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Part 2: Amended Field Notes

Research Topic: Seek to discover and understand the experience of teachers when they use Smart Board for their math lessons.

Subjects: One teacher, Mrs Lynne Townsend (email: ltownsen@hcsd.k12.ca.us)
20 students in a 5th grade class

Location: 5th grade classroom in South Hillsborough School
303 El Cerrito Ave, Hillsborough, CA 94010

Time: 1.00pm – 2.00pm (Math Lesson)

Observers:
1. Yeong Haur Kok
2. Sherwin Cheng
3. Yuen Mei Liu
4. Laura
5. Mrs Jane Fletcher (Principal of South Hillsborough School)

Background:

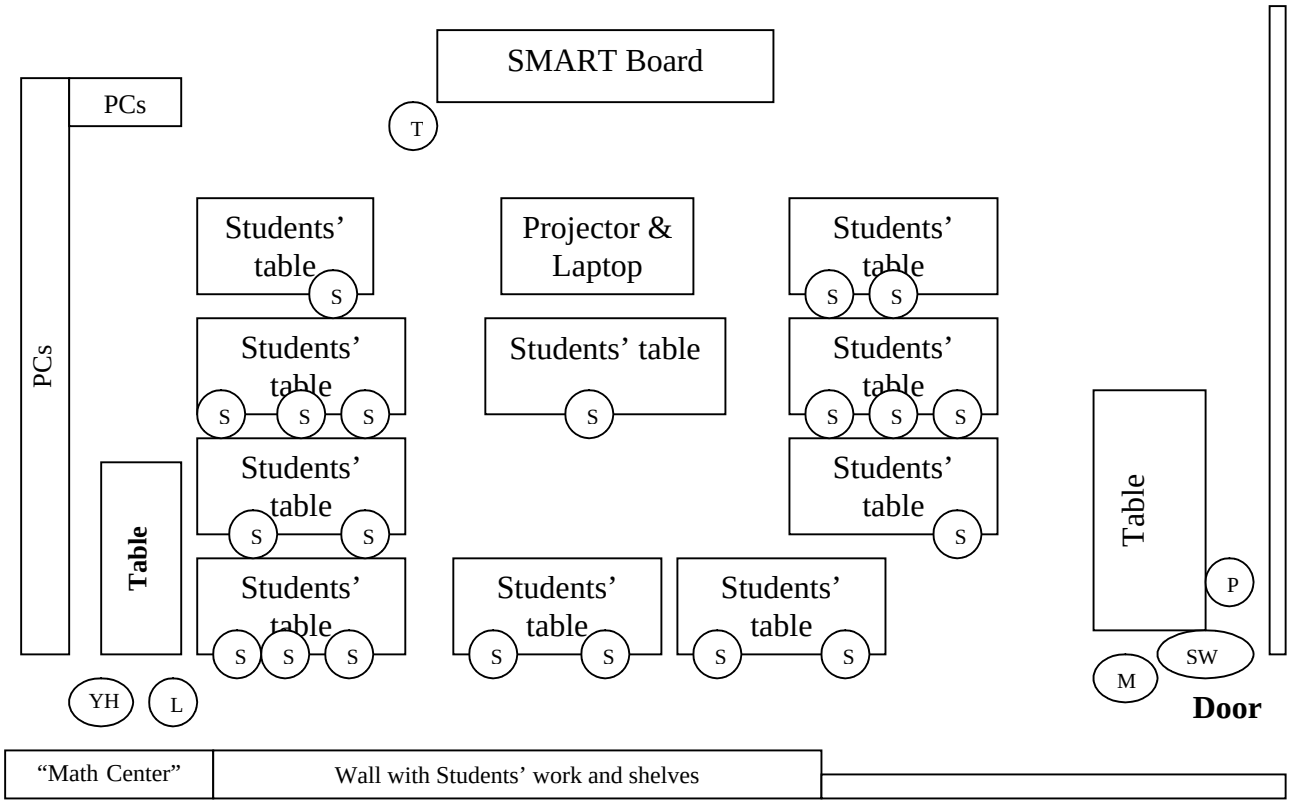
South Hillsborough School is one of three elementary schools serving the children of Hillsborough, California. Set by a creek in a lovely wooded area, the school serves K-5 children and has an enrollment of 285 as of October 2006.

