

Appendix E:

Methodology of Program Evaluations

The program sample

This study analyzes coursework from 48 teacher preparation programs located within 28 institutions of higher education (IHEs) in 19 states. The programs are listed by name in Appendix B.

Programs in the sample were randomly selected from approximately 490 for which NCTQ had obtained full sets of syllabi for professional coursework and student teaching materials. These documents were screened to ensure that sufficient information was provided in syllabi for relevant coursework to ascertain the nature of lectures/class discussion, assignments and required readings, and that program documents included observation forms and lesson/unit plan guidelines used during student teaching. Nothing in the selection or screening process should bias results. The syllabi and other materials used in the report are dated between 2009 and 2012.

The sample includes approximately equal numbers of undergraduate elementary and secondary programs (16 and 17, respectively), as well as approximately equal numbers of graduate programs at each level (6 elementary, 9 secondary). The sample is generally representative of the national population of teacher preparation programs, except that the proportion of public IHEs is greater than the national average because only public IHEs are obligated to comply with NCTQ's open records requests for data.

Selection of relevant coursework

Courses of three types were included in analysis: 1) educational psychology, 2) general methods, and 3) methods specific to teaching in the four core subjects (English/language arts, math, science, history/social studies). Course titles, descriptions, class topics, and assigned readings were considered when judging course relevance.

Educational psychology courses

Courses selected focus on the application of psychology to learning. The titles, descriptions, or objectives of these courses include phrases such as “educational psychology,” “cognitive science,” “learning theories,” “information processing,” or “memory.”

General or introductory psychology courses were not analyzed: Even if they include topics relevant to instructional strategies or cognitive science, as broad survey courses they would not be able to do so with the requisite depth or emphasis necessary for prospective teachers. Likewise, developmental psychology and human development courses (which might address relevant topics to a small degree) were not included unless there was a clear, strong connection in the course between development and learning — as indicated, for example by course titles such as *Educational Psychology Applied to Adolescent Development and Human Development and the Learner*.

General methods courses

Courses selected focus on instructional or teaching strategies relevant to all subject areas. These courses often cover topics related to designing and delivering instruction, writing lesson plans, and designing and using assessment. Courses in this category are relevant if instruction is a major focus, although they may also devote considerable time to another aspect of teaching, such as classroom management.

Introductory education courses that may only briefly cover instructional methods among areas of major focus, such as philosophies of education and the history of education in the U.S., were not included. (Such courses typically have titles like *Foundations of Education and Orientation to Teaching*.) General methods courses could focus on the elementary or secondary grade span, but could not address instructional methods only for a specific group of students, such as students receiving special education services or English language learners. Courses with titles referring to specific environments (such as *Teaching in Culturally Diverse Environments and Teaching in Urban Settings*), were included if close inspection indicated that they address general methods and that there was not a more appropriate general methods course required in the program.

Subject-specific methods courses

Subject-specific methods courses cover topics similar to general methods classes, but focus on one or more subject-areas. Methods courses analyzed for this study address core subjects such as math, English/language arts, social studies, and science. The fact that teacher candidates should learn that the fundamental instructional strategies are not subject specific but of general applicability led us to consider subject-specific methods courses in elementary and secondary programs differently:

- An elementary teacher who learns a particular strategy in the context of a math methods course is unlikely to understand that the same strategy can be applied to English instruction. We therefore examined single-subject methods courses in elementary programs with a careful eye to discern how strategies were presented, and did not evaluate subject-specific methods texts.
- However, because secondary teachers will only teach the single subject covered by the subject-specific course, we gave credit to strategies taught in the context of a single subject within secondary programs, and reviewed relevant texts assigned in secondary subject-specific methods courses.

In general, subject-specific methods courses covered the fundamental strategies so infrequently that, if they had been ignored entirely, all but seven of the forty-eight programs in this report would have been judged to prepare teacher candidates on the same number of fundamental strategies.

Courses that focus solely on imparting subject-area content to prospective teachers were not included; however, classes that combine instruction in both methods and content were.

In the domain of English/language arts, methods courses focused specifically on *literacy* or *reading* were not included unless no other English/language arts methods course was required: Literacy/reading courses generally address instruction in the processes involved in reading (e.g., decoding, fluency, comprehension), rather than in more general instructional strategies for fostering understanding and retention of content.

Figure E1 provides examples of typical courses deemed relevant and irrelevant.

