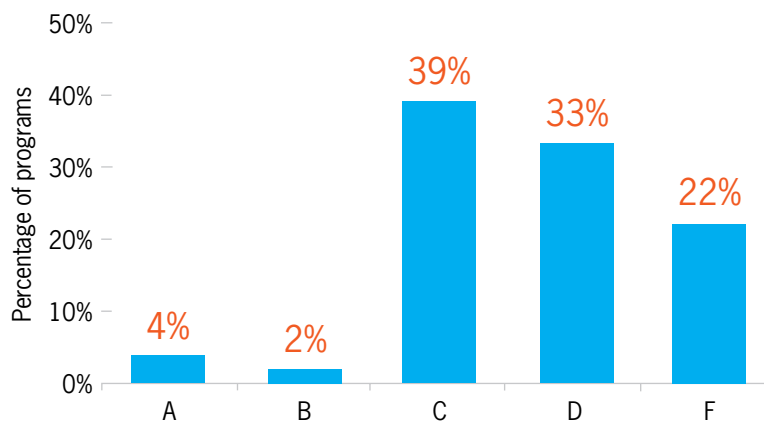
1. The program's policy on how often a student teacher must be visited and observed and what happens during these observations
2. The program's role in determining who is qualified to serve as the cooperating teacher.¹¹

We find that only 6 percent of programs do well on both of these elements.

Grading:

How well do programs cover the basics of student teaching?

(N=692 undergraduate secondary programs)



Programs that earn an A or a B check that cooperating teachers have the skills they need to host student teachers and require program supervisors to conduct frequent observations of student teachers. Programs that earn a C or a D provide student teachers with, at most, only one of two key elements of a high-quality student teaching program — adequate observations with comments or a strong cooperating teacher — and programs that earn an F provide neither of these elements.

¹⁰ Small programs are those that graduate 25 or fewer teachers a year.

¹¹ See 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.

Following are the programs that succeed in providing the two essential elements (earning an A or a B).

Programs that provide student teachers with strong cooperating teachers and frequent observations

AZ – Arizona State University	KS – Friends University	NY – CUNY – Hunter College
CO – Colorado State University – Pueblo	LA – Louisiana State University – Alexandria	NY – CUNY – Lehman College
GA – Augusta University	LA – Nicholls State University	NY – SUNY – Fredonia
GA – Georgia Southwestern State University	LA – Northwestern State University of Louisiana	OH – Central State University
IA – Central College	MD – Morgan State University	OH – Ohio Wesleyan University
IA – Coe College	ME – University of Maine at Farmington	OH – Wright State University
IA – Faith Baptist Bible College and Theological Seminary	MI – Michigan Technological University	OR – Linfield College
IA – Graceland University	MS – University of Southern Mississippi	RI – Salve Regina University
IA – Grand View University	NC – East Carolina University	TN – Lipscomb University
IA – Mount Mercy University	NC – High Point University	TX – Houston Baptist University
IA – St. Ambrose University	NC – Meredith College	TX – Texas Tech University
IA – University of Iowa	NC – Methodist University	UT – University of Utah
IA – William Penn University	ND – North Dakota State University	UT – Western Governors University
IL – Greenville College	NV – Great Basin College	WI – Concordia University Wisconsin
IL – Wheaton College	NY – CUNY – Brooklyn College	WI – University of Wisconsin – La Crosse
		WI – University of Wisconsin – Platteville

The following programs, almost 25 percent of our sample, do not deliver either of the safeguards on quality.