Students are drawn primarily from upper class homes in the district. Parents and the community have been generous in supporting the school, donating time, effort and money. In 2004-2005, the combined Hillsborough School Foundation and the Concours d' Elegance raised $3.1 million dollars through the annual campaign for the 2005-2006 school year to further enhance the excellent educational programs.

The school recently purchased interactive whiteboard systems, the SMART Board to further support the teachings and to enhance the lessons. The use of the Smart Boards is actively encouraged by the School Principal. One such lesson, which involved the use of the Smart Board in a 5th grade math lesson, is the subject of this observation.

Environment:

The classroom is a spacious learning environment located in a bunker-like building with the following general layout:



The SMART board is mounted on the wall at the center of the classroom, with the projector and laptop laid on a small table about 1.5 meters away. There are about 10 student tables, with each table accommodating one to three students. Behind the tables are spaces where the students can put books. To the left of the classroom are rows of PCs (about 7-8). At the bottom left corner is a "Math Center" which stores all the math manipulatives, board games, puzzles, tangrams and other learning materials. Displayed on the wall at the back of the classroom are some of the students' work. Shelves are provided below the displayed work for students to keep their things. Finally, to the right of the classroom is a long table with some accompanying chairs.

The classroom is rich in colors, with the walls adorned with many colorful posters and pictures. There were many books and book shelves at the top right and bottom (with reference to diagram) of the room.

The starting and primary locations of the observers and the teacher, Mrs Townsend are indicated by the circles in the diagram (YH:author, L:Laura, M:Mei, SW:Sherwin, P:Principal, T:Teacher – Mrs Townsend); students are seated at the locations indicated by circle S.

Activity:

The session began at 12:55 am with the teacher, Mrs Townsend, starting her lesson by asking the students if they remembered what they learn about angles in the previous lesson.

(OC: This seems to be the way the teacher normally begins the lesson as the students seems well-prepared and ready to answer the teacher's questions on the previous lesson)

She asked the students to think back about what are the things they learn about angles. After some students responded with answers of "Obtuse angles" and "Acute angles", the teacher proceeded to draw an obtuse angle on the SMART board (hereafter referred to as board) and ask a boy, Conner, to name the angle drawn.

Conner went up to the board and used the marker to write on the board but nothing appears. Conner then said the board is not calibrated yet. Upon hearing this, the teacher asked Conner to go ahead with calibrating the board, which he did. After calibration, the board worked successfully, as Conner wrote the words "Obtuse angle" on it. Conner then returned to his seat.

The teacher followed up immediately asking the class how many degrees is this angle, to which the class answered in a chorus "Greater than 90 degrees." The teacher went on to restate what are obtuse angles ("angles which are greater than 90 degrees"), before moving on to parallel lines, perpendicular lines, obtuse angles, acute angles and line segment. Throughout this sequence, students managed to answer the questions correctly.

(OC: The fact that the students could give the answers fluently suggests that these might be the topics that the teacher taught in the previous lesson.)

(OC: The students are very responsive and spontaneous; this could be due to them being conscious that there are five observers – four of us and the Principal – observing the lessons).

(Time: 1.00 pm)

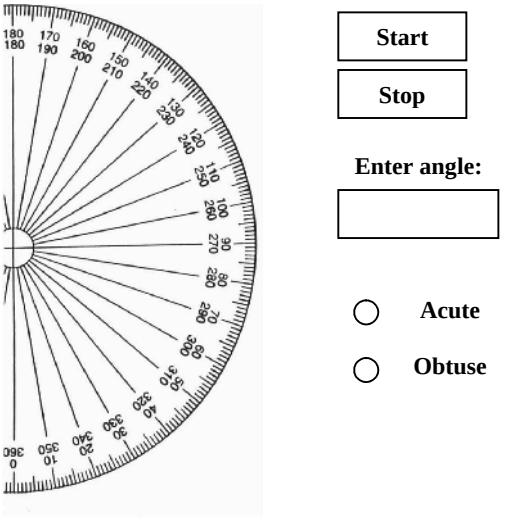
The teacher moved on to triangles by drawing a triangle on the board. (OC: the Δ looks equilateral) She then asked "What triangle name is that?" The students responded with "It is equilateral" (OC: this is puzzling: how could the students have known that the Δ is equilateral? Perhaps the students learned this in the previous lesson and hence, anticipated what the teacher was going to ask already.)

