Teacher A interview transcript

**Researcher:** Right, so this is the question, why did you ask this question at the beginning

of the topic?

**Teacher:** Because it is part of what we did earlier on cells

**Researcher:** On cells. So…

**Teacher:** I was trying to connect the discussion on the cells and the topic

**Researcher:** On mitosis?

**Teacher:** Yea.

**Researcher:** Yea, okay. So that they can be able to link what they already know with

**Teacher:** Mitosis. Yes.

**Researcher:** Okay. Is there any way, or any other way that you could have phrased it? Or

it was supposed to be like this.

**Teacher:** I could have phrased it better. Give them a bit more clue.

**Researcher:** Okay.

**Teacher:** Yea, maybe I could have said, what are chromosomes before cell division?

how do they look before cell division starts, something like that?

**Researcher:** Yea. To make the question much clearer, much simpler for them

to understand.

**Teacher:** Yea, I realized there that they struggled to understand…

**Researcher:** The question itself

**Teacher:** Yea,

**Researcher:** Yea, but they did know, I saw that they knew, just that they were uncertain

whether the question was actually…

**Teacher:** Referring…

**Researcher:** Referring to that

**Teacher:** Chromatin networks, yea.

**Researcher:** Yea, yeah okay. We are now done with the first question, let us now move

on to this one. (Plays the video and pauses) All right, so this is the

description here. When you gave the learners a description of the chromatin

network, were you trying to give the learners a clue with the description?

**Teacher:** Yea

**Researcher:** Why?

**Teacher:** Because I realized they didn’t know, they didn’t realize what I was talking

about actually. So, I tried to give them a clue so that they can realize that I

was talking about the chromatin network

**Researcher:** Chromatin network. And since it was the beginning of the lesson and I

realized this, the learners struggle to connect the topics

**Teacher:** Yea.

**Researcher:** All right, so this is the question. I know this is in line with what we do in

Grade 12, the pairs of the…

**Teacher:** Homologous chromosomes

**Researcher:** Yes. Homologous chromosomes are the number of human cells, of

chromosomes in human cells. Somatic cells more specifically. But now, you

spoke about this here when you were doing mitosis, and it seems like you

have spoken about it prior. It is something that they know they must recall.

What was the significance of this question?

**Teacher:** Okay, not that question, because usually, they would understand the human

one better because it is almost in all the books. In fact, I was trying to make

them understand two things here. One is the same issue as saying that each

organism must have a specific number, which was important for them to

understand. I like it when they understand it in Grade 10 for the sake of

Grade 12. and also, the fact that they exist in pairs. Now, here, it was

important to emphasize the pairing of homologous chromosomes because it

plays, it is significant in mitosis

**Researcher:** Yea, so that they know the splitting part, that this is when they will have the

identical number of chromosomes because of the pairing that occurred.

**Teacher:** Yea.

**Researcher:** Okay, all right. So, this is the question, here.

**Teacher:** I always ask this question.

**Researcher:** You always ask this question, why?

**Teacher:** Actually, that question achieves two things, one, is that the nucleus is

important in cell division. Secondly, that cell division is all about the

distribution of chromosomes in the daughter cells.

**Researcher:** Okay,

**Teacher:** Yea, so that's what the question usually achieves. Once they understand

that, then in Grade 12, they will be all right.

**Researcher:** But why specifically in this section? Why maybe not toward the end of the

lesson? Why here, because you asked this question after mentioning the

prophase or metaphase. After mentioning those phases of what happens

there, then you dived into that question.

**Teacher:** Yea, because actually, in fact, I should have asked that question earlier.

Then I said, no before I asked, you could see that I…

**Researcher:** It was something at the back of your mind.

**Teacher:** I realized that I should have asked it earlier. It’s best when it is asked earlier,

you are right. But I had forgotten to ask them, so I asked them at that stage.

**Researcher:** But do you think, if you had asked this question at the beginning of the

lesson instead of the one you asked for, one of the appearances of

chromosomes as chromatin network? So, if you had asked this question, on

the nucleus does you think they would have been able to answer the

question and understand which direction or angle you are stemming from.

**Teacher:** Yea. Most probably yes. But then the chromatin network could have come

after that. But yes, that question should have been asked earlier. The one on

the removal of the nucleus.

**Researcher:** Nucleus

**Teacher:** When I was teaching in Swaziland and Zambia this used to be a very

important question in the exams. Like you heard some of the answers. They

said the cell will die.

