15th of October, 1997 (Jane's teaching), 4th lesson

TAPE 18

Year 9

Overal Description of the lesson

Structure: The students work in groups (6 groups of students are in the class about 5-6 students in each group. They work on the problem of making a pack for a company to put 48 cubs each of dimensions 2cm.The company will give a prize to the one who has used the least card. The teacher gave 48 multi cubes in each group, a prompt sheet, squared paper, card, A4 sheets. The groups work on this problem for about 45 minutes. The teacher goes around and discusses with them. During the last 15 minutes she discusses with them about the importance of cooperative work and about what she noticed about the way they cooperated.

Mathematics content: Properties of 3-D shapes, areas, volumes, nets could be considered by the students during their exploration

Type of activities: practical - investigational work.

Sitting with a particular group of students: I am sitting with Paul, Jonathan, Gary, Shaun, Ian, Ben.

Counter /Structure	Text	Comments
1 (000-113) Initialising the task	I have not recorded the beginning of the lesson where the task is given by the teacher. I use my field notes to describe it. The teacher has given in each group a square paper, card, A4 sheets and a sheet which describes the problem. The teacher invites someone to come on the board and draw a 2 cmx 2 cm x 2 cm cube. Michael draws a square of side 2 cm. Some students say that this is a square. The teacher says "a cube facing in front". Another student comes on the board and draws a cube T: Can you draw your dimensions as Michael has done? T: You need to make a box to fit 48 of those cubes. The squared paper is to try out some designs. It is a group project. Everyone needs to be busy. T: Right. Thank you (asks for silence) T: The company will give prize to the one who has used the least card. We want to find the best size and shape of the box. The groups start working. They are very excited and it is not possible to listen to what they say. I gave the tape recorder to the teacher to use it as she goes around in the groups. I will also write down about my observations in the group I was sitting.	

B

2

(113- 146) Discussing with the group of Michael

The teacher goes to the group of Michael.
M: I do not know how to work it out yet.
T: Let's take this one a step back. When Michael has made his block, Gary you need to practice first of all, can you stop that, join in?
G: Not really
T: They might do it in all over your home diary.
(Gary says something I can't hear)
T: You've spent 5 minutes doing that in front of me. Right. Come up. Join in. You are saying it has to be as compact as possible to use as least card as possible and I suggest that's great. Good.. Now, how are you going actually prove this to them? What do you need to do now?
(Another student says something (irrelevant with the question the others in the group are laughing)
T: Can I draw your attention to the cm squared paper that I've given you? How might we use that?
Patrick(?): If it is 1cm by 1 cm then you can just do, each square will be 2 cm..
T: It could be. Yes. You might then actually fit the whole thing on this paper anyway.
P: Yes.
T: Even if you press it down. O.k.
M (says what he is trying to do, I cannot hear)

3

(146- 172) Discussing with Stewart (I have to check his group, he probably sits with Alex, Tom,..)

T: Stewart, what have you discovered about your net here?
S: It works.
T: O.K. But remember I said to you how many sheets of card do you need. What is the total area of this..
S: It's ... cubic cms.
T: It's the actual area which is in cms squared, when it's made up into a box, then it is cm cubed. How many cms squared? Can we write down on the sheets? I 'll come back to you in a minute(to another student). The surface area is how much?
S: The surface, is it the top?
T: No, the whole thing.
S: 352
T: 352 cms squared. Now, the volume is indeed the 48 cubes, how do you they package? how many in a row? and how many..
S: 2 in the row
T: 2 layers
S: 4,8 no (he counts) 6 across, 4 wide by two high.
T: So, it is actually 12 by 8 by 4 cm cubed. That's how the cubes are. Each of those 6 cubes is 2 cm across, across there you,ve got 12, across there you,ve got 8, across there you've got 4. O.k?
(Stewart says something I cannot clearly hear)
T: Have I? 12 by 8 by 4 is , So your actual volume there is 384 cm cubed.

effective something?

Check with Tom

Analysis of Jane's teaching

15th of October, 1997 (Year 9)

Sections

1. Introducing the task in the class
2. Discussing with the group of Michael.
3. Discussing with Stewart
4. Discussing with Tom and Stewart about Tom's construction
5. Discussing with a group who thinks that there is only a box which can be made about their construction.
6. Discussing with a student about the dimensions of this construction
7. Discussing with a group which express and intuitive feeling about the least area
8. Closing the lesson, Communicating on the students' cooperation —
9. Despina's Observations on any group she was sitting.

Sections

1.

What? The teacher gives a practical task for the students to work.
She distributes materials (Prompt sheet, squared paper, card, 48 multilink
She invites students to draw a 2x2x2 cube on the board
Michael comes on the board and draws a 2x2 square by ~~writing~~ the dimensions, one
Some students recognise that this is a square and not a cube.
The teacher says that this drawing is a special case of a cube
Another student (comes on the board) ~~is drawing~~ another draws a cube
The teacher tells him to draw the dimensions as Michael did.
The teacher says that they have to construct. She explains what is the use of some materials. She states that it is a group work so everybody has to be busy. She asks for silence. She emphasizes the aim of the task.

Why?

She chooses probably the task because it is in the scheme of work and because she wants all the students to be able to make a start. She probably considers important to work investigatively aiming for building understanding.

She provides hands on experience as she considers this experience important for building abstractions - generalisations

She discusses the task in the classroom to make it clear for all the students

She reacts positively to the correct wrong drawing of Michael to make him feel confident and successful.

She recognises the positive contribution of Michael in the class twice to help the other students becoming sensitive to other students' contributions

She ~~explains~~ states that this is a group work as she wants all the students to contribute and to work together.

talking to T.T.

The nature of the task carries a MC for the students

The teacher organises the whole learning environment very thoroughly for all the students and she also emphasizes development of social skills. These actions are in the area of the ML but there is S.S possibly through the teacher's objectives to ~~develop~~ aim for the development of values - She is also sensitive to Michael both to the affective and to cognitive level as she recognises his contribution and its mathematical reasoning in the class.

Section 2

What?

Michael needs help. He has made a block with the multi-cubes but he does not know how to proceed further

The teacher asks ~~encourages~~ the other students to participate in the activity (eg Gary is doing things irrelevant to the task).

She praises Michael for his intuitive explanation that his construction need the least cubes. She asks for proof. She reminds them that they have been given a squared paper. She asks them how they could use it.