Programs that ignore basic steps toward a quality student teaching experience

AL – Alabama State University	AR – University of Arkansas – Fort Smith	FL – Florida SouthWestern State College
AL – Athens State University	CO – Western State Colorado University	FL – Indian River State College
AL – Auburn University	CT – Sacred Heart University	FL – Miami Dade College
AL – Birmingham Southern College	CT – Southern Connecticut State University	FL – Southeastern University
AL – University of Mobile	FL – Flagler College	GA – Albany State University
AL – University of West Alabama	FL – Florida Agricultural and Mechanical University	GA – Gordon State College
AR – John Brown University		GA – Middle Georgia State University
AR – Ouachita Baptist University		

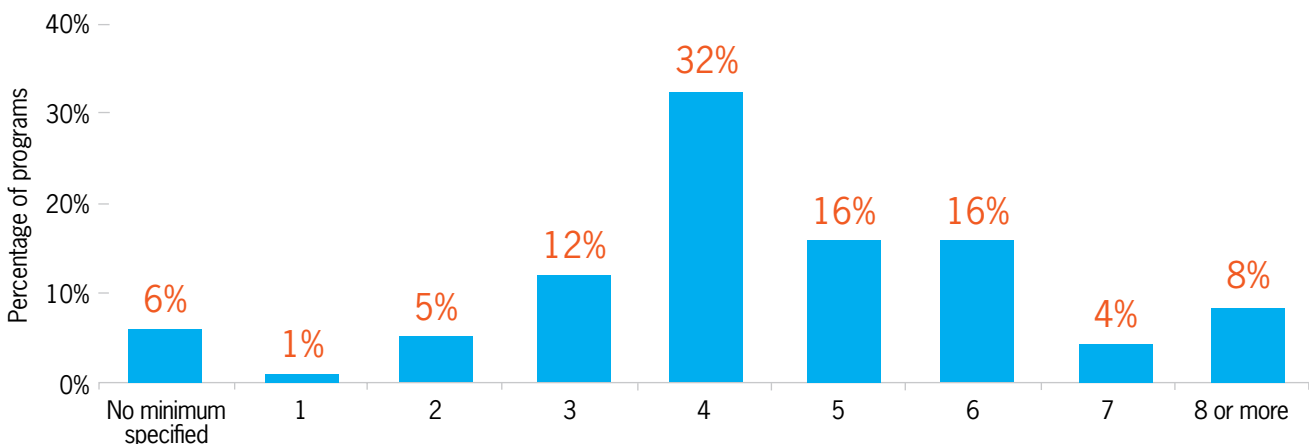
Full list of programs can be found [here](#)

The following are further details on the two components we examined.

Observations: How much is enough?

Research, albeit limited, indicates that teachers are more likely to get off to a successful start if they are observed by their supervisor least five times. In our analysis we look for at least four formal observations to meet this standard.

How many formal observations do programs require?



These are formal observations conducted by a supervisor or other representative of the teacher prep program, not the high school. Such observations must also include the supervisor giving written feedback to the student teacher on what was observed.

The quality of the mentor teachers

Nearly all programs leave it up to the school district to select the cooperating teacher without any process in place to verify that the teacher is effective or has the ability to mentor adult learners.

Only 8 percent of the programs consistently collect substantive information on their cooperating teachers' skills. Of the programs we evaluated, only about 1 percent screen cooperating teachers to determine whether they are both capable mentors and effective instructors as measured by student learning.¹²

These programs confirm that cooperating teachers have strong skills. Programs that check cooperating teachers' effectiveness (as measured by student learning) and mentorship skill get a star.

Programs that confirm that cooperating teachers have strong skills

AZ – Arizona State University*	LA – Louisiana State University – Alexandria	NY – SUNY – Fredonia
CO – Colorado State University – Pueblo	LA – Nicholls State University	OH – Central State University
GA – Augusta University	LA – Northwestern State University of Louisiana*	OH – Ohio Dominican University
GA – Georgia Southwestern State University	MA – Fitchburg State University	OH – Ohio Wesleyan University*
GA – University of Georgia	MD – Morgan State University	OH – Wright State University*
IA – Central College	ME – University of Maine at Farmington	OR – Linfield College
IA – Coe College	MI – Michigan Technological University	RI – Roger Williams University
IA – Cornell College	MS – University of Mississippi	RI – Salve Regina University
IA – Faith Baptist Bible College and Theological Seminary	MS – University of Southern Mississippi	SD – Northern State University
IA – Graceland University	NC – East Carolina University	TN – Lipscomb University
IA – Grand View University	NC – High Point University	TX – Houston Baptist University
IA – Mount Mercy University	NC – Meredith College	TX – Huston-Tillotson University
IA – St. Ambrose University	NC – Methodist University	TX – Lamar University
IA – University of Iowa	NC – University of North Carolina at Chapel Hill	TX – Texas Tech University
IA – William Penn University	ND – North Dakota State University	TX – West Texas A&M University
IL – Greenville College	NM – New Mexico Highlands University	UT – University of Utah
IL – Southern Illinois University Carbondale	NV – Great Basin College	UT – Western Governors University
IL – Wheaton College	NY – CUNY – Brooklyn College	WI – Concordia University Wisconsin
KS – Friends University	NY – CUNY – Hunter College	WI – University of Wisconsin – La Crosse
	NY – CUNY – Lehman College*	WI – University of Wisconsin – Platteville

