

**SciMathMn
Teacher Research Network
Analysis of Elementary Mathematics Profiles
1999-2000**

Summarizer notes:

- A form of content analysis was utilized to summarize the data from the four profiles available. It is obvious that any conclusions drawn from the small number of profiles provided is tenuous at best. Hopefully we will have more profiles to work from in the coming years.
- I decided to summarize the subsections determined by the TRN last year. The format is 1) General conditions; 2) Knowing Content; 3) Knowing Pedagogy; 4) Knowing Students; 5) Establishing Environment; and 6) Developing as a Teacher. A conclusion follows these six sections that attempts to identify overall themes that emerged from the analysis. Within each of the six sections the impressions of pre-service teachers and in-service teachers are described, followed by a brief section summary.
- Also, thanks to the reviewers for their insights into my 1st draft. I agree with their conclusions, particularly that the summaries needed to be redone in light of my overly subjective conclusions.

1) General conditions:

Pre-service:

Two pre-service teachers participated in this study at the elementary mathematics level. One was in a semi-rural setting and the other in an urban setting. It was reported that the rural setting had very little diversity, while the urban setting was reported to have significant cultural and individual (LD, EBD, Gifted Talented) diversity. Both classrooms displayed non-traditional seating (not in uniform rows) for students with faculty that appeared to promote group work and student-to-student interaction. Resources appeared to be readily available in both classrooms. These included some science kits, centers, and other instructional materials. One room had three computers. No mention of computers in the other room.

In-service:

Both in-service teachers had classrooms in urban settings with diversity that was apparently consistent with the urban setting above. Both classrooms exhibited seating arrangements as indicated above. Resources appeared to be readily available in both classrooms. These included some science kits, centers, and other instructional materials. Again, one room had three computers, the other had a computer at the teacher's desk.

Summary:

From the limited data collected, conditions for all classrooms varied to an extent. Computer access was different. All the rooms appeared to have resources available that related directly to math instruction. Science kits were observable in two rooms.

2) Knowing Content:

Pre-service:

Teacher 1 appeared to have a meager math background. Seemed very committed to “real world” applications of the content being covered. It appeared that the teacher might have been too focused on relevancy and not enough on necessary content and the students’ needs with regard to content as indicated by the observer. The observer noted that teacher 1 relied heavily on the text for instruction, content and guidance, and mentioned that he needed to “look in the book to discover what the four steps in solving a word problem” prior to teaching it to the kids. Still the observer noted that teacher 1 appeared motivated to bring relevancy to the curriculum and meet student needs.

Teacher 2 appeared to have a strong math background and attributed this to her science preparation. Used many resources to determine necessary content to be covered. Exhibited good decision making when given freedom to choose curriculum for class. Made many interdisciplinary connections as observed and as indicated through her interview. Her prior knowledge and use of resources appeared to contribute to the appropriateness and accuracy of her lessons.

In-service:

Teacher 1 here had a very limited content background in math. Displayed poor understanding of mathematics in front of the class and misrepresented the algorithm for division as noted by the observer. She determined what to teach by “grabbing the book, reading it, thinking about it, Then I think about what I have to do to teach those that don’t get it from the book.”

Teacher 2 has a math specialty in her elementary licensure preparation and displayed a solid understanding of mathematics. She indicated that her third grade team assesses students in math at the end of their 2nd grade year, and makes curriculum decisions based upon those needs. Much reference to developing units, lessons to enhance student involvement.

Summary:

One on the pre-service and one of the in-service teachers had limited background in mathematics. The remaining two teachers showed solid backgrounds.

2) Knowing Pedagogy:

Pre-service:

Teacher 1 exhibited less competency in the pedagogy realm with his students. He seemed to be aware of different strategies for teaching, but unable to utilize them in math class. This teacher indicated that he wanted to be a facilitator of learning but indicated that he felt he failed and ended up “just ordering them around.” Teacher I also indicated that he did not like evaluations developed by the textbook company, but mentioned that he didn’t know what the alternatives were.

Teacher 2 allowed students to explore, utilized good questioning to promote learning used multiple assessments and multiple resources. Believes that students learn best when having to work through concepts. She mentioned that “It means a lot more to students if they can just figure something out on their own, or with friends”. She also indicated the use of alternative assessments during her teaching experience.

In-service:

Teacher 1 restricts pedagogy to that which supports classroom management As indicated, She “doesn’t do much with this group because of their behavior”. That appears

to be her primary concern. Lecture is the primary strategy utilized. Students are controlled. Teacher indicated she “moves” around more in math than other classes. She uses textbook publisher generated assessments. Very teacher-centered classroom: “students do not play a role in my planning. Division is division. It doesn’t matter much what the student thinks.”

Teacher 2 has similar students and is a first year teacher (teacher 1 is in the 2nd year of teaching). This teacher appears to be innovative, trying new things, varied activities, and assessments. Students seem to respond well. She uses a variety of assessments, some which are created by her students. She uses assessment to help her design curriculum to meet student needs.

Summary:

One of the pre-service and one of the in-service teachers had limited backgrounds in mathematics. They also exhibited traditional pedagogy knowledge (predominately lecture format). The remaining two teachers had more variation to their pedagogy, including multiple assessments and use of multiple activities.

4) Knowing Students:

Pre-service:

Teacher 1 seemed aware of student perspectives and backgrounds on topics being covered and attempted to plan to meet their needs. The observer saw this teacher reinforcing this within the classroom. Teacher 2 had a student-centered classroom with centers. Seemed very aware of individual student progress, and was comfortable engaging students in activities that were appropriate. She was also comfortable allowing students to explore concepts with each other while she listened. She also exhibited flexibility within lessons as initiated through her awareness of the students.

In-service:

Teacher 1 remained consistent in the focus on student behavior. Did not seem concerned with their learning as much as controlling their behavior. Teacher 2 exhibited excellent planning to meet individual student needs. Developed developmentally appropriate lessons with varied and appropriate assessments.

Summary:

Three of the four teachers had appropriate knowledge of students. In-service teacher 1 had a predominate focus on student behavior (and controlling that behavior).

5) Establishing Environment:

Pre-service:

Not much data here. Both teachers utilized flexible seating and promoted student to student interaction. Centers were used and student to student interaction encouraged.

In-service:

In-service teacher 2 had much the same conditions as the pre-service teachers. In-service teacher 1 promoted little dialogue and student to student interaction.

Summary:

The environments were safe in all classrooms. Three teachers appeared to have more flexible environments, while in-service teacher 1 appeared to be more traditional.

6) Developing as a Teacher:

Pre-service:

Teacher 1 was very reflective on his current and future teaching. He could not identify future professional growth or resources. Pre-service teacher 2 was not able to reflect on her teaching. She had participated in two math conferences, joined three professional organizations and was planning on further development in the near future.

In-service:

Teacher 1 displayed little reflection unless it had to do with student behavior. She counted in-service days for continuing education credits. Teacher 2 thought reflection was vital to her growth. There was no involvement in further professional development, but this teacher could identify future resources such as professional magazines.

Summary:

Pre-service teacher 1 and in-service teacher 2 were able to reflect productively on their teaching. Only pre-service teacher 2 was involved in outside the school professional activities.

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