TRN Profile Analysis
2001-2002
Elementary Science Profiles
Michele Koomen
January 15, 2003

Teacher 1: Mr. Jack Bean
Teacher 2: Ms Christine Cam
Teacher 3: Susan Kantor
Teacher 4: Vance Goodman
Teacher 5: Emily Brandon
Teacher 6: Jan Jannsen
Teacher 7: Lena Christianson
Teacher 8: Kelly
Teacher 9: Helga Helgeson
Teacher 10: Mr.

Inservice Teachers				
Name	**Grade level/ how many years**	**Location of school**	**Subjects taught**	**Specialty in teaching**
1. Mr. Jack Bean	Science to Grades 1-5/2 years	Urban-Private	Science	Science
2. Ms Christine Cam	4th grad/; 2nd year	Charter Public Urban	All	Science
3. Susan Kantor	5th/ 2nd year	Urban Public	All	Science
4. Vance Goodman	1st/ second year	Public-Urban	All	None specified
5. Emily Brandon	4th/2nd	Private-Suburban	All except religion & social studies	Science
6. Jan Jannsen	5th/3rd	Not specified	All except social studies	None specified
7. Lena Christianson	5th/3rd	Small metro public school	None specified	None specified
8. Kelly	3rd/3rd	Suburban-public	All	Language arts/communication
9. Helga Helgeson	3rd/1st	Urban, public	None specified	None specified
10. Mr.	Science/social studies for 3rd/3rd	Rural-public	Science & social studies	Science

Demographic Data						
Name	Size of class; gender division	Diversity of class	School size	Resources for science	Classroom arrangement	Distribution of teaching science
1. Mr. Jack Bean	Class 1 23 students, 12(m), 11 (f).	Class 1 All English proficient, all white.1 No disabilities	Class 1 400	Class 1 FOSS kits with associated materials	Dedicated science classroom- six tables- each with 4 chairs	Class 1 90minutes
	Class 2 23 students Not specified for sex.	Class 2: All white except 1 African-American student. No ESL needs.	Class 2 400 in school	Class 2 Activity based- McGraw Hill Text	Class 2 Dedicated science classroom- six tables- each with 4 chairs	Class 2 Not specified.
2. Ms Christine Cam	23 students, 12 (m), 11 (f).	10 students limited English proficient. Most students reading below grade level. 3 special ed students. 19 Asian students, two white, 2 African American.	Not specified	FOSS	Six tables with places for 4 students each.	Science is taught for 45 minutes, however emphasis of school is language arts and math.
3. Susan Kantor	28 students; 10(m), 9(f).	18 proficient in English, 10 have limited English. 4 students African-American, 12 Asian, 2 Hispanic, 8 white, 2 of mixed ethnicity.	600 students.	FOSS	Desks for students are arranged in clusters- students face each other in groups of 4-5.	Three times per week for 40 minutes – however no science was taught in the fall.
4. Vance Goodman	19 students, 8(m), 11(f)	All proficient in English. 5 African-American, 11 white, 3 of mixed ethnicity.	425- Students bused from all 10 districts to the downtown school.	FOSS	Student desks arranged in six clusters of four	Daily: Not specified for how long.
5. Emily Brandon	28students, 13(m), 15(f)	All English proficient, no ethnic mix- all white.	750	FOSS	Students sit 4 to a square table.	Three times per week for 45 minutes
6. Jan Jannsen	21 students; sex not specified.	Not specified	Not specified	Not specified	Pods; 4 student desks per pod	Not specified
7. Lena Christianson	23 students; similar numbers of girls and boys	Most Caucasian, with a few minorities- American Indian-- Hispanic. 40% of students have learning disabilities.	Not specified	*Discovery Works* by Houghton Mifflin	5 rows facing a white board in the front	3-4 times per week for 30-90 minutes.

