Exercise 2.4: Conducting a Decoding Interview

1. Start with a recent, specific example of the expert successfully overcoming the bottleneck students struggle with—for example, the bottleneck is that students don’t understand the concept of bias in scientific data. Then ask, “What do you do when you are doing this task so that you don’t get stuck at this spot? When was a recent time you came up against bias in data? What did you see? How do you do this? How did you handle it?”
2. When the interviewee responds, try to imagine doing the thinking described. Ask yourself, “What more do I need to know so I can (mentally) do it?” Performing the mental tasks as described allows the interviewer to see where expert thinking might be covered up. “How is this different from the way I think about bias? What sorts of things do I need to know to understand bias in data? How do I know what to look at to determine the bias in data?”
3. Probe any place where the interviewer cannot explain. (Repeat this step often in the interview.) For example, the interviewer might say, “So you say that the data are factual, but they are also biased. I don’t understand how they can be both at once. Can you explain that to me?”
4. Summarize—reflect back to the interviewer what was said without the fine details. (Repeat this step several times in the interview, particularly when the expert has gotten stuck.) “So bias is not conscious selection of some data over other data, but is caused by methods of collecting data?” for example.
5. Toward the end of the interview, abstract and list the main three to five mental actions. Categorize the mental action in terms of one of Bloom’s typology levels: analyzing (taking things apart), synthesizing (generation or combination of elements into a new idea), applying (using procedures to solve a problem), or evaluating (making judgments based on criteria). “So all data have bias because our methods always involve sampling. So I would need to identify the sort of bias that might be in the data (analysis). I would do this by thinking about the possible ways data might be gathered in this situation and how the method might influence the data (application). I would have to know what the authors did to compensate for the errors produced by their method of sampling (evaluation). And then I would determine whether given the inaccuracy inherent in data gathering there is still reason to see the author’s conclusions as reasonable. I would have to know how much inaccuracy is likely to be in the data as well (evaluation).”
6. Continue to ask for more details until (a) the bottleneck has been fully explicated, (b) there’s a reasonable expectation that the student will be able to perform the mental actions, or (c) the expert cannot explain further.

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