* Checks that cooperating teachers are strong mentors and effective instructors

In this area, we again see the important influence of state regulations on program policy. The states in which the largest proportion of programs require cooperating teachers to have strong mentorship skills are states that have a regulation requiring these skills (Connecticut, Florida, Kentucky, and North Dakota).

However, regulation and enforcement are two different things. Seventy-five percent of programs in four additional states with a regulation on the books (New Jersey, New Hampshire, Rhode Island, and Tennessee) still do not explicitly include mentorship skills in their list of criteria for cooperating teachers.¹³

Most programs shy away from specifying the skills cooperating teachers need, as it can often be hard enough to find enough classroom teachers willing to take on a student teacher. Nearly three in four programs do not even suggest to their school district partners that cooperating teachers should be effective instructors. The most common requirements

12 Although our insistence that cooperating teachers should themselves be effective instructors has not been proven by research, we stand by this requirement as important for a quality student teaching experience.

13 Specifically, we checked whether programs communicated this criterion to school district partners involved in the selection of cooperating teachers.

stated by programs in communications with school districts are 1) that the cooperating teacher have three years of experience; 2) that the cooperating teacher be licensed in the area in which the student teacher will be certified; and 3) that the cooperating teacher must be a “master” or “exemplary” teacher, without defining what this means.

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

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

Classroom Management

Studies investigating classroom management have identified specific strategies that are successful at improving student behavior and related outcomes. The wisdom accumulated from centuries of teaching — as well as findings from strong research studies — recognizes that student learning depends on both engaging instruction and a well-managed classroom.

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 areas that receive strong support from research. See NCTQ's [Training Our Future Teachers: Classroom Management](#) report and two meta-analyses.¹⁴

When teachers are taught what works in managing a classroom, they can maintain a better environment in which students can learn. Without this knowledge, teachers struggle to learn on their own which approaches are most effective.

What is behind a well-managed classroom? First, it is critical that teachers minimize chances for misbehavior by planning and implementing classroom rules and routines, creating engaging lessons, and by setting up the classroom so that it is easy for a teacher to circulate among the students. Second, teachers should implement the right kinds of interactions with students (e.g., using praise to encourage positive behavior, refocusing off-task students in ways that don't disrupt the rest of the class) to consistently maintain a focus on instruction. Finally, teachers must be prepared to respond appropriately to misbehavior when necessary.

Key Findings: Fewer than half of teacher prep programs (44 percent) evaluate student teachers on their ability to apply effective strategies for managing student behavior.

Programs signal which classroom management skills they consider most essential through the indicators included on observation and evaluation forms. Our review of programs therefore focuses on these forms, specifically those used during the keystone experience of student teaching. We check to see if these evaluation forms indicate that every student teacher will be evaluated on the five universal and research-based classroom management strategies.