**Researcher:** They said the cell will die. And then you said not immediately.

**Teacher:** Yea.

**Researcher:** But if they answer like that it would make sense. you would expect them to

answer like that if you asked it at the beginning of the lesson. It would make

sense for them to say the cell will die because they know the functions of the

nucleus. The controlling of all the activities of the cell, and the hereditary

characteristics. But they are uncertain, to the point where they do not know

anything about mitosis they would be uncertain how the hereditary

characteristics are transmitted. I think it is a very abstract question.

**Teacher:** Yea.

**Researcher:** Right so this learn here, was trying to link. I think she was trying to link her

response to that other learner’s response who said it will stop functioning.

And then she thought about cell division and then she said… because your

response to that learner was, what functions are referring to? And then the

Another one said, cell division will stop functioning.

**Teacher:** Yea.

**Researcher:** Yea. But that response, you said to the learner, what are you trying to say? I

am just trying to understand, don’t you think it would have been better

maybe if you gave the learner an idea, to maybe say structure your answer

correctly? There is something there, you are getting close but structure your

answer correctly. But instead, you just said what are you trying to say.

**Teacher:** Okay,

**Researcher:** Yea, I am just trying to understand that one, why didn’t you give a clearer

response, sort of a leading clue or a leading question?

**Teacher:** Because she had already answered the question actually, she had already

given the correct answer.

**Researcher:** Yea, but she had not structured it correctly.

**Teacher:** She had not structured it correctly. But she had already given the correct

answer.

**Researcher:** So, you just didn’t want to say more because you thought you will be

giving them the answer.

**Teacher:** I wanted her to come out, on her own, clear. Did she by the way?

**Researcher:** No, she didn’t but it was just the structuring of the answer.

**Teacher:** You see, there is a question where if you want them to sink, you spend a bit

of time on it. Make follow-ups and follow-ups. The idea is to catch

everyone’s attention so that everyone can participate.

**Researcher:** Yea.

**Teacher:** When there are certain questions that you just ask, they give you the wrong

you give them the correct answer and it passes. But some of the very

important questions that hinge on the topic itself then it will attract

attention from almost all of them, then you hang on. Until everyone, even the

ones that were not thinking

**Researcher:** They start thinking, I know right, because this one I feel like this one got

them thinking. Because when those other learners responded when they

gave their answers and then you kept on probing and probing. It started

hammering to them, they started asking themselves, wasn’t that the correct

answer, what is wrong with that answer if you are not taking it?

**Teacher:** Mhm. Yea.

**Researcher:** Here is another one, another interesting one. When you say why? I feel like

the question was cold because the learners tried to answer the first question

and you just said why.

**Teacher:** No, the question was ambiguous, it was not clear. They struggled; you see.

That is why they went back to the fact that the nucleus is removed, so there I

should have maybe said why is the removal of the nucleus causing this, you

see, then it would have been clear. I realized they didn’t really, they wouldn’t

connect because I wanted them to say, okay, the chromosomes. As I had

mentioned earlier to say the whole essence of cell division is where the

chromosomes will be distributed in the daughter cells, right? So, I wanted

them to connect to that, but the way I asked, they went back to the fact that

the nucleus has been removed. They couldn’t think deeper. Because if the

nucleus has been removed, that it has been removed there was no

discussion anymore. I wouldn’t ask such a question in relation to the fact that

the nucleus has been removed because that's what we said.

**Researcher:** Yea.

**Teacher:** So, then I wanted them to, but then, it’s like the question was ambiguous.

Can I see? Didn’t I make a follow-up on this one?

**Researcher:** There is a frequent use of so why and they kept. Of trying and trying. You

see this one because the nucleus is important but not going into depth about

how is it important? You see this one because cell division occurs in the

nucleus. But even that follow-up, is still “so why”, I feel like the question

was…

**Teacher:** Ambiguous, it was not very clear.

**Researcher:** Yea

**Teacher:** No, that question was not clear, that's why they struggled to answer. Yea.

**Teacher:** I lead them through until she realized not this man should be talking about

what is in the nucleus? I think at that point, that one realized. That’s why she

referred to chromosomes being on the nucleus. But the initial question was

ambiguous.

**Researcher:** Okay. So this frequent use of “so why” was supposed to be probing them

and channel them in that direction.

**Teacher:** Yea. Toward that…

**Researcher:** There is this other description that you are going to give here, that I wanted

us to talk about as well.