Name	Size of class; gender division	Diversity of class	School size	Resources for science	Classroom arrangement	Distribution of teaching science
8. Kelly	23 students, 11(m), 12(f)	All English proficient, 1 speech impaired student. 10 students are gifted.	750	FOSS	U shape configuration with rows of 3-4 student desks in a row facing the overhead projector.	3-4 times per week for 1 hour each.
9. Helga Helgeson	24 students, 13 (m), 11 (f)	All Caucasian- all English proficient. One student developmentally disabled, one student learning disabled.	550	Silver Burdett- not specified the name of the series.	3 clusters of 8 student desks.	30 minutes per day each day in alternating five week blocks.
10. Mr.	24 students, 13 (m), 11(f)	1 student has a behavior problem, very little diversity in the school.	Not specifie d.	No text- teacher is responsible for creating the curriculum.	Not specified.	Daily for 50 minutes.

Key: M= male, f= female, ELL= English Language Learners.

Commonalities

Knowing Science/Math

1.1. Important Content

Commonalities:

A common thread between many of the teachers in this research study in terms of the important content is that it is implemented through the use of FOSS kits (Bean, Cam, Kantor, Goodman, Brandon, Kelly) (STOI-STII). In many schools it is the district that determines that the content is appropriate which may be through the district curriculum committees (Bean, Kantor, Goodman, Christiansen,) or school improvement committee (Cam) or assumed from authors of the FOSS kits (Bean, Cam) –(STOI-STII). In two cases (Mr., Helgeson) the teacher decides on the important content (STII).

Differences:

1. Lena Christianson does not feel that she has much of a say in what she teaches (STII).
2. Science standards mentioned only by Lena Christianson as part of important content determination. (STII).
3. Kelly stated that in terms of science that students should understand that science takes time. (STII).
4. Helga Helgeson: report does not indicate why she chooses her topic (solids, liquids, and gases) – M. Koomen observation.
5. Mr. (teacher 10) emphasizes practicality and relevancy in his lessons (STII).
6. Formal background in science was only noted in Kelly's profile-, which stated that she had one science course (STII in college).

7. Researcher for Teacher 6 Jannsen stated in the profile – that the teacher was in good command of the science content (MNSTOI).
8. Concern that what the students were learning was not from a "textbook", and might make middle school level science more difficult - Brandon- STII.
9. Activities judged to be more applicable to science process skills then science content- Kantor (STOI).
10. Science lesson was really a vocabulary lesson that prepared students for a test (Teacher 9: Helga Helgeson)– STOI).

Omissions:
Except for Lena Christianson's profile –there is no mention that Standards are used to determine the important content.

1.2. Accurate Content

Commonalities
Content determined to be accurate by the researchers (Bean, Cam, Kantor, Goodman, Brandon, Mr. --STOI).

Differences
1. Christianson: Profile indicated that this teacher did lack a deep understanding of the science content – this was evidenced to the researcher through the answering of student questions during the observed lesson (STOI). This particular teacher had relatively high scores (medium to high) on the STEBI in terms of self-efficacy.
2. Helga Helgeson: Researcher stated that most of the content was accurate – although in each lesson a few things were not (STOI).
3. In the case of teacher 10 (Mr.) the teachers stated that if students gave inaccurate responses – the teacher asked another question [of the class] to help clarify the misinterpretation (STOI).
4. Teacher 1(Mr. Jack Bean) was confident in ability to teach science, which was, supported in the STEBI results.
5. FOSS kit and materials helped to keep the content accurate (STOI-Bean)

Omission
Not stated in the profile whether the science is accurate: Janssen – Kelly

1.3. Appropriate Content

Commonalities
1. Content was judged to be appropriate because students seemed comfortable and understood the content (Bean –STOI, Cam- STOI), completion of tasks or feedback during teaching or observations (Kelly: STOI- STII).
2. Content was judged to be appropriate because it is recommended by FOSS (Cam-STII, Kelly: STII-STOI).
3. District deems that the content is appropriate: Brandon-STII, Janssen-STII, and Kelly-STII.

4. Conversations with other teachers help to determine whether the science content is appropriate: Brandon- STII.
5. Do not think about student misconception when designing or teaching a science lesson: Kantor-STII; Brandon-STII.

Differences

1. Content deemed appropriate – however- the lesson took longer than planned – Cam- STOI.
2. Chooses the appropriate content based on what she thinks that students are able to do or are interested in (Kantor-STII-STOI).
3. No evidence that the teacher selects curriculum outside of what she is required to teach and that is adopted by the science curriculum (Profile-Christiansen).
4. Teacher 9-Helgeson did make an effort to connect the observed lesson with the large unit that was being studied (STOI).