Research-Based Strategies for Managing Student Behavior:

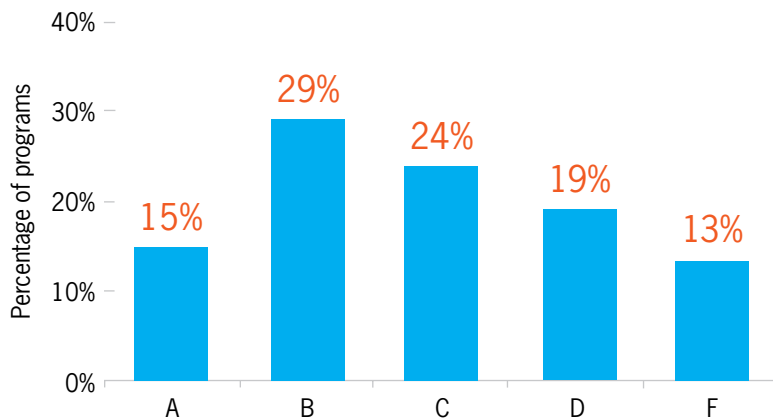
1. Establishing and reinforcing rules and routines, such as what to do when entering the class at the start of the period and rules for obtaining an extension on due dates
2. Maximizing learning time by maintaining student engagement and managing time, materials and the physical classroom environment
3. Encouraging appropriate behavior through praise and other positive reinforcement
4. Maintaining awareness of the classroom and using the least disruptive means to address minor misbehavior
5. Appropriately responding to disruptive misbehavior.

For more on these five strategies, see NCTQ's [Training Our Future Teachers](#) and evidence-based practices research cited above.

14 Simonsen, B., Fairbanks, S., Briesch, A., Myers, D., & Sugai, G. (2008). Evidence-based practices in classroom management: Considerations for research to practice. *Education and Treatment of Children*, 31(3), 351-380; Oliver, R. M., Wehby, J. H., & Reschly, D. J. (2011). Teacher classroom management practices: Effects on disruptive or aggressive student behavior. *Society for Research on Educational Effectiveness*.

Observing student teachers for classroom management skills

(N=536 undergraduate secondary programs)



Programs that earn an A provide feedback on all five key strategies, while programs that earn an F provide, at best, feedback on only a portion of one of them. Student teachers in programs scoring a C or below receive coaching on proactive steps toward classroom management, e.g., creating classroom rules or writing engaging lessons, but they almost never learn how to deal with misbehavior when it occurs, or how to use praise to motivate students to be their best.

In terms of which of the five strategies are most likely to be addressed, programs are most likely to look for the student teacher's ability to establish standards of behavior (77 percent) as well as maximize the amount of class time when students are focused on learning (70 percent).

Programs are least likely to evaluate student teachers on their use of meaningful praise and other positive reinforcement to encourage positive behavior (27 percent), even though this area of research has the strongest support of any of the five.

Programs' evaluation of student teachers on these skills has improved slightly since the [2014 report](#). Among the undergraduate secondary programs evaluated in both editions, 49 percent now receive an A or a B compared to 40 percent in 2014. This is due in part to a move by Massachusetts, which raised the score of all of its programs by revising its mandatory statewide teacher performance assessment to cover more key areas of classroom management. Again, this shows how state action can help improve the quality of teacher education programs.

A few notable, classroom management-related changes that make Massachusetts's Candidate Assessment of Performance, introduced for the 2016-2017 school year, different from its predecessor:

- Most importantly, the assessment specifically requires that student teachers receive feedback, based on observations, about their classroom performance. This is especially important for classroom management.
- The scoring guidelines specifically ask for feedback on the student teacher's ability to use praise to encourage positive behavior.
- The structure of the assessment makes it clear that student teachers must receive feedback on their ability to respond to student behavior — positive and negative — in the classroom, instead of leaving the possibility that feedback will focus on proactive actions like setting classroom rules.

See the research support and methodology for [Classroom Management](#).

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

Selectivity in Admissions

This analysis ends with where teacher preparation programs start: the selection of candidates.

A fundamental attribute of effective teachers is possessing the academic ability needed for the job. While teaching generally may not require individuals who can solve the equations of relativity, it does require candidates who are reasonably well educated, are quick and agile thinkers, and are capable of making hundreds of decisions every hour of the day.

Other attributes such as an affinity for children, sensitivity to all cultures, grit, and a sense of personal responsibility are all attributes that programs and districts can and should value, but academic ability should be the primary “gateway” skill into the profession.