The teacher proceeded to draw double lines on each side of the triangle drawn earlier (OC: This is to indicate that all three sides are equal in length, i.e. the Δ is equilateral) and then she asked if the three sides are equal, to which the students answered yes. (OC: With reference to earlier comment; I thought the double lines should have been drawn first before asking students what triangle is it. Perhaps this suggests a little nervousness on the part of the teachers due, again, to the presence of the observers.)

At this time, the lesson was interrupted when a young lady (OC: we suspect she is a teacher because the Principle, teacher and students clearly know her and seems to be expecting her) knocked on the door and signaled to the teacher and some students at the back of the classroom. The teacher replied: (rephrase) "those students who need to leave now may do so". Four students stood up, packed their things and left quietly. (OC: Earlier before the observation, the

teacher did mention to us that sometime during the lesson, four students need to leave early for some other activity)

After the lady left, the teacher continued with her lesson. She used the board to write out the sums of the angles in a triangle is equal to 180^o. After stating this to the class, the teacher moved to the next segment of the lesson by using the board to "drag" out a protractor. (OC: A general screen shot of the board at this part of the lesson is shown below)



The teacher asked one of the boys, Preston, to come out to try this protractor. Preston took the pen (OC: the pen is a special marker used in conjunction with the SMART board) from the teacher and hit the "Start" button repeatedly but to no effect.

Preston then used his finger instead, and it worked. He then marked the checkbox for the "Acute" at the bottom of the board and after that, touched the protractor to set it "animating" (OC: This means a line will appear from the top of the protractor, starting with an angle value of 0^o, then slowly increases, moving to the bottom of the protractor).

Before the line hits 90^o, Preston hit it again to stop it from moving. The board then indicates the word "INCORRECT". The teacher and the other students asked him to try again. Some of them gave some suggestions, but these suggestions were not heard clearly due to everyone speaking at the same time.

Preston reset the animation and tried the exact same steps again, and to the same effect. For the third attempt, Preston pressed "Start", then stops the line when it exceeded 90^o, then chose "Obtuse" checkbox but again the board showed "INCORRECT".

The teacher then suggested to Preston to read the instruction which is located on the top left corner of the board. At this stage, the class started to get excited and eager and many raised their hands, saying they want to try.

Preston looked through the instruction (OC: Not sure if he really read them considering the short time he took) and tried the same exact steps again, this time choosing "Acute", and again "INCORRECT". Now, the teacher allowed another boy, Brent, to go up to try. At the same time, the teacher said to the whole class that they should try to figure out how this animated protractor works together.

(OC: The fact that the teacher allowed Preston to make the same mistakes so many times (four) suggest that perhaps the teacher herself was not sure of the problem)

As Brent was starting, one student said that they need to enter the value of the angle. At this stage, Brent had hit "start", started the line going and stopped it. Brent tries to read the value indicated by the protractor on the board but he seemed unable to read it as he moved his face closer to see it clearly. Another student shouted "Zoom in!" Brent then hit the protractor to zoom into that particular part of the protractor where the line stopped. This time, he is able to read the value correctly. However, as he tried to write the value on the board with his finger, the

board does not recognize it. Seeing this difficulty, David, a boy who has been seated in the front central table with the laptop, said to Brent that he will enter the value for him by using the laptop. After David typed in the value from the laptop, Brent marked the "Acute" checkbox and this time, the board indicated "CORRECT". The whole class clapped.

(OC: David seems to be very adept with the system; it could be that he is a class technical assistant of some sort based on the fact that he is entrusted with sitting at the laptop which controls the board)

(OC: Even taking into account the effect of the observers, the class enthusiasm and eagerness to solve the problem of the animated protractor was genuine. It seems to indicate that the teacher has cultivated an environment where students are encouraged to give their feedback and help one another. It also shows a genuine, keen interest of the students in the board)

At this moment, the Principal (Mrs Jane Fletcher) stood up and said to the class that it was good that everyone was trying to figure how the thing worked together. "Great example of group cooperation!" she said.

(Time: 1:10 pm)

The teacher now moved on to the "movable protractor" (a protractor which can be shifted around different areas of the board simply by dragging) and asked the students to take out their math template. (A picture of which is shown below)

After the students did that, the teacher asked them to look at their templates and see what they observe. At the same time, the teacher asked a girl to come to the front to take 2 sets of worksheets (a copy of one of which is attached with this paper) from her and help distribute to everyone. The girl followed the instruction – got the worksheets and, with the help of another boy, went to put the worksheets on everyone's table, including the four who left the class earlier.