Omission

Except for teacher 6 (Janssen), Standards are not mentioned or evidenced in the profiles as being important in determining the appropriate science content for students. In the case of Janssen- it is only stated in the profile that the teacher was aware of the Standards-but did not have copies or use these documents (STII).

1.4. Science for all

Commonalities

1. All or most students were actively engaged or participatory during the observed science lessons: (Bean-STII; Cam-STII; Kantor-STII; Goodman-STII, Kelly-STII, Helgeson-STII-STOI.
2. Students were eager to answer questions during the observed lessons: Goodman-STOI; Brandon, STOI.
3. CLES data supported relevance of science content study to students lives in Christiansen, Helga Helgeson and Mr.

Differences

1. Teacher uses KWL charts to help her determine what she will teach- Kantor – STII; Goodman-STOI-STII.
2. Teacher (Bean-STII) stated that the science content keeps students of various levels of learning or learning styles on track –STII.
3. Cam-STOI-noted by researcher that the teacher tried very hard to keep all students on track-but was not successful with all the students.
4. Designs student cooperative groups so that students can help each other— Goodman-STOI-STII.
5. Does not use KWL chart – but does ask students if they are familiar with something before she/he teaches it (STII- Brandon).
6. Dose extends the science content based on student interest: Brandon-STII- solar system study.
7. Researcher described how Teacher 9- Helgeson- allowed students to vote, which indicated that science was for all –STOI.

Omissions
Christiansen: Not indicated in the report how she determines Science for all- however- it is noted (STII) that this teacher did allow students to choose which of two units of study they would do**.**

1.5. Understanding the Nature of Science

Commonalities

1. Science is about figuring things out, inquiry, or involves discovery: Cam-STII; Kantor-STII, Goodman-STII; Brandon-STII; Kelly-STII.
2. Science is hands-on: Bean-STII; Cam-STII.
3. Appropriate although limited understanding of fact, theory, and hypothesis: Bean-STII; Goodman-STII, Helgeson-STII. Janssen-limited understanding of a scientific law-STII; Christiansen-STII.

Differences

1. Sees the nature of science as a way of looking at the world in which we live: Mr.-STII.
2. Teacher was very interested in helping her students to understand the inquiry process rather than knowing that they (the students) were using inquiry- Brandon-STII.
3. Teacher felt that he did do inquiry experiments, but this was not supported by the researcher-STOI- Christianson.
4. Nature of science is a way of looking at the world- Teacher 10-Mr.- STII.
5. Teacher wants students to use scientific method and make connections- STII-Mr.
6. Cam stated that science is a different way of thinking from the other disciplines-STII. Stated that students thinking has been broadened- STII.
7. Teacher stated that students have the opportunity to do scientific inquiry when they do experiments- did not define what this is though- STII-Kantor.
8. The FOSS kits really help students to figure things out- Goodman-STII.
9. Stated that science is like an art- you have to study it, you have to understand various parts – it is an experimenting process- Kelly-STII.
10. Defined knowing about science as digging deeper- this is how science is different from other subjects-learning about science is a process- vocabulary is not as important as the ability of thinking and reasoning with kids-Kelly-STII.

Omissions
Writer (M. Koomen) notes that in all profiles there is no indication of what we mean in science by the nature of science – several profiles indicate inquiry- (not defined what this is though) but a common understanding of the nature of science is not indicated in the reports.

1.6. Curriculum Constraints and decisions

Commonalities

1. Curriculum planned by district, curriculum committee or grade level team, or by other teachers (i.e.-observed teacher has no input into the curriculum decisions): Bean-STII; Cam-STII, Brandon, STII; Janssen-STII; Christiansen-STII; Helgeson-STII; Kelly-STII.
2. FOSS is constraint: Goodman-STII; Cam-STII.

Differences

1. Freedom to make his own decisions: Mr. –STII.
2. Students not involved in curriculum design: Bean-STII.
3. Curriculum dictated by science standards: Kantor-STII.
4. Funds available for science: Bean-STII.
5. Time is a constraint: Kantor-STII.
6. Helgeson acknowledges that what she teaches is determined by the school district-however – she tries to make this interesting and authentic to student's lives- STII.
7. Feels support from peers- Mr.-STII.