Unfortunately, as has been documented previously by NCTQ and many others, too many teacher preparation programs in the United States do not set the bar high enough as to who may enter the programs. Again, we find with this new round of evidence that just over half of the evaluated teacher prep programs are sufficiently selective.¹⁵

Diversity Concerns

Many programs will argue that making their programs more selective will have a negative impact on the diversity of their candidates. Yet, nearly half of the most selective programs (N=88) are both selective and diverse.¹⁶

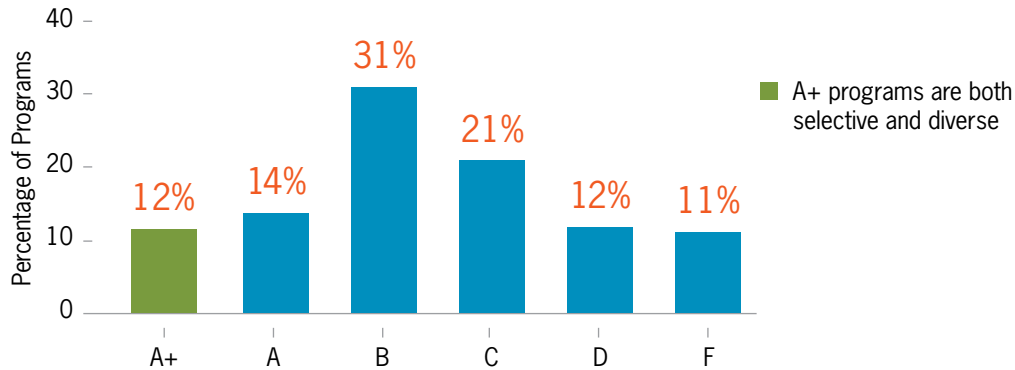
Selective and diverse programs

AR – John Brown University	MN – University of Northwestern – St. Paul	OR – University of Portland
AZ – Arizona State University	MN – University of St. Thomas	PA – Arcadia University
AZ – University of Arizona	MO – Maryville University of St. Louis	PA – Bucknell University
CA – University of Redlands	MO – Rockhurst University	PA – Elizabethtown College
FL – University of Central Florida	MO – St. Louis University	PA – Grove City College
FL – University of Miami	MO – University of Missouri – St. Louis	PA – Juniata College
IL – DePaul University	MO – Westminster College	PA – Messiah College
IL – Illinois Wesleyan University	MO – William Jewell College	PA – Misericordia University
IL – Knox College	MO – William Woods University	PA – Pennsylvania State University
IL – University of Illinois at Urbana-Champaign	MT – Carroll College	PA – Saint Joseph’s University
IN – Goshen College	MT – Montana State University	PA – Susquehanna University
IN – Indiana University – Bloomington	NC – Guilford College	PA – University of Scranton
IN – Purdue University	NC – University of North Carolina at Chapel Hill	PA – Villanova University
IN – Saint Mary’s College	NE – Creighton University	RI – Providence College
KS – Benedictine College	NE – University of Nebraska – Lincoln	SC – College of Charleston
KS – Newman University	NJ – College of New Jersey	TN – Freed-Hardeman University
KY – Asbury University	NJ – Seton Hall University	TN – Lipscomb University
KY – University of Louisville	NY – Barnard College	TN – Maryville College
MA – Boston College	NY – CUNY – Hunter College	TX – LeTourneau University
MA – Mount Holyoke College	NY – College of Mount Saint Vincent	TX – Rice University
MA – Simmons College	NY – Columbia University	TX – St. Edward’s University
MA – Stonehill College	NY – Manhattan College	TX – Texas Christian University
MI – Calvin College	NY – Stony Brook University	TX – Texas Southern University
MI – Michigan State University	OH – John Carroll University	TX – University of St. Thomas
MN – College of Saint Benedict and Saint John’s University	OH – Miami University of Ohio	UT – Brigham Young University
MN – Gustavus Adolphus College	OH – University of Cincinnati	UT – University of Utah
MN – St. Olaf College	OH – University of Dayton	VT – Saint Michael’s College
MN – University of Minnesota – Duluth	OH – Xavier University	VT – University of Vermont
MN – University of Minnesota – Morris	OR – Linfield College	WA – Seattle Pacific University
		WA – Western Washington University

15 For selectivity, we examine admissions requirements to look for the average SAT/ACT scores of the institution overall, the minimum required GPA to enroll in the teaching program, and the average GPA of the program’s students upon enrollment, all of which indicates whether the program likely draws most of its teacher candidates from the top half of the college population.

