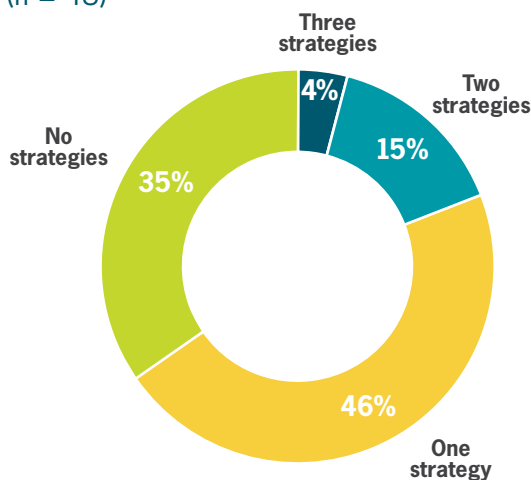


Appendix F: Additional Findings on Program Preparation on Strategies

This report combines information gleaned from assigned textbooks, course topics, coursework assignments and student teaching assignments to understand which of the fundamental instructional strategies teacher candidates in the sample's programs are exposed to and required to practice.⁶ Almost half of the programs in the sample prepare candidates on only one strategy, and that strategy is almost always **posing probing questions**; one-third prepare candidates in none of the strategies; two prepare candidates in three strategies; none prepare candidates in more than three. See Figure 1F below.

Figure F1. Number of strategies in which candidates are prepared by programs
(n = 48)



In eighty percent of programs in the sample, teacher candidates are prepared in at most one of the fundamental instructional strategies.

As discussed on page 15 of the report, **posing probing questions** is the only one of the fundamental instructional strategies in which there is a 50 percent or greater chance that teacher candidates will be prepared by their program. A small percentage of programs prepare candidates on one or more of the strategies of **pairing graphics with words**, or **linking abstract concepts with concrete representations**, or **distributing practice**, while none of the programs in the sample prepare candidates on the strategy of **repeatedly alternating solved and unsolved problems** or **assessing to boost retention**.

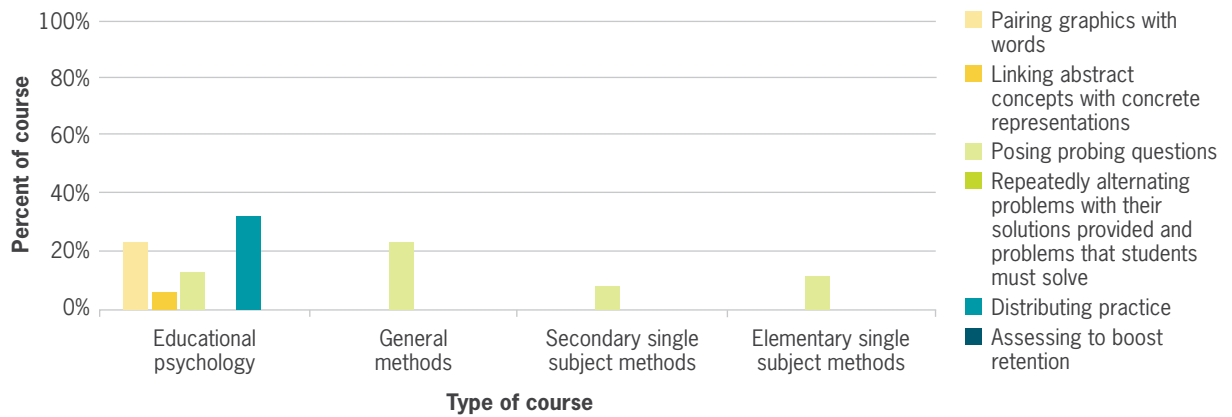
Only minor differences were observed in the preparation on the strategies among the four types of programs in the sample: undergraduate and graduate elementary, and undergraduate and graduate secondary.

How the strategies are taught within a typical program

A typical program includes three types of courses focused on instruction: educational psychology, general methods and subject-specific methods courses. Considering only the degree to which teacher candidates are prepared in coursework and not in student teaching, Figure F2 shows there are significant differences in the types of strategies presented in each type of course.

⁶ "Preparation" in a strategy is defined in this study as the combination of discussion or lecture in class AND at least one practice assignment.

Figure F2. What type of course covers each strategy?
(n = 219)



Only one of the six fundamental strategies is reinforced throughout coursework.

The distribution of strategies implies that that teacher candidates may learn about **distributing practice** or **pairing graphics with words**, but not be asked to practice either of these strategies outside the single course in which they were learned. **Posing probing questions** is the only strategy that is likely to be reinforced throughout coursework. The odds that a teacher candidate will learn about and practice the three remaining strategies — **linking abstract concepts with concrete representations**, **repeatedly alternating solved and unsolved problems** and **assessing to boost retention** — are zero or close to zero.

How the fundamental instructional strategies are addressed in student teaching

We found that only one of the fundamental instructional strategies (**posing probing questions**) was incorporated into student teaching in any of the programs in our sample. Seventy-one percent of programs gave student teachers feedback in observation forms on their **posing of probing questions**, but in only one case were candidates explicitly asked to use this strategy in lesson planning assignments.

Figure F3. How did programs make **posing probing questions** part of student teaching?

Instructions in Lesson Plan Assignments	Indicators in Observation Instruments
<ul style="list-style-type: none"> “list key questions that you will ask during the lesson” 	<ul style="list-style-type: none"> “Uses questioning strategies to engage students and stimulate higher order thinking and asks follow up questions to expand, clarify, and assess student learning” “Designs multiple opportunities within a lesson for students to be engaged in instructional conversations that allow them to interact and make meaning of the content and language skills being learned” “candidate encourages students to explain their reasoning/strategies” “Incorporates questioning techniques that elicit multiple-level thinking” Uses questioning and discussion techniques to enhance student learning

It would not be difficult for programs to weave all six of the fundamental strategies into student teaching. Given the strategies' importance, it is essential that programs do so. At a minimum, the fundamental strategies should be part of major student teaching assignments including lesson planning and observations. Appendix H is a sample lesson plan format that incorporates the six fundamental strategies, and Appendix I shows how they can be included in observation feedback. Excerpts from an observation form used by one of the programs in our sample show how easily existing assignments can be modified to include the key instructional strategies.

Figure F4. How can the fundamental strategies be included in an existing observation form?

Indicator	Strategy
Presents material in clear, precise language accompanied by graphic representations of the material.	Pairing graphics with words
Provides concrete examples and explanations and connects them to underlying abstract concepts.	Linking abstract concepts with concrete representations
Probes for understanding using questions such as “why,” “how,” “what if,” “why not,” etc.	Posing probing questions
Provides for student practice distributed over weeks and months, including problem sets that alternate worked problems and problems to be solved.	Repeatedly alternating solved and unsolved problems; Distributing practice
Provides for assessment of student progress, including assessment that promotes recall.	Assessing to boost retention

The bolded additions show how the fundamental instructional strategies can be incorporated into the original indicators.