Omissions

2. Knowing Pedagogy

2.1. Kinds of activities

Commonalities

1. Activity is hands on: Bean-STII; Cam-STII.
2. Science is more hands on- Kantor-STII- STOI; Goodman-STII; Brandon-STII & STEBI
3. STEBI (Kantor, Goodman, Brandon) and CLES (Kantor) results indicate that the teacher is comfortable and confident in teaching science.
4. Researcher stated in the case of Goodman, that students were observing, comparing sorting, and discussion (STOI); Brandon (STOI) comparison and observation.
5. Feels strongly that teachers can and do help students to learn about science (Brandon-STII-STEBI)
6. Wants students to look at things more closely: Brandon (STII); Kelly (STII).
7. Cooperative learning (Kagan) used in science teaching: Janssen-STII; Mr. (STOI); small group work with inquiry: Christiansen-STOI; Kelly-STOI.

Differences

1. Bean defined inquiry as coming up with a question, hands on activities, and students finding things out for themselves and designing the experiment. Liked FOSS kits because they had many open ended question. STII.
2. Cam described an activity as hands on- all science activities in science class were from the FOSS kits- STII.
3. Less certain that teachers can and do help students to learn science –STEBI-Goodman.
4. Does a lot of circulating in the classroom while the students are working- STII (Brandon).

5. Teacher relies heavily on teacher led discussions with use of student-conducted demonstrations-STOI-Christiansen.
6. Active learning defined as students being able to move around – Kelly- STII.
7. Utilized learning activities that engaged her students – Helgeson-STOI.

Omissions

2.2. Appropriate activities

Commonalities

1. Researcher judged activities to be appropriate: Bean-STOI; Cam-STOI; Janssen-STOI; Mr.-STOI.
2. Teacher assisted with activities as necessary: Bean-STOI; Cam-STOI.
3. Hands On Activities are viewed as important ways to learn: Goodman-PreSTOI; Brandon-STII-STOI.
4. Activities selected based on district criteria: Christiansen-STII.
5. Inconsistent data between the belief that the students have choice in design and management of learning activities (CLES data indicates that teacher has stronger belief than the students: Christiansen-CLES).

Differences

1. Teacher stated that she chooses the activities based on what the students might be interested in- Kantor-STII.
2. Selects activities based on how she thinks that the students will handle it (behaviorally speaking)-STII-Kantor.
3. Facilitates growth in social development through purposeful placement of students in cooperative learning groups-Brandon-STII.
4. Teacher included appropriate safety instructions- Janssen-STOI.
5. Main criteria in selecting an activity are students' prior understandings and her indication of how the activity will extend their knowledge: Christiansen-STII.
6. Christiansen feels strongly that if students do not possess the background knowledge that they should not do an experiment (M. Koomen notes- this is directly opposite my beliefs about inquiry): STII.
7. Teacher used FOSS kits, which are deemed age-appropriate-Kelly-STII.
8. Used the expertise of other teachers to help her identify whether and activity was appropriate or not-STII-Kelly.
9. Activities selected that were congruent to her learning goals. (Helgeson-STII-STOI) and were appropriate for the students-STOI-Helgeson.
10. Made real-world connections-Helgeson-STOI.

Omissions

Definition of an activity?

2.3. Kinds of thinking and discourse

Commonalities

1. Researcher rated that thinking/discourse as varied (part explanation, teacher asking questions): Bean-STOI; Christiansen-STOI.

2. Teacher was receptive and encouraging to student answering questions, ideas and discourse: Bean-STOI; Cam-STOI; Goodman-STOI; Brandon-STOI.
3. Students at their desks working, teacher circulated throughout the desks: (Cam-STOI).
4. Variety of tools used: Easel (Cam-STOI); blackboard, overhead-Bean-STOI; Cam-STOI.
5. Students read in science (text or FOSS): Bean-STOI; Brandon-STOI.
6. Questions from teacher a part of discourse: Mr.-STOI; Christianson-STOI. Cam-STOI; Kantor- STOI; Goodman-STOI; Brandon-STOI.