16 Programs are determined to be diverse if they maintain or exceed the level of racial diversity of the entire institution or the state’s teacher workforce.

How likely are undergraduate secondary programs to select aspiring teachers from the top half of students?
(N=717 undergraduate secondary teacher prep programs)



Of the 57 percent of programs that earn an A or a B, nearly all (53 percent) earn their A or B by virtue of being housed in institutions that are highly or moderately selective. Programs that are not housed in selective institutions need to take proactive steps to ensure that their teacher candidates are drawn from the top half of the college population. However, only 4 percent of all programs do so — earning an A or a B for taking actions such as admitting classes of teacher candidates with high standardized test scores or average GPAs or setting a high minimum GPA for admission.

Among the programs that did not earn an A for the selectivity of their institution, the number that require at least a 3.0 grade-point average for admission into their teacher prep program rose from 30 programs in 2014 to 54 programs in 2016, a small but notable improvement.

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

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

Recommendations

Programs Can Do More

By design, this report explores the crucial basic elements that a quality secondary program must contain, the foundation on which professorial quality, assignments, required readings, opportunities for practice teaching, and other course requirements all rest. We fully acknowledge that our examination does not and cannot look at everything programs should do to better educate America's future teachers. Nor does it measure all aspects of a high-quality program. **Put bluntly, this is a survey of the minimum that all teacher prep programs should include — the floor rather than the ceiling.**

Undergraduate programs preparing secondary teachers can turn to our [program ratings](#) for specific grades detailing their individual strengths and weaknesses. NCTQ provides a number of resources on its website that programs can use as a guide to improvement, including recommendations for [student teaching](#), [classroom management](#), [content in the sciences](#) and [content in the social studies](#).

The fixes are not complicated nor are they costly, especially given what's at stake. The 43 percent of programs that fail to ensure that all candidates, not just some, leave with a firm grasp of their subject-matter knowledge need only follow the example of the remainder that do.

The implications of such a move mean that all aspiring general social studies teachers should have to take the equivalent of a minor in history, since nearly all social studies teachers will wind up teaching history — hardly a controversial position for any university to take.

While programs may claim that they cannot increase requirements, our analysis of programs' science semester credit hours shows that programs with certification routes earning an F can increase their breadth by redistributing the hours they already require.

The 24 percent of programs that fail to require a methods course that is specific to a teacher's intended subject area need to abandon the ubiquitous general methods course so that future teachers can be shown the instructional techniques most effective for the courses they will be teaching. Such an investment may seem too costly for a small program with only a few candidates in each subject area, but the fact that most small programs are able to provide such courses should be persuasive enough evidence for any dean to use in his or her discussions with higher-ups, even if it means substituting a live classroom experience with one online.

Unfortunately, this is work — addressing deficiencies in either subject-matter preparation or how to teach that subject matter or both—that the majority of secondary programs in the United States must tackle.

Adequacy of content and methods coursework by subject area

School	English	Math	Science	Social Studies
CT – Southern Connecticut State University	■	■	■	■
CT – University of Hartford	■	■	■	■
CT – University of Saint Joseph	■	■	✱	✱
CT – Western Connecticut State University	■	■	■	■
DC – American University	■	■	■	■
FL – Bethune–Cookman University	■	■	■	■
FL – Flagler College	■	■	■	■
FL – Florida Agricultural and Mechanical University	■	■	■	■
FL – Florida Atlantic University	■	■	■	■
FL – Florida Gulf Coast University	■	■	■	■
FL – Florida Memorial University	■	■	■	✱
FL – Florida Southern College	■	■	■	■