(OC: I was wondering - asking two students to distribute the worksheets while explaining to the class about the template: how would the two students be able to listen and give out worksheets at the same time? The teacher did not seem to be much bothered by this)

While this was going on, in response to the teacher's question on the template, a girl, Fernicia, was asked by the teacher what she observed, and she said "Goes by tens"

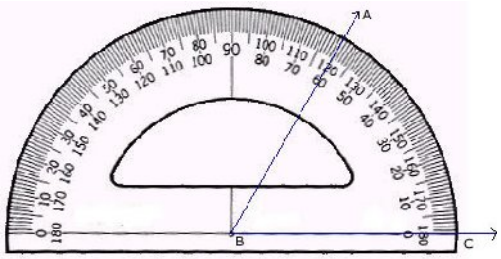
Another boy, Zach, answered "There are two numbers!" (OC: It is most likely he is saying there are two sets of numbers – two sets of numbers, top and bottom, are printed on the curved side of a protractor). The teacher said "Ha! There lies the problem! Does it confuse you?"

(OC: Is this a typical strategy? Of confusing students or having the students work through and encounter difficulty on their own before showing them how to do it?)

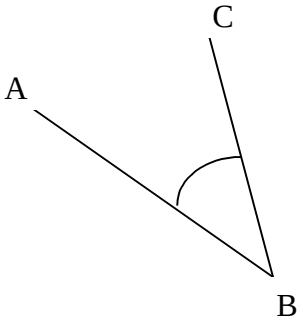
The teacher "flips" the movable protractor on the board to a horizontal orientation (OC: Presumably so that the values on the protractor could be seen) and asked a boy why are there two sets of 0s to 180s. (Diagram of protractor shown below for easy reference)

Zach then said “So you could measure going different ways!”

To which the teacher replied “We’re going to practice that!”



The teacher switched to “Measuring Angles” on the board, which shows a series of angles formed by two lines – some obtuse, some acute. The teacher proceeds to mark letters on one the different points of the two lines forming the angle. (See diagram on left). She then asked whether this angle is BAC?



A student answered it is not.
The teacher asked “Why not?”
The student answered “Because B has to be in the middle.”
The teacher explained to the whole class, telling them it could be angle ABC or CBA but not BAC.

The teacher now dragged out a protractor from the side bars on the left of the board to measure the various angles on the screen. She tries to position and orientate the protractor to align it with the two lines that formed the angle (so that she could measure it) but the protractor did not respond very well.

At this time, David (who is seating at where the laptop is) tried to help the teacher by using the laptop to control the protractor. The Principal gave encouragement “Go for it, David!” While David was using the laptop to try doing that, the teacher stood on the left side of the board and gave encouragement to David. When David managed to orientate and align the protractor later, the teacher said “I’m so proud of you! That’s why I have you as my *master* assistant!” (OC: The second last word was not heard clearly, might not be the right word) The whole class clapped.

(Time: 1:15 pm)

The teacher now gave instructions regarding the worksheet, focusing on the first page where they are supposed to state the value of the angle based on reading from the protractor. Then, the teacher asked a boy, Ben, to be the Math Helper (OC: Presumably, they have a system of peer assistance, where the better ones are called ‘Math Helper’ who will go round to assist other weaker students). But Ben replied “I’m a little shaky” A girl, Natasha was called instead to be the helper. At the same time, Zach was called by the teacher to measure the angles on the board, using the interactive protractor.

(OC: The teacher did not ask further when Ben mentioned that he was “a little shaky”. She simply brushed off his remark. Is this her typical response? Did she usually expect some students to have problems and expect them to resolve them on their own eventually?)

The next few minutes, the students worked on the worksheets. At any time, besides the teacher, there were about two or three students who go around helping others. The Principal also stood

up and walk around. Zach, meanwhile, was working to measure the angles on the board with occasional help from the teacher.

(OC: I was wondering - why did the teacher have Zach to continue working on the board while the rest of the class was working on the worksheet, especially when the problems on the board were not gone through later. Would it be better for Zach to return to his place and start on the worksheet?)