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Differences

1. Students sat at carpet around the teacher: Cam-STOI.
2. Students used a log to record procedures, draw conclusions, and log notes: Kantor-STOI; Brandon-STOI.
3. Uses the suggested essay questions from the curriculum exams for stimulating class discussions and higher order thinking skills: Christiansen-STII.
4. Students were encouraged to think about their own thoughts in observed lessons- teacher encouraged divergent thinking. Kelly-STOI.
5. Discussion almost entirely oral- students could vote (thumbs up/thumbs down). Helgeson-STOI
6. Students needed to justify their answers- Helgeson-STOI.

Omissions

Teacher 6: (Janssen) Discourse was not included in the report although the researcher did state that if the students read something in the book they did an activity to test it. “very little was taught by just reading and believing the book”. (Report).

How do we define constructivism- is this important for this section (M. Koomen)?

2.4. Teacher’s role

Commonalities

1. Demonstrated how to do activity: Bean-STOI; Kantor-STOI.
2. Managed and restored order as necessary: Bean-STOI.
3. Teacher led activity as a whole group: Kantor-STOI; Helgeson-STOI.
4. Teacher stated that her/his role was as a guide, to set direction or be a facilitator: Kantor-STII; Brandon-STII; Kelly- STII; Helgeson-STII.
5. Stated the teacher’s role was to figure out what students knew: Goodman-STII and wants to take them to a different level, Goodman-STII; Christiansen-STII.

Differences

1. Combination of an instructor while presenting the information and a guide while circulating the room: Bean-STOI
2. Teacher talked about the students varied roles for cooperative learning – however- only the getter in each group really did a job- Kantor-STOI.

3. Stated the teacher's role was to figure out what students knew: Goodman-STII and wants to take them to a different level.
4. Role is to introduce a topic and set them in the right direction: Brandon-STII.
5. Role in science is not that much different then in other areas: Goodman-STII
6. Teacher's role is a model and a leader in discussion – tried to get them to go beyond what they know: Christiansen-STII.
7. Teacher feels that she utilizes student's everyday or real life experiences (CLES data) however this data is not supported with the CLES from students. (However side note from M. Koomen-this is third grade-they may not have understood the question or tasks).
8. Teacher repeated student responses back to the class: Helgeson-STOI.
9. Teacher appeared to have spent ample time preparing and developing the supplemental materials to make the lesson a success: Mr. STOI, STII.

Omissions

Cam: Teacher's role omitted in the profile-M. Koomen

What about directions and instructions given out by the teachers – were these clear- do they affect how the learning occurs? (M. Koomen).

2.5. Assessments

Commonalities

1. Assessments made through observations of students and their participation during the lesson: Bean-STOI STII; Kantor-STII; Goodman-STII; Christiansen-STII & STOI; Mr. STII.
2. Assessments determined by students participation during the lesson: Bean-STOI; Cam-STII.
3. Assessments determined by students written, pictorial, or data responses during the lesson: Bean-STOI; Cam-STOI-STII; Kantor: STOI-STII.
4. Assessments determined by student's lab notebooks/journals Bean-STOI; Christiansen-STII.
5. Assessment is determined through student's completion of an activity: Cam-STII, STOI; (Hands-on activities- Goodman-STII; Brandon-STOI-STII.
6. Engagement of students in the lesson is a means in determining the assessment of learning: Cam-STII.
7. Assessment determined in part through conversations with the students: Brandon-PreSTOI.
8. Tests/quizzes contributed to the assessment: STII-Bean; Brandon-STOI-STII; Christiansen: STII; Mr. STII.

Differences

1. Tests/quizzes contributed to the assessment: STII-Bean; Brandon-STOI-STII; Christiansen: STII; Mr. STII.
2. Self-evaluation of students contributed to the assessment if learning: Bean-STII.
3. Used FOSS written assessments: Cam- STII.
4. Monitors groups and individual performances: STII-Mr.

Omissions

1. What is the purpose of assessment? Formative and Summative learning and assessment.
2. Teacher 6: Jan Janssen & Teacher 8-Kelly – not indicated in profile how they determined assessment.

2.6. Student learning

Commonalities

1. Is indicated by the researcher from the responses (participation) of the students and their actions: Bean-Profile; Kelly-STII.
2. Teacher indicated that students were meeting objectives [hence they were learning] through discussions at their desks- STOI-Goodman.
3. Teacher tries to understand student misconceptions before starting to teach or begin a new unit Cam- STII; Christiansen-STII.

