**Interview Protocol used in Lynch and Star (2014) Study**

Lynch, K., & Star, J.R. (2014). Views of struggling students on instruction incorporating multiple strategies in Algebra I: An exploratory study. *Journal for Research in Mathematics Education*, 45(1), 6-18.

Hi, my name is \_\_\_. I work on a research project at Harvard University and am one of the people who wrote the Alex and Morgan materials that you've been using. I wanted to talk to you about your experiences with the Alex and Morgan problems this year. We are going to be using these materials with lots of other algebra students next year, so we want to get your feedback. I’m going to be tape-recording our conversation so that I can listen to it again later and think more about what you've said - is this OK? Because I’m tape-recording this, I’ll ask you to talk a lot and to speak clearly so that we can understand you when we listen to this recording later. You probably know this already, but what you say in our interview won't be shared with your teacher and it won't impact your grade in your math class; only Blinded researchers will listen to this recording. Our conversation today will take about 20 or 30 minutes, but you can stop the interview at any time if you don't want to continue. OK? Do you have any questions for me before we begin? Let's start.

1. First, it helps us to know whether or not you like math in general. Is math one of your favorite subjects?

*If yes, ask*: What do you like about math? *If no, ask*: Why not?

1. Great. Now let's move on to talk about the Alex and Morgan materials.
   1. Did the Alex and Morgan materials get used a lot in your Algebra class this year?
   2. About how often would you say that your teacher used the Alex and Morgan materials (e.g., every class, once per week, once every couple of weeks, once a month)?
2. When your teacher used the Alex and Morgan materials, was there a certain way that he/she used them each time?

*See if the student can respond to this question posed generally. If not, you can prompt him/her with some options, such as:* Did you work in groups/pairs when using Alex and Morgan? Did you have a discussion about Alex and Morgan's ways?

1. We are curious about whether you noticed that there were certain types of Alex and Morgan problems; they were not all the same. Did you notice anything about different types of problems?
2. Your teacher may have talked about this when he/she used the Alex and Morgan materials, but what do you think was the purpose of the Alex and Morgan problems?
3. Before this year, have you ever had teachers really emphasize more than one way to solve a math problem? What did you think about the focus on comparing more than one way to solve problems? Why?

*If the student has something vague to say to the second question, it might be necessary to probe a bit. For example, you could ask:* Did you find it hard, easy, interesting, boring, not really different than what you were used to, really different than what you were used to? Why?

1. What did you like most about using the Alex and Morgan problems? What did you like least about using the Alex and Morgan problems?
2. What do you think are the advantages of learning more than one way to solve a problem? What are the disadvantages? Do you think there are more advantages or more disadvantages?
3. Do you think that your classmates liked using the Alex and Morgan materials? Why or why not? Do you think your teacher liked using the Alex and Morgan materials? Why or why not?
4. Is there anything else you'd like to tell me about your experiences with the Alex and Morgan problems?

Now I’m going to ask you to do a few math problems, if this is OK. You may or may not have seen these problems before in your math class. I'm not going to grade you or share your work with your teacher, I just want to learn about how you are thinking about these problems. Is this OK? Let's start.

1. Let’s imagine you are trying to solve this equation . *Give the student the piece of paper with this problem printed on it in large type, with rest of the paper blank.*
   1. Can you tell me how you would solve this problem? You can write your steps down on this paper if you'd like, but I'd also like you to talk out loud about what you are doing. *Give student time to work on problem. You may need to prompt him/her to talk about his/her steps by asking*: What did/do you do here? Great. What did you get for your answer? OK, nice job.

*If the student does not know how to solve the problem, skip to Question 12.*

* 1. Do you know of any other ways to solve this same equation that are different than the way you used? *If yes, ask*: Can you show me another way?

*If they get the same answer as the first way, say*: I see that you got the same answer as the first way. Is this what you expected? Why or why not?

*If no, skip to Question 12.*

* 1. Great job! Are there any other ways to solve this problem? If yes, can you describe or show them to me?
  2. Thinking about these ways of solving this equation, do you think one of these ways is better than the other(s)? What makes it better? What does it mean for one way to be better than another way?
  3. Do you think the [say way the student identified as better] way would be better for all equations or is it only better for certain equations?
  4. Which of these ways do you think your teacher would most like you to use? Why?
  5. We've been talking a lot about ways to solve this problem. Did you learn about these ways in your class this year or did you know them from a previous course?

1. Let’s move on to the next problem, which is to simplify . *(Repeat question 11 protocol with this problem.)*
2. Great! Now let's do another problem. Here is a linear system  *(Repeat question 11 protocol with this problem.)*