

SciMath<sup>MN</sup>  
Teachers Research Network  
Instructions for Minnesota Science Teacher Interview Instrument (MnSTII)

**Interviewing:**

This interview should be regarded as a guided conversation in which the participant does most of the talking. The lead questions tend to be quite open and aim to elicit a descriptive response. Most probes listed below each lead question are vital to get at the essence of the intention of the question. A few probes, however, are optional as they may elucidate a participant's perspective further but are not essential. These optional probes are identified with asterisks.

The wording of the questions and the probes can be modified to so as to bridge naturally with the participant's responses. Where possible, pick up on something from the last answer to introduce the next question.

When interviewing elementary teachers, it is important to clarify that these questions are meant to pertain specifically to their teaching of science. Participants should be told this up front and then reminded periodically through out the interview by tagging "science teaching" onto a few questions where appropriate. For secondary teachers, it is important to clarify whether the interview pertains to all the courses the teacher is currently teaching or if there will be a more restricted focus. It is recommended that the other instruments reflect a similar degree of focus. (i.e. just biology, biology and chemistry, etc.)

**Taping:**

The interviews are to be audio taped and then transcribed verbatim. Writing the questions in bold or another font can facilitate analysis. In any event, the transcriptionist must indicate which parts of the tape are questions and which are answers. Researchers are cautioned to avoid taping an interview in a restaurant or other location with significant background noise.

**Analysis:**

Transcriptions will be reviewed and summarized for each of the following five categories: Knowing Science, Knowing Pedagogy, Knowing Students, Establishing a Learning Environment, Developing as a Teacher

While the main data for each category will likely be found in the responses to the questions listed for each category, researchers can delve into any part of the interview if it sheds light on the participants perspective about that category. In other words, evidence can be found in any part of the interview, not just the questions that are apparently relevant. Be sure to draw upon relevant quotes as appropriate.

These same categories can also be found in other instruments such as the MnSTOI and the CLES. The goal of the interview analysis is to summarize (not judge) the participants perspective on each of the 5 categories. Consequently, a full description of these categories will form the basis for the analysis of the interviews and need to be thoroughly developed so as to be congruent with the other instruments.

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**Knowing Science:**

How do you decide what to teach and what not to teach? Probe for:

- Any ways in which classroom teaching and preparation relates to any standards or standards frameworks.
- The role (if any) of student interests in planning
- The role (if any) of prior student knowledge in planning

What opportunities do your students have to do scientific inquiry? Probe for:

- this person's definition of inquiry
- \*the parameters of this person's definition of inquiry (i.e. Can they differentiate between and example of what is and what is not inquiry?

How do you distinguish between a fact, a hypothesis, a theory? Probe for:

- \* possible examples

How is studying science different than studying other disciplines such as art or math? Probe for:

- Is a different way of thinking used by students during science lessons?
- Is science based on a particular way of thinking or viewing the world?

**Knowing Pedagogy:**

What kinds of science activities do you use? Probe for:

- This person's definition of "activity" (What counts as an activity?)
- Ratio of engaged activities to seat work/lecture during science class  
*(Comment: For our purposes, "engaged activities" means investigation, demonstrations, projects, questions, problems, applications, and exercises in which students actively engage. "Seat work/lecture" reflects a passive role for students who are working on lower order questions, definitions, crossword puzzles, or listening to a lecture. Interviewers are asked to avoid stating these definitions to participants as that would taint their view.)*

How do you pick which activities to use? Probe for:

- Criteria used to select activities
- \* How they prioritize activities within the given time constraints

How do you evaluate student learning? Probe for:

- Sources of evaluations
- When evaluations are created/procured
- \*How teacher makes sense of results
- If/how instruction is modified in response to results

What textbook and/or curriculum materials do you use? How do you use these? Probe for:  
-Extent to which textbook materials drives order and organization of curriculum  
-Extent to which textbook materials are used as is or modified.

**Knowing Students:**

When planning, do you take into account your students previous knowledge and ideas? Probe for:  
-Specific examples  
-Misconceptions students might bring to a subject  
-Use of pre and post tests

What kinds of grouping strategies do you use? Probe for:

- Criteria for forming groups
- Group sizes
- Kinds of activities done in groups
- Frequency with which groups are used
- If same groups are maintained over a course of time or new groups are made each time

What kinds of activities do you do that give students a chance to express their own views and ideas? Probe for

- Specific examples
- Opportunities for all students to express idea
- Public (ex. Class discussion) vs. private (ex. journal) expression of student ideas.
- \*Managing emotional risk that student take when putting forth an idea publicly

**Establishing a Learning Environment:**

How would you describe your role as teacher in the classroom during science? Probe for:  
-Definition of any jargon used by participant (ex. constructivism, community of learners, etc.)  
-\*Elementary probe: How is teaching science teaching different from teaching other subjects.

What is the student's role in the classroom during science?

- \*Elementary probe: How is being a student during science different than being a student during other subjects?

**Developing as a Teacher:**

Have you participated in professional development beyond your university preparation? Probe for:  
-\*meetings, organizations, books, workshops, conferences, mentors

What resources do you use in your teaching and planning that come from outside your classroom?

- \*school, district, community, state, national

Do you feel your current knowledge of science content is sufficient to teach effectively? Probe for:

- Brief description of science courses taken
- If interconnections between these content courses were made explicit at any point

of his/her teacher preparation.

-If connections between content coursework and pedagogy were made explicit at any point of his/her teacher preparation.

I'm going to ask you to make a pie chart that shows the relative pieces that have contributed thus far to your preparation as a teacher.

-\*undergraduate courses, graduate courses, books, field experiences, classroom experience, anything else you can think of

-influence of various pieces on their professional growth.

*(Comment: It might help to ask the participant to make a list first and then decide the relative impact of each piece.)*