Figure E1. Examples of Titles of Courses Relevant and Not Relevant to Analysis

Course category	Course titles relevant to analysis	Course titles not relevant to analysis
Educational psychology	Educational Psychology Learning Theory in Elementary Schools Psychological Foundations of Education Psychology of the Learner Human Development and the Learner	Introduction to Psychology Human Development Child and Adolescent Development
General methods	Designing Instruction and Evaluation in the Secondary Classroom Integrating Teaching and Learning Methods and Media in Middle/High School Principles and Techniques of Teaching Introduction to Elementary Teaching	Foundations of Education Management Principles for Elementary Teachers Classroom Management and Organization
Subject-specific methods	Curriculum, Instruction, and Assessment in Secondary and Middle Level Mathematics Knowing, Teaching, and Assessing in: Earth, Physical, and Life Sciences Teaching and Learning in Social Studies Teaching Secondary English Teaching Language Arts in Elementary Schools	Mathematics for Secondary Teachers English Grammar and Usage Processes and Acquisition of Reading

Other courses

Teacher preparation programs almost always include both classroom-based coursework and clinical coursework (practica, field experiences, student teaching). Classroom-based coursework was our focus; the only clinical courses included were linked with courses already identified for inclusion. For instance, a general methods course, *Teaching and Learning*, might have an included co-requisite of *Field Experiences in Teaching and Learning*, or a subject-specific methods course like *Science Teaching Methods* might have an included co-requisite of *Practicum in Science Teaching Methods*.

Summary of courses

In total, 195 distinct courses were selected for analysis. Because some of these courses are required in multiple programs at the same institution, the total number of courses examined was 219. Taking into account that some are part of multiple programs within the same IHE, 14 percent of courses were educational psychology courses, 24 percent were general methods courses, and 62 percent were single-subject methods courses. A typical elementary program included one educational psychology course, one general methods course, and four subject-specific methods courses focused on the core subjects of math, English, social studies, and science.³ A typical secondary program included one educational psychology course, one general methods course, and one subject-specific methods course.⁴

3 Elementary teacher candidates often take additional subject-specific methods courses focused on health, physical science, art, or music. However, we did not evaluate these courses because the instructional strategies they taught were even less likely to be presented as universally applicable than material taught in courses focused on core subjects.

4 A typical secondary program offers licensure in multiple subjects, and different subject-specific courses are required for candidates in each subject. The average coverage of the fundamental strategies across all pathways offered at a sample of five programs was compared with corresponding results for courses which were part of a single randomly chosen pathway. Results from both approaches were extremely similar, and as a result the methodology of this report specifies that the subject-specific courses for one randomly chosen subject will be evaluated for each secondary program.

Student teaching documents

Two types of student teaching documents capture instruction-related guidance and feedback: 1) forms for observation and evaluation of teaching episodes, and 2) lesson and unit planning guidelines.

Observation and evaluation forms are used by both university personnel and cooperating teachers to give feedback to student teachers on their instructional skills. By choosing the indicators on these instruments, the program signals which skills are most essential to teaching and mandates the areas in which student teachers must, at minimum, receive feedback. In addition, scores on observation and evaluation forms are generally a major part of the grade for student teaching.

During student teaching, candidates complete a variety of instructional assignments, such as daily lesson plans and/or a teacher work sample that includes a unit plan. Although the parameters of each assignment may vary, all involve some degree of lesson planning, which generally must follow specific guidelines established by the candidate's program. Like observation and evaluation instruments, these guidelines indicate which instructional strategies teacher candidates are required to know and practice.

Program analysis

Programs were analyzed by combining information from syllabi, textbooks assigned in the course,⁵ and student teaching documents. A program was considered to “prepare a candidate” in a strategy if 1) evidence was found with respect to at least one course that candidates are exposed to the strategy during class time through lecture or discussion, and 2) candidates practice the strategy at least once. (Credit for “practice” requires only that candidates are either given an assignment related to the strategy during any course or are required to use the strategy during student teaching.)

Syllabus and student teaching document analysis

Analyses of syllabi have long been an accepted part of the evaluation of teacher preparation. State agencies, accrediting organizations, and multiple research studies use syllabi for the same purpose for which these documents are distributed to students: to identify key topics covered by a course. NCTQ's methodology follows this approach, treating a syllabus as an outline of the broad topics considered essential. In addition, syllabi provide a host of other data, such as textbooks and other required and recommended reading, descriptions and grade weights of assignments and bibliographies on which coursework is based.

In addition to identifying required textbooks and which chapters of those textbooks were assigned for reading, syllabi were used to determine if the six fundamental instructional strategies are discussed during class time or practiced in assignments. When syllabi were vague or unclear about lecture topics, readings or assignments, we used contextual clues from other parts of the syllabus to provide information. If language could not be clarified, credit was given for the broadest and most generous interpretation of its content.