(Time: 1.20 pm)

Teacher asked students to stop work for a while, counted one to three to focus everyone's attention. Teacher told the class the need to align the protractor on their template with the horizontal line, in order to measure the angle. After that, she asked the class to try.

One boy, Shawn, went up to the teacher to ask her something by using an example on the board using the blue marker to draw on it. Shawn then asked the other angles to be measured.

The teacher then said for the next page of the worksheet, they need to draw the angle.
At this time, the teacher goes around the class to check the students' individual progress. A girl, Natasha, made a remark "you can use the little space on the template!" (OC: She was referring to how you can use the cut-out part at the bottom of your protractor to measure angles easily). The teacher echoed Natasha's finding with the whole class.

(Time: 1.25pm)

It was observed that compared to earlier part of the lesson, this time now the students were very quiet working on their worksheets. However, it was seen that some students were able to answer the questions fast, moving on page 2; while there are also a few who is struggling to answer them. There are now not many Helpers walking around; only the teacher is walking from table to table, checking on students' progress.

(OC: Description of worksheet – page one on stating values from protractors printed on the paper; page two on measuring angles using students' own math template)
(OC: It was obvious that some students are having difficulty doing the questions on the worksheet, but the teacher did not seem to take much notice of that)

It was clear that the students were on different pace; there are two or three who were looking around for help.

Students continue to work quietly. Once David shouted the answer for one of the questions; to which the teacher replied "You're thinking out loud, Dave"
(OC: This suggests that worksheets are meant to be done individually, and students are not supposed to shout out the answers like that)

Dave kept quiet after that.

While the students were working, the teacher came over to the two observers – Laura and YH, and showed them the "Math Center" (a corner with the math learning manipulatives). She showed them the manipulatives and the "FlashMaster". She also explained the math-related games available on the PCs located on the left side of the classroom.

Wanting to show Laura and YH the PC games, the teacher asked one girl, Stephanie, to come over and launch the game on one of the PC. Stephanie came over and start up the PC, went to the relevant websites. She opened up a game called "Factor Captor" for us to see. Sherwin and Mei also came over to take a look.

(OC: I was surprised to find the teacher come over to talk to us and show us the many resources they have. My impression is that the teacher seemed to be quite concerned about our observation of her lesson; our portrayal and interpretation of what goes on in her lessons. She seemed very conscious and mindful of our presence, and I wondered to what extent our presence affected her lesson – the degree of typicality and representation of what we just observed.)

(Time: 1.35 pm)

The teacher gathered everyone's attention and gave three instructions:

- Completing the worksheet (OC: As homework? Not heard clearly)
- Put the 2nd worksheet in their math folder
- As part of their usual Friday sessions, they can spend the remaining time either playing Othello, chess, matella or PC math-related games.

(OC: As the teacher explained to us later, this is a Friday special – kids get to play their favorite game from the list given)

(OC: I was wondering – no summary of the important things learned in that lesson before letting the students off to play their games? What about the difficulties some students have regarding the worksheet?)

7 boys went to the PCs; while the others went to the Math Center to take out their games.

The teacher got the four observers to come together at the table on the right, where the Principal was sitting, to discuss the lesson and feedback. The teacher explained to us about giving the kids time every Friday, toward the end of the lesson, to play their favorite learning games or learning-related PC games. According to her, the rationale was twofold – to reward them on the last day of the week, and it serves as a 'free time' for her to check on the progress of specific students whom she thinks might have problems. The teacher also showed us some of the students' folders, which contain math worksheets and handouts.

Mrs Fletcher, the Principal, also shared with us and the teacher, her own observations of the lesson and what she thought were the good things and the areas to improve.

(OC: This is the second time the teacher gathered us to 'explain' to us her lessons, strategies and reasons for doing certain things, while the lesson is still going on! She really seemed conscious about what we wrote and thought about her lesson, and went to great lengths to explain her lesson and some of the things she did. It also seemed that the Principal wanted to project a positive image of the lesson and class to us by sharing what she thought about the lesson and her own remarks about a good lesson and school is about)

We asked a few questions out of courtesy, and followed the Principal to leave the class at the end of the session at 2pm.

Part 3: Reflection Memo

My first observation was a memorable one. Reflecting on the experience, I found the following aspects especially valuable and relevant to my growth as a qualitative researcher:

The Need for "Topic" to Guide Observation

Before the observation, our group know that we will be observing the use of a new interactive whiteboard system, the SMART board, in a math lesson. But we did not discuss in detail exactly what the focus of our observation will be. For example, is it to understand the experience from the students' or teachers' perspectives; the effect on pedagogy and curriculum; the effect on nature of interaction and interaction patterns in the classroom?

The night before the observation, as I was "thinking through" what might happen, I found myself setting a research topic – focusing on the experience of teacher's using the new technology. I felt that going in without a focus in mind might make the observation overwhelming and directionless – attention might be spread over too many things at the same time. You don't know what to "exclude" and as it is not possible to observe everything that goes on within that hour, the experience might be exhausting and more importantly, superficial. Especially in this case where we did not capture the whole lesson on video, it is not possible to record everything at a meaningful level.

I do not know whether this is a good suggestion, but I did find it helpful as it guides my primary focus during the actual lesson observation. At the same time, this guiding "signpost" is not immutable. It did not preclude me from taking note of the other events taking place, though it gave a good general direction for my effort and frame of mind.

Perhaps in an actual qualitative research, we would have the luxury of multiple observations, enough time to weave through the raw data before settling on a topic. For a single observation, with multiple observers, one way to overcome the problem of "attention over stretch" (besides using video) might be to distribute different areas of focus to different team members. But for this exercise, we could not do that.

Taking Field Notes

Even though my topic helped set my frame of mind, I seek out to record as much as I can. Everything occurs in the field is a potentially important source of data. And it was very difficult! I had trouble recording down every conversation, questions asked, answers given, names called, comments made, let alone my own comments! The whole sequence of events happened so fast that I found myself frantically scribbling, at times ineligible, handwriting, afraid that I would miss recording what was happening.

I eventually developed some impromptu techniques. First, I used sketches wherever I can – diagrams, layouts, sketches of critical snapshots that can "trigger" and reconstruct the events of that moment for me. Second, for conversation, I tried to capture the essence of it instead of whole dialogue verbatim. Wherever possible, and if I felt that was a critical statement, I record it verbatim but for typical, routine dialogue, I picked the most essential word(s) which will help me reconstruct what was said. I found these two techniques useful.

Observers' Dilemma

One difficulty that arouse during the observation was when the teacher came over to talk to me and Laura (another observer). She wanted to show us some of the resources they have at the back of the class, and even went so far as to ask one student to come over, power up the PC and launch a math-learning game for us to see.

While I am conscious of and careful that participation in what goes in during the observation might interfere with the data collected, I just find it difficult and rude not to respond to the well meaning teacher. I did not ask any questions but gave appreciate smiles and acknowledged what she showed and explained to us with words like "Wow, that's nice", "great!".

Perhaps what we should have done before the lesson is to communicate clearly to the teacher and the principal about our roles as passive observers for the need of recording "unaffected" data.

Yet, I also found myself wondering – not being able (or not recommending) to ask questions could mean losing chances to find out what our subjects - the teacher and the students - were really thinking during certain important, special moments.

Subjectivity

Coming from an educational background of a teacher, I can't help but viewed the lessons through my own lens as a classroom teacher. I found myself subconsciously, comparing the teachers' actions with my own teaching during much of the lessons. For example, I identified with the teacher at the beginning when she started the lesson by asking the students certain things they learned in the previous lesson. But then I was also much intrigued about certain things the teacher did not do or did not seem to attach great importance to: e.g. stating the objectives of the lesson at the beginning, different students going at a great pace and yet no summary of the more difficult questions on the worksheet; no summary of lesson at the end etc. My background as a classroom teacher means that I carry with me certain beliefs about aspects of classroom teaching – e.g. classroom management, questions asking techniques, homework etc. Added to this is the fact that I come from a different cultural background. As teaching is much embedded in the society and culture of which it is a part, this is an important factor to consider.

Hence, the important question is this: does all these mean that because of my prior experience as a teacher and cultural differences, my observation and report will tend to be harsher than is really the case? How much of my own subjectivity as a teacher, affects my observation and the 'fairness' and validity of the data recorded is something I, in my role as a qualitative researcher, must take note of. While it is not possible to be completely cleansed of my own subjectivity, recognizing that it exists and when it occur, is one way to minimize and make known its influence during the course of my research. This is one area I hope to understand at a deeper level.