Differences

1. Teacher gives a numerical grade: Bean-STII.
2. Students have to prove to the teacher that they have learned but it is not stated how they do this: Bean-STII and profile.
3. Uses morning meeting as a place to see if students have remembered and understood from prior days' lessons: Cam-STII.
4. Informal observations and test scores determine that learning has occurred: Christiansen-STII.
5. Journals, talking with students help teacher to determine if learning has occurred: Kelly-STII.

Omissions

Student learning not noted in report- Teacher 6: Janssen and Teacher 10: Mr. Helgeson- researcher indicated that this was a difficult area for her to assess- although the teacher indicated that she was pleased with the learning: STII.

2.7. External resources

Commonalities

1. Other teachers as resources: Cam-STII; Kantor- STII; Goodman-STII; Christiansen-STII; Kelly-STII; Helgeson-STII.
2. External resources judged to be good by the teacher: Cam-STII
3. Funds allocated for science through fund raising is a line budget item: Bean-STII.
4. Parents or other support (non-school) personnel: Bean-STII.
5. Principal/district supportive: Bean-STII.
6. Classroom assistant: Cam-STII.
7. Books/materials from FOSS: Cam-STII; Kantor-STII; Goodman-STII; Brandon-STII; Brandon-STII.

Differences

1. Teacher feels that resources are sufficient: Cam-STII.

2. Rarely uses the web as a resource: Brandon-STII.
3. Science methods courses in college: Christiansen-STII.

Omissions

3. Knowing students

3.1. Appropriate to students

Commonalities

1. Uses KWL charts to determine needs of students: Goodman: STII.

1. Aware that some or many students are below grade level and need extra attention: Bean-STII & STOI; Cam-STII.

2. Accommodates learner needs (ESL –mentally impaired) as necessary: Kantor-STII and Pre-STOI; Christensen-STOI.

3. Questions students to assess their knowledge: Brandon-STII; Janssen-STII, STOI.

4. Teacher and students do not agree on the CLES data regarding shared control: Janssen and Christiansen. Teacher feels that they allow for greater shared control than the data from the students indicates.

Differences

1. Knows his students – uses analogies and examples that they understand: Bean-STII.
2. Social issues are a big concern in her classroom: Brandon-STII-PreSTOI.
3. Teacher and students do not agree on the CLES data regarding shared control: Janssen- Teacher feels that he allows for greater shared control than the data from the students indicates.
4. Works with third grade teachers to help determine what is appropriate- Kelly-STII.
5. Researcher determined that the lessons were appropriate- Helgeson- STOI- made many connections to the student's lives in connecting concepts (STOI-CLES-STII.
6. Teacher 10- Mr. Material appeared to be meaningful and relevant to students (STOI and STII). CLES scores in relevancy were high 4.5

Omissions

3.2. Student's roles

Commonalities

1. Students eager or encouraged to answer questions from the teacher: STOI- Cam. Kantor, Goodman, Brandon.
2. Students could converse amongst themselves during the class time: Bean-STOI; Kantor-STOI
3. Students were observed to work deliberately and cooperatively: Brandon-STOI; Kelly-STOI – STII.

4. CLES data show that both students and teacher "share a common perception that science taught in his class shows a high relevance to the real world of the students and that students come to see that science is evolving and culturally and socially determined"- Janssen-CLES.
5. Students' role was active: Janssen-STOI; Mr.- STOI.

Differences

1. Mr. Bean's impression of the student's control of their learning was much higher for him then it was for the students (Mr., Bean 4.25, students 2.9).
2. STOI – Kantor: Students interacted with their partners –but were not on their own because the teacher had them in "lock step".
3. Teacher used a group spinner to make participation more random- STOI- Janssen
4. Critical voice for Kelly was a 5, for student's it was a 4.370. CLES.
5. Teacher 7: Christiansen- Teacher states that she gives her students the option to question her plans and methods of teaching science (her average in Critical voice was 4.75) but her students had an average of 3.5, with a standard deviation of .8. No indication in the two observed lessons that students were encouraged to express their opinions about the lesson (STOI).
6. Teacher very deliberate and used sufficient time in giving instructions: Cam-STOI.
7. Teacher encouraged students to speak and ask question: Cam-STOI.
8. Students conducted observations and investigations- Goodman-STOI.
6. Lessons observed were very teacher directed: Helgeson-STOI.