[Full list of programs can be found here.](#)

- Program requires adequate content and methods coursework
- Program does not require both adequate content and methods coursework
- Certification is not offered
- ✱ Content coursework could not be evaluated due to missing information

States Can Do More

State requirements influence how well teacher prep programs prepare secondary teachers in their intended subject area. When programs know that they have to prepare their aspiring teachers for state licensing tests in their subjects, they generally design their courses and requirements accordingly. For instance, we found some evidence suggesting that, on average, programs in states with an English test require more English courses. However, only three states achieved this aim across all certifications (Arizona, Minnesota, and Missouri), while the rest need more work on their tests. In the states that lack such guardrails, the quality and depth of subject-matter preparation in untested subjects is left entirely up to the teacher preparation program.

Since college undergraduates can only take a limited number of courses, limiting broad multiple-subject certification to fewer subjects with relevant or related content would build stronger, more knowledgeable teachers. For instance, perhaps an astronomy major should be able to teach physics but not biology, or maybe an anthropology major should be allowed to teach sociology but not economics. However, if states are not yet ready to take this step, they could strengthen the quality of this training by requiring significant coursework in the multiple subjects a teacher will be licensed to teach and by mandating a subject test before licensure.

States offering general science and social studies certifications without tests that provide separate subject scores

State	General Science Certification	Social Studies Certification
Alabama		
Alaska		
Arizona		
Arkansas		
California		
Colorado		
Connecticut		
Delaware		
District of Columbia		
Florida		
Georgia		
Hawaii		
Idaho		
Illinois*		
Indiana		
Iowa		
Kansas		
Kentucky		
Louisiana		
Maine		
Maryland		
Massachusetts		
Michigan		
Minnesota		
Mississippi		
Missouri		
Montana		
Nebraska		
Nevada		
New Hampshire		
New Jersey		
New Mexico		
New York		
North Carolina		
North Dakota		
Ohio		
Oklahoma		
Oregon		
Pennsylvania		
Rhode Island		
South Carolina		
South Dakota		
Tennessee		
Texas		
Utah		
Vermont		
Virginia		
Washington		
West Virginia		
Wisconsin		
Wyoming		

School Districts Can Do More

School districts should have functioning partnerships with teacher prep programs. Districts supply high school graduates who aspire to become teachers, employ prep programs' graduates, and offer classroom placements for student teachers. As a result, school districts should have substantial leverage over teacher prep programs, leverage that almost always goes unused.

Districts that are dissatisfied with the quality of graduating teachers can tap all three roles to pressure programs to improve:

1. School guidance counselors can use NCTQ's ratings in talking with high school seniors who aspire to become teachers, steering their students to apply to higher-rated programs.
2. Schools can choose to accept student teachers only from programs that earn high grades in this analysis.
3. When hiring new teachers, schools can actively recruit from top-scoring programs, and district human resources teams can consider the quality of preparation when evaluating applicants.

By using these leverage points, schools can pressure their local prep programs to improve and better prepare new teachers.

Conclusion

These findings are especially alarming in the STEM fields. Research and just plain common sense tell us that high school teachers with solid subject-matter expertise are more effective. If we want our economy to grow through more students entering STEM fields, our high school science teachers will need to know the research-proven content and teaching methods necessary for students to master this vital material.

States, schools, and leaders of teacher preparation programs have the ability to demand higher-quality preparation for future teachers by instituting subject-specific tests or perhaps even limiting the use of multiple-subject teacher certifications. They also can change the selectivity, content requirements, oversight of student teaching, and provisions for method courses of the programs themselves. While this study demonstrates that most programs are at least partially satisfactory, too many inadequate programs continue to graduate teachers who lack knowledge of content, teaching techniques, or classroom-management skills. As a result, too many high school students miss out on a learning experience that their high school years should provide while their teachers teach themselves what their teacher prep programs neglected.



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* Each science and social studies certification in Illinois allows teachers to teach all subjects within the field, and are therefore designated as general science and social studies certifications here.

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