**Teacher:** Yea

**Researcher:** The learners usually struggle with this one, I really don’t know why

**Teacher:** Even in Grade 12

**Researcher:** Even in Grade 12 they struggle, even with the number of chromosomes

inside the cell. In mitosis even the definition itself, a parent cell divides to

form two identical daughter cells. So, they know that there are supposed to

be two cells that are formed, but when they are asked that question, even

the cell you drew on the board had a cleavage farrow narrowing that is

happening there. And it shows that this is where the cell is going to divide

but when they have to answer that question, they struggle. I would like to

know when you asked that question was you trying to understand if they

understood the definition or what is happening in mitosis or if you just

wanted them to see it on the board? If they are able to be vigilant enough or

observant enough to see that there are two cells that are going to form

here?

**Teacher:** Yea both actually, that’s the main issue, even now, is in Grade 12 when you

talk about say, meiosis because that is what we are doing there. You can tell

them that you have eight chromosomes in a somatic cell, then how many will

be in the gamete? They say 23 because of how we emphasize the human.

Even on the diagram, some of them will write 23 but they can’t count 23 or

46 so it’s that thing I was trying to emphasize.

**Researcher:** So that was the clue? The even distribution also the daughter cells

remind them that

**Teacher:** They get the same number of chromosomes.

**Researcher:** Yea**.**

**Teacher:** Because if you run through them, the issue of two cells being formed is very

very crucial. So, yea, I could have said okay I run through it, and somewhere

they were going to remain behind.

**Researcher:** Yea, because even the one who knows that it’s two cells. But they are now

contemplating because they are uncertain

**Teacher:** How they are thinking what could be the answer

**Researcher:** Right, here is another question. You phrased this question, it is almost

similar to the question you asked on the very first…

**Teacher:** Chromatin network, is that the one?

**Researcher:** Yes, that is the one. Why did you phrase it like this?

**Teacher:** How did I phrase it, that if the cell is not going to divide what happens to

the chromosomes? Yes, I wanted them to connect to the first question.

**Researcher:** To the first lesson?

**Teacher:** Yes**.** Did they get it?

**Researcher:** They did but after you gave them clues. They did, yea.

**Teacher:** It was a very difficult question.

**Researcher:** It is, even that first one.

**Teacher:** Because at this stage. No at this stage this was difficult for them. Because I

don’t I don’t know if I had mentioned it. But I think I had mentioned

**Researcher:** You mentioned all the phases.

**Teacher:** I was discussing interphase, because, I had mentioned that once the cell

division takes place and the cell is not going to divide then they go back to

the chromatin network. I think I mentioned it. But then they wouldn’t

connect because this one is a different lesson altogether.

**Researcher:** Yea, so if had mentioned it in the first lesson

**Teacher:** I think I did I am not very sure, but I think I did.

**Researcher:** But even if you didn’t mention it, I think that very first question you asked on

how chromosomes are going to appear. I think because you asked it

beginning of the question so

**Teacher:** Yea

**Researcher:** Do you think it was an issue of ambiguity in the question again?

**Teacher:**  No, it was just tough, there was no ambiguity there. I think they wouldn’t just

connect. But the fact that they could remember that the chromosomes would

replicate, okay, that happens to chromosomes during cell division. During

the whole, during the entire process. But remember that they then uncoil and

become threadlike and become a network of…

**Researcher:** Going back to the cell as it had started.

**Teacher:** Yea, that's what they couldn’t connect.

**Researcher:** Right, now this learner here sounded confused because she spoke about

the centrioles, she spoke about the chromosomes the opposite poles, and

everything. She completely deviated from the question you were trying to

ask. But you did not respond to her, you just revoiced what she was trying to

say, but you did not respond to it. You quickly moved on to the others.

**Teacher:** Yes, that was just misleading. I mean, isn’t this the same one about what

happens to the chromosomes.

**Researcher:** Yes, that’s the question

**Teacher:** And she was talking about centrioles, that they separate, so I didn’t want to

dwell much on that, it was just completely out.

**Researcher:** Because it was totally… okay

**Teacher:** Because there are some who can just get that point

**Researcher:** So, you are saying, asking this question was intentional so that they are able

to link the knowledge that they already have with the newly acquired

knowledge

**Teacher:** Yea, it was important for them to know what happens, once cell division has

ended to the chromosome. And I was hoping they would then connect, and

say okay before cell division these must change into actual chromosomes or

something

**Researcher:** So that the process can start again.

**Teacher:** Yes.