Appendix A: Sample Student Interview Questions

Each type of interview used in data collection is briefly described below. Sample open-ended questions are provided for pre- and post-interviews described.

Pre-Interview

The first semistructured interviews were conducted at the beginning of the summer session, and each lasted about 30 to 45 minutes During that time, the researchers focused on establishing the context of the participants' experiences by asking them to share as much as they would have liked about themselves as teachers, as physics students, and/or future physics teachers, including their experiences (especially in learning physics), their thinking about being science teachers, their views of teaching and learning of physics, and the preparation for teaching they had received prior to their enrollment in PHYS 7210.

1. What can you tell me about your educational background and work experiences, if there is any?
2. What teaching experience have you had in teaching science prior to this summer?
3. What is the ideal view of science teaching and learning?
    a. How did you arrive at this view? Or how did this evolve?
4. Describe your experience in learning physics to this point.
    a. How is this related to your ideal vision of teaching and learning of science?
    b. Is teaching and learning of physics any different than other science subjects?
5. In your opinion, what are the most important qualities that a physics teacher should have to teach physics more effectively?
    a. In your opinion, what kind of roles do teachers and students need to adopt for teaching and learning of physics?
6. What roles do students' initial ideas play in teaching and learning of physics?
    a. In what ways have you/would you incorporate(d) this in teaching and learning of physics?
7. What are your expectations for PHYS 7210?

Post-Interview

The second semistructured interview took place near the end of the summer semester, and each lasted about 30 to 45 minutes. The point of this interview was to find out about teaching science through conceptual change–based instruction. During these interviews, participants were asked to tell the researchers about the key incidents that helped them with their understanding of conceptual change–based science teaching and their views of teaching and learning of physics.

1. At this point, what is your ideal view of science teaching and learning?
    a. How did this course help you to reformulate this view?

    b. In this ideal view, what role do you see the teacher playing and what role do you see the student playing for the best learning to take place?
2. Have there been any changes in your perspective of teaching and learning of physics? If so, what changes?
    a. What aspects of the course were involved in making this change take place?
3. What roles do students' initial ideas play in teaching and learning of physics?
    a. In what ways have/would you incorporate(d) this in teaching and learning of physics?
    b. What features of the teaching strategies or resources to which you were exposed influenced your thoughts about this?
4. What roles did the two course instructors play in bringing about any changes in your perspectives about teaching and learning of physics as you described them in response to the previous questions?
    a. Provide specific examples to support your ideas about how the instructors played a role in changing your perspective.
    b. In what ways did the instructors integrate what they were doing to support your learning of content and your learning of pedagogy? Cite an example.
5. Describe your experiences in PHYS 7210 this summer.
    a. Did this course meet your expectations? If so, in what ways?
    b. If we were to redesign this course, what recommendations would you have for that redesign?

Appendix B: Post-Course Student Survey

Below is the evaluation student survey carried out at the end of the course. Students did not disclose personally identifiable information.

1. This course (Phys7210) was taught by two instructors (Dr. C. and Dr. T.) from different colleges (Education and Arts & Sciences). Please describe how you thought the material and approach of the two instructors worked in relationship to each other.
2. Thinking about how the class (Phys7210) was organized and run, what part(s) of the class were the most valuable in preparing you to be an effective physics teacher?
3. Thinking about how the class (Phys7210) was organized and run, what part(s) of the class were the least valuable in preparing you to be an effective physics teacher?
4. Thinking about how the class (Phys7210) was organized and run, if you were in charge, how would you change the course to better prepare MAT students to be effective physics teachers?
5. For this course (Phys7210) to be effective at preparing MAT students to be effective physics teachers, at what point in the MAT program should the course be taken and what knowledge or experience should students have before taking this course?