Omissions

3.3. Management of social aspects and behavior

Commonalities

1. No problem with classroom management: Goodman-STOI; Brandon-STOI; Kelly-STOI; Mr.-STOI.
2. Teacher tries to get all involved in the lesson: STOI- Bean, Helgeson, Cam, Brandon.
3. Encourages students while they work together: Kelly-STOI; Helgeson- STOI, Cam- STOI.

Differences

1. Mixes lower and higher ability kids together, spreads out ESL students- Cam and Helgeson, -STOI-STII.
2. Encourages other to respond: Cam-STOI-STII.
3. Does more whole class teaching because of chatty students: Christiansen-STII.
4. Lesson was emotionally safe for students: Helgeson-STOI.

Omissions

4. Learning Environment

4.1. Management of physical facilities

Commonalities

1. Desk and table arrangement allows for safe traffic flow and is well managed: Bean-STOI; Cam-STOI; Kantor-STOI; Goodman-STOI; Janssen-STOI; Helgeson-STOI, Mr. –STOI.
2. FOSS kits, materials stored for easy access: Bean-STOI; Cam-STOI; Kantor-STOI; Goodman-STOI; Brandon- STOI; Janssen-STOI; Helgeson-STOI, Mr. –STOI.
3. Student desks arranged in pods or small groups: Goodman-STOI; Janssen-STOI; Kantor: STOI.

Differences

1. Students stayed in their own seats for most of the two observed lessons: Christiansen- STOI.
2. Changes seating arrangement every month- Kelly-STII.
3. One bulletin board devoted to science: Brandon-STOI.
4. Group discussion and work areas are separate- Goodman-STOI.
5. Tables and arrangement changed in rooms as necessary for behavioral management: Kantor-STII-STOI.

Omissions

4.2. Physical safety

Commonalities

1. No safety concerns in any of the observed lessons- all 10 teachers-STOI.
2. Science rules posted: Bean-STOI.
3.

Differences

1. Only one student brings or puts materials away: STOI- Brandon.
2. Teacher went over safety rules: Kelly- STOI.
3. Helgeson- Teacher very conscientious of open flame, had additional parental help in the room during the investigation- STOI.

Omissions

5. Professional Development

5.1. Self reflection

Commonalities

1. Evidence that teacher was reflective: STII- Post-STOI: Kantor, Goodman, Brandon, Christiansen, Kelly, Mr., Helgeson.

Differences

1. Modifies her teaching to fit the needs of her students: STII- Christiansen.
2. Science methods instructor in college and the science methods course in particular have been very influential to her as a teacher of science: Helgeson-STII.

3. Referred to outside research that he did to improve his teaching: Mr. –STII.

5.2. Professional development

Commonalities

1. Working or completed a Master's degree: Janssen- STII; Kelley-STII; Christiansen- STII; Mr.-STII.
2. Attended workshops or MNSTA in science: Kantor-STII; Bean-STII
3. Attend professional development although not in science: Cam-STII, Goodman-STII, Brandon-STII; Janssen-STII; Helgeson-STII.
4. Teachers in building are resources: Kantor-STII; Cam-STII; Brandon-STII.

Differences

1. Used Web sites (Science Masters): Bean-STII;
2. Member of professional organization that are not science: Janssen-STII.

5.3. Resources and support communities

Commonalities

1. Reads background information from FOSS: Kantor, Goodman, Brandon, and Kelly – all STII.
2. Support at schools: mentors, (Bean, Cam), other teachers in school (Goodman, Christiansen, Kelly, Helgeson), principal (Bean, Cam), parents (Bean), science support personnel (Kelly)- all from STII and or Post-op STOI.
3. Internet: Brandon, Goodman- STII.
4. District for supplies and kits- Christiansen, Bean – STII.

Differences

1. Rarely uses the Internet- Brandon- STII.
2. Read books and magazines regarding teaching- Brandon- STII.
3. Knows about MNSTA – but has not attended: Cam-STII.

