

**NOTE:** These examples *begin with an overall statement of quality* and they *they include a balanced integration of supporting evidence*.

### **Sample Analytic Memo #1**

#### **Key Function Area: Deepening Teacher Content Knowledge**

2. In assessing the quality of the design and the implementation of that approach you should address the questions listed below in the boxes provided. Your responses to each question should include an overall statement of quality as well as evidence to support that statement.
  - a. To what extent did the professional development highlight the key conceptual understandings underlying the designated instructional materials? Was the disciplinary content presented accurately and accessibly?

The Preston LSC professional development did a good job of highlighting the key conceptual understandings in the designated instructional materials and provided high quality presentations of accurate and accessible disciplinary content.

During Introductory Kit Workshops, the key science concepts in each lesson were explicitly pointed out to the teachers and then reiterated for the kit as a whole during session wrap-up. The Science Content Classes were of very high quality and are the key strength of the content portion of the LSC. Here, central science concepts integral to the kits were studied in depth. Through interviews, we found out that the SRTs worked closely with their scientist partners to design the classes so that the content was tightly linked to the instructional materials. The SRTs also created a reference sheet for each content class, which linked the key concepts to specific activities in the kits. The project director distributed these to every teacher in each participating school this year and plans on integrating them into the Introductory Kit Workshops next year. Our observations showed that the disciplinary content in these sessions was presented in an exemplary manner, showing that they were carefully designed. The scientists did a thorough job of sharing accurate content, and they and the SRTs made that content relevant to the teachers by pointing out its relationship to the key concepts in the kit materials. The facilitators also provided ample time and structure for participants to reflect on how they could apply their new content knowledge in their teaching.

- b. To what extent was the disciplinary content addressed by the program matched with teacher needs? How did the project determine the extent to which participating teachers were in fact deepening their content knowledge?

Since so few participants attended the Science Content Classes, which covered the bulk of disciplinary content in the program, the quality of the Preston LSC design was poor at addressing teachers' content needs.

As mentioned, all teachers were exposed to the key concepts in the instructional materials during the mandatory Introductory Kit Workshops, but the depth and breadth of the science content needed to effectively teach the kits were presented in the Science Content Classes, which were voluntary. Although attendance was high at some of the content classes (e.g., Rocks and Minerals, and Electricity and Magnetism), many content classes only drew a dozen or fewer participants when offered. The project director indicated that this might be due to their competing against other professional development sessions offered on the same in-service days (i.e., mathematics and reading, areas with higher stakes). The SRTs are working on a plan to include incentives such as free science materials in order to entice teachers to attend in the future. Regardless, the project has been unable to ensure that teachers who need disciplinary content receive it; right now it goes to teachers who want it. To date, only 12 % of the targeted teachers have attended a Science Content Class. The Preston leadership will need to work to ensure that teachers attend the content classes that relate to the science kits they teach.

Facilitating scientists have proposed that the LSC begin giving pre and post tests to the teachers, but currently the project does not have a mechanism in place for determining the extent to which participating teachers have deepened their content knowledge. A number of teachers we interviewed did comment that they were now more comfortable teaching science as a result of attending the Science Content Classes. The following are representative quotes:

“Science was boring, now it’s exciting and I am involving the kids more. I’m more comfortable teaching the science because I now know what the stuff in the kit means. The science class I took helps me to answer all the questions the kids have and now I feel like I can answer them where before I was embarrassed that I couldn’t.”

“I’m doing more science with greater content.”

- c. Based on classroom observations (as well as other relevant data), what evidence is there that teachers have, in fact, deepened their content knowledge?

Based on classroom observations, teacher interviews, and teacher survey data there is conflicting evidence as to the extent to which participating teachers have deepened their content knowledge.

A solid majority of the teachers who returned LSC Teacher Questionnaires reported that their participation in the LSC has increased their science content knowledge. Thirty-eight percent reported that their science content knowledge had increased to a great extent, another 42% said it had increased significantly, and 17% say it has increased some. Only 3% said it had increased little if any.

These data contradict the data collected during observations of classrooms this past year, where only 2 in 15 observed teachers both demonstrated strong content knowledge and had adequate focus on science content in their lessons. Those two teachers had attended a Science Content Class addressing the content in the kit taught during the observations. It appears that the LSC has succeeded in increasing the teachers' confidence in relation to the science content, but much work remains to be done before teachers will be able to guide their students through an in-depth exploration of the science concepts included in the science kits.

3. Provide an overall rating and rationale for that rating.

**Program Rating: Deepening Teachers' Understanding of Mathematics/Science Content (2001–2002)**

1	②	3	4	5
Poor				Excellent

**Rationale:**

While the Preston LSC has high quality and extremely teacher-friendly science content professional development available (e.g., Science Content Classes), they are optional sessions and not highly attended. Only 12 % of the targeted teachers have attended a Science Content Class thus far. The mandated Introductory Kit Workshops provide only a superficial coverage of key science concepts, therefore the majority of teachers in the LSC schools are not receiving the disciplinary content knowledge that they need. This is supported by classroom observation data. Thus the Preston LSC is not deepening the understanding of important science content for most of the LSC participants.

**NOTE:** These examples *lack an overall statement of quality* and they *do not include a balanced integration of supporting evidence*. Furthermore, the rationale *simply repeats the narratives from other areas*.

## Sample Analytic Memo #2

### Key Function Area: Deepening Teacher Content Knowledge

2. Assess the quality of the design and the implementation of that approach by answering each of the following questions. Each of your responses should include an overall statement of quality as well as evidence to support that statement.
  - a. To what extent did the professional development highlight the key conceptual understandings underlying the designated instructional materials? Was the disciplinary content presented accurately and accessibly?

During Introductory Kit Workshops, the key science concepts in each lesson were pointed out to the teachers and then reiterated for the kit as a whole during session wrap-up. The Science Content Classes were of very high quality and are the key strength of the content portion of the LSC.

- b. To what extent was the disciplinary content addressed by the program matched with teacher needs? How did the project determine the extent to which participating teachers were in fact deepening their content knowledge?

Science content was mentioned to some extent in the Introductory Kit Workshops observed, resulting in a composite content rating of a 2 on a 5-point scale. The Science Content Class observed covered the key concepts in one of the kits in more depth, thus receiving a content rating of a 4 on a 5-point scale.

A number of teachers we interviewed did comment that they were now more comfortable teaching science as a result of attending the Science Content Classes. The following are representative quotes:

“Science was boring, now it’s exciting and I am involving the kids more. The science class I took helps me to answer all the questions the kids have and now I feel like I can answer them where before I was embarrassed that I couldn’t.”

“I’m doing more science with greater content.”

- c. Based on classroom observations (as well as other relevant data), what evidence is there that teachers have, in fact, deepened their content knowledge?

Thirty-eight percent of the teachers who returned LSC Teacher Questionnaires reported that their participation in the LSC has increased their science content knowledge to a great extent, another 42% said it had increased significantly, and 17% say it has increased some. Only 3% said it had increased little if any.

3. Provide an overall rating and rationale for that rating.

**Program Rating: Deepening Teachers' Understanding of Mathematics/Science Content (2001-2002)**

1	②	3	4	5
Poor				Excellent

**Rationale:**

During Introductory Kit Workshops, the key science concepts in each lesson were pointed out to the teachers and then reiterated for the kit as a whole during session wrap-up. The Science Content Classes were of very high quality and are the key strength of the content portion of the LSC.

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