5 See Appendix C for a full explanation of how textbooks were selected and evaluated.

Coding of syllabi for instruction

The following example of a real syllabus shows coding for the fundamental instructional strategies.

Figure E2. Coded Syllabus

Date	Topics
Week 1	Introduction/Overview Role of the Teacher Considering All Learners' Needs: Learning Styles/Multiple Intelligences
Week 2	Introduction to Models of Instruction Direct Instruction
Week 3	Cooperative Learning Inquiry Based Instruction
Week 5	Assessment
Week 8	Presenting Lessons - Questioning Techniques - Following a Model of Instruction

Too general to receive credit for assessing to boost retention.

Credit for posing probing questions.

Note: This is part of a longer schedule. The empty lines show where weeks were omitted.

Course schedules, which list the main topics to be addressed at each course meeting, provided the primary window into the topics covered in each course. If a syllabus did not contain a course schedule, the list of goals or outcomes for the course was examined to see if they described specific strategies to be taught in the class. If the list of goals was too broad (or simply reproduced standards established by a university or national organization), the syllabus — and therefore the program — could not be evaluated and the program was removed from the sample.

Determination of whether candidates read from texts that cover the fundamental instructional strategies was specific to assigned readings. If a syllabus did not indicate which portions of a text were read, it was assumed that the entire text was read.

Coding of syllabi and student teaching documents for practice

Coding for practice in assignments or student teaching documents was similar. If assignments were not listed, or were not described in detail, the program could not be evaluated and it was removed from the sample.

Figure E3 illustrates coding of a form used to evaluate teaching episodes in a field experience that is associated with a general methods course.

Figure E3. Coded Assignment

Supervising Teacher Lesson Evaluation

Candidate _____ Student ID No. _____

Content Specialization _____ Semester _____ Year _____

I. Evidence of Planning

1. Evidence of appropriate planning for instruction, including thorough lesson plan aligned with state and national standards.
2. Knowledge of and appropriate use of content
3. Selects strategies to accommodate individual difference. (developmental and skill levels, cultural, and exceptionalities).
4. Plans appropriate assessment(s)
5. All materials including appropriate technology were ready for use.
6. Strategies encouraged creativity, innovation and problem solving

	Distinguished	Accomplished	Emerging	Unsatisfactory	N/A
1. Evidence of appropriate planning for instruction, including thorough lesson plan aligned with state and national standards.					
2. Knowledge of and appropriate use of content					
3. Selects strategies to accommodate individual difference. (developmental and skill levels, cultural, and exceptionalities).					
4. Plans appropriate assessment(s)					
5. All materials including appropriate technology were ready for use.					
6. Strategies encouraged creativity, innovation and problem solving					

II. Evidence of Teaching

1. Maintains a positive, supportive classroom climate
2. Communicated with students in a variety of ways
3. Used quality questioning techniques and engaged students in discussion
4. Strategies motivated and engaged students in a deep understanding of the content
5. Demonstrated ability to adjusted instruction based on the students' responses and needs of students with diversities.
6. Used assessment data to make instructional decisions
7. Exhibits good communication skills (speaking, writing, listening), including consistent use of Standard English Grammar

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7. Exhibits good communication skills (speaking, writing, listening), including consistent use of Standard English Grammar					

Credit for posing probing questions.

No credit for assessing to boost retention because does not mention improving retention as a purpose for assessment.

Figure E4 includes additional examples of language drawn from syllabi and student teaching documents of programs in the sample that did or did not receive credit for any given each strategy.

Figure E4. Examples of Language Given Credit or Not Given Credit for Each Strategy