Omissions

Janssen- support not indicated in reported profile.

Pie Chart:

Teacher 1: Mr. Bean- Pie chart: 45 % of influence is from teaching, 25% from undergraduate college courses, 10% to his work with other junior high school teachers. The rest was split between school development workshops, MNSTA events, books, journals, and the web.

Teacher 2- Cam-Pie chart divided into 7 pieces: life and family experiences gave her the curiosity, college classes, high school classes, FOSS kits, and her own teaching experiences and professional development.

Teacher 3- Kantor- Pie Chart: Classroom experience accounts for 80% of relative contributions.

Teacher 4- Goodman- Pie Chart: Stated that 60% of contribution is from working in a nature area. This helped him to teach science in a constructivist way.

Teacher 5- Brandon- Pie Chart: Relative contributions thus far to her teaching, classroom experience 25%, and college 25%. The remaining 50% included books, workshops, discussions, with other teachers, FOSS kits, and student teaching (STII).

Teacher 7 – Christiansen- Pie Chart Teaching experience has contributed 70% to her development as a science teacher. (STII). College education and science methods courses are 20%, 10% to her co-workers,

Teacher 8- Kelly: Pie chart: 60% based on materials, district guidelines, previous experience, 30 from colleagues, 10% from college work.

Omissions:
Janssen, Helgeson, and Mr., did not do the pie chart.

Summary and Conclusions

What really stands out?
Knowing Science

FOSS kits are found in many classrooms – the kits help to define the appropriate and the important science content in many cases. In many schools the district also determines the content, however, it is not specified how the details regarding the important or appropriateness of the content are determined by the school district. Few teachers note that the science Standards are used in determining the content for science teaching (this is generally just omitted from the report). In only two cases did teachers decide the important or appropriate content. Content was judged to be appropriate. In most cases – the content was also judged to be accurate.

Knowing Pedagogy

Hands-on learning was evidenced in many of the observations. Many of the obsessive lessons also used some form of cooperative learning.

Knowing Students

In many of the observed lessons students were eager to participate. Classroom management was not a problem in the classroom observations of the science teaching lessons.

Learning Environment

Safety was not a concern in any classroom. Classroom management was evidenced – with very few behavioral problems noted in any profiles.

Professional development

Relatively little direct science teaching or learning professional development by any participants. Teachers relied on colleagues at their school for assistance or clarification where needed in most cases. Four teachers were working on or had recently completed a Master's.

Elementary Science Profile Writer Analysis Comments and Suggestions (From Michele Koomen):

The research from the Teacher Research Project Network for SCI/Math MN is noble and important. I believe that the researchers whose reports are the foundation for this analysis (including my own) have compiled their reports with integrity, professionalism, and reflection. If this study is to be of real merit in the description of the research in math and science and contribute to our knowledge as professionals, I believe that it is paramount that the research and description of the research (Profiles, Analysis, and other reports) are done with greater consistency. I believe that there continues to be a critical need for a more standardized format in the development of the profiles in particular. The Profile Reports are done using the categories that we have described: Context, Knowing Science/Math, Knowing Pedagogy, Knowing Students, Learning Environment, Professional Development), however, the description in each of these sections remains inconsistent. Some writers have included the categories and all the sub categories, while others have not. Some research writers have only written a narrative with a great deal of information left out. Documentation is much, much better from the math analysis I did for another year; however, this needs to be consistent and detailed throughout every report.

I also advocate that the TRN Program Managers develop definitions for some very key terms: pedagogy, constructivism, activity, hands on - to delineate a few.

I also believe that the interview itself, while not needing to be scripted, should have be semi-structured with the same general questions asked of all participants.

Being picky – writers should be sure to include a key for any abbreviations or acronyms that they use (Y-chart in one case in this analysis). It may be assumed they the acronyms used is understood and common knowledge – but – this is not always the case.

Finally – it may be helpful to use qualitative coding software for authors of the profiles. A program such as EnVIVO (this may be a spelling error) could be set up to code certain language into categories. It would be very helpful when one is writing the profiles to streamline the work – and would allow for fewer omissions of perhaps important evidence.

Michele Koomen
January 15, 2003