Full lesson transcript for Mrs. Letsiba of School B

Lesson 1: Abnormal Meiosis on 11 February 2020

Details

- This lesson transcript represents 35 minutes teaching time.
- A female black teacher was teaching the topic genetics and inheritance to 21 male and female learner participants, all in grade 12.
- The lesson took place at a former model C co-educational High school in Johannesburg East district in Gauteng on 11 February 2020.
- When used by the teacher, the learners' names have been changed to protect anonymity.
- The textbook utilised during the lesson is Exam Fever Life Sciences Grade 12 2nd edition published by Exam Fever Publishers.
- Used the chalk board and chalk.

Transcription conventions

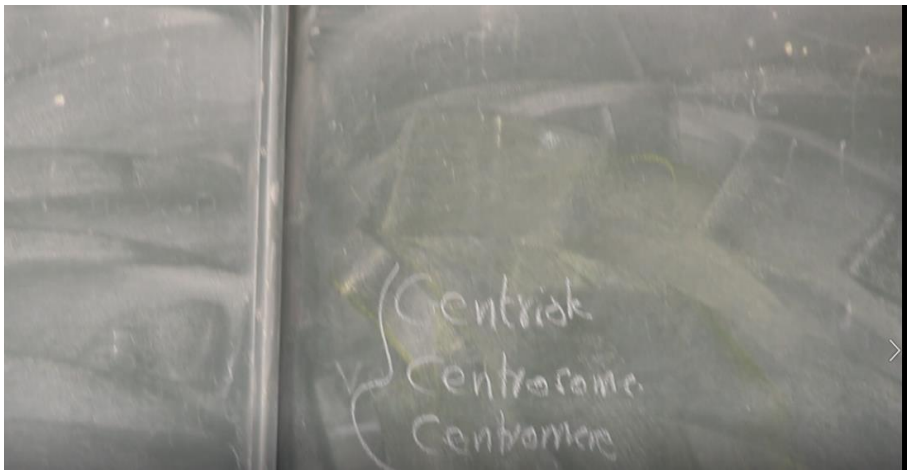
Symbol	Signification
T:	A verbal contribution belonging the teacher
L:	A verbal contribution belonging to any individual learner
Ls:	A verbal contribution belonging to two or more learners
…	Noticeable pause of less than 1 second in a turn, which could be due to reformulation or hesitation
—	Sound abruptly cut off e.g false start Truncated word Formal made shorter e.g S-
/ /	Words between slashes show uncertain transcription (not clearly known or

	understood.
/ ? /	Inaudible utterances
[ ]	Words in brackets indicate non-linguistic information eg [pause for 1 second] Laughter, throat clearing, smile, applause, sigh happily/ werily/deeply, contently, swallowing, nodding, shaking head dance or movement towards/away
( )	Parenthesis around tone units indicate words spoken in a sotto voice under one's breath (in a very quiet voice)
,	Slight pause
?	High rising intonation
.	Falling intonation at the end of tone unit
:	Colon following a vowel, indicates elongated vowel sound or extending length of sound e.g Die:d
::	Extra colon indicates longer elongation
↑	A step up in pitch/ high pitch (high quality sound)
↓	A shift down in pitch (low quality sound)
^	A caret indicating high pitch level e.g ^weird
-	Low pitch level
— —	Self-interruption or repair
Abc	Best guess transcription