Strategy	Credit awarded	No credit awarded: not sufficiently comprehensive, explicit, or on target
<p>Pairing graphics with words</p>	<p>Class schedule: Topic is “Cognitive perspectives on learning,” which is also the chapter subheading under which the text accurately teaches the strategy. The class meeting is assumed to cover the topics in the chapter section.</p> <p>Class assignment: The class takes three exams, including the final exam. Topics on the exams are listed according to textbook chapters, and the second exam covers the chapter in which the strategy is taught.</p> <p><i>Not found in student teaching documents</i></p>	<p>Class schedule: “Visuals”</p> <p>Class assignment: Instructions for writing a lesson plan say “Use visuals and other means to engage student attention”</p> <p>Student teaching document: Observation form has an indicator which says “Uses visuals appropriately”</p>
<p>Linking abstract concepts with concrete representations</p>	<p>Class schedule: All of the course topics correspond to chapter subheadings of the textbook. Two of the course topics are the same as headings of sections of the text in which the strategy is taught.</p> <p>Class assignment: The class takes three exams, including the final exam. Topics on the exams are listed according to textbook chapters, and the first exam covers a chapter in which the strategy is taught.</p> <p>In the list of goals for the course (because the syllabus did not include a class schedule): “Selects and uses appropriate concrete materials for learning mathematics. “Acceptable despite specification of math because this was a subject-specific methods course for secondary math teachers, who would only be teaching math.</p> <p><i>Not found in student teaching documents.</i></p>	<p><i>This topic was completely absent from syllabi and student teaching documents.</i></p>
<p>Posing probing questions</p>	<p>Class schedule: “questioning techniques”</p> <p>Class schedule: “questioning strategies”</p> <p>Class schedule: “questions/discussion/closure”</p> <p>Class schedule: During class time, groups of students are assigned to present all of the chapters, in turn, of a text that accurately teaches the strategy.</p> <p>Class schedule: “Learning and cognitive processes” and the reading assigned for this class meeting accurately teaches the strategy (otherwise the language in the class schedule would be too broad to parse)</p> <p>In list of class goals (because syllabus did not include a class schedule): “Incorporate the use of higher level thinking and questioning skills”</p> <p>Class assignment: Lesson Plan #3 – “Design a complete lesson plan (all sections are included) for a discussion/closure lesson that will be used with the questioning/discussion and closure microteaching assignment.”</p> <p>Class assignment: “Scoring Criteria for Lessons 1 and 2” says “Includes at least 6 open-ended questions written in question form.”</p> <p>Class schedule and assignment credit: Description of “Mini-lesson” assignment notes that it will be evaluated on “Effective use of questioning.” Because the topic is included in an assignment, we assume that it is also covered during class time.</p> <p>Class schedule and assignment credit: As part of the course, students are assessed using the ADEPT observation form. One of the indicators on the form is “Uses appropriate questioning techniques.” Because the topic is included in an assignment, we assume that it is also covered during class time.</p> <p>Student teaching document: Midterm evaluation has an indicator that measures whether candidates “use appropriate questioning techniques.”</p> <p>Student teaching document: Lesson plan guidance requires candidate to “write six open-ended questions for each goal.”</p>	<p>Class schedule: “Socratic discussion”</p> <p>Class schedule: “Motivating students through discussion”</p> <p>Class assignment: “Introduction” section of lesson plan says “Use questions, KTW chart, etc to engage prior knowledge.”</p>
<p>Repeatedly alternating solved and unsolved problems</p>	<p><i>Not found in class topics, assignments, or student teaching documents.</i></p>	<p>Class schedule: “Guided Practice”</p> <p>Class assignment: Lesson plan template includes section for “guided and independent practice” but does not provide any additional instructions on how practice should be structured.</p> <p>Student Teaching Document: Observation form has indicator for “Guided Practice”</p>

Strategy	Credit awarded	No credit awarded: not sufficiently comprehensive, explicit, or on target
Distributing practice	<p>From a class schedule: The topic for the week is “Learning and Cognitive Processes” which is the also the title of the chapter of the text which is assigned that week. The text chapter accurately teaches the strategy, and the class meeting is assumed to cover the topics in the chapter.</p> <p>Class schedule: “Assessment-based instruction: remediation, extension, reinforcement”</p> <p>Class assignment: The professor gives a weekly quiz. Our analysis has shown that the strategy is accurately taught during the week, and we assume that the quiz covers all topics taught that week.</p> <p>Class assignment and class schedule credit: The class takes three exams. The content of the exams is described by chapter numbers. Exam 2 covers a chapter which accurately describes the strategy. Because the topic is included in an assignment, we assume that it is also covered during class time.</p> <p><i>Not found in student teaching documents.</i></p>	<p>Class schedule “ Lesson Planning”</p> <p>Class schedule: “Effective lessons”</p> <p>Class schedule: Text that accurately covers the strategy is assigned, but corresponding class topic is “Piaget/Vygotsky”</p> <p>Class assignment: Lesson plan template includes section for “guided and independent practice”</p> <p>Student Teaching Document: Lesson plan template includes “practice” section</p>
Assessing to boost retention	<p><i>Not found in class topics, assignments, or student teaching documents.</i></p>	<p>Class Schedule: “Designing assessment for instruction”</p> <p>Class schedule: “Formative and Summative Assessment”</p> <p>Class Schedule: “ Using assessment to inform instruction”</p> <p>Class assignment: Lesson plan template asks “How will you measure what students have learned?”</p> <p>Student Teaching Assignment: Lesson plan template includes space for “Diagnostic, Formative, Summative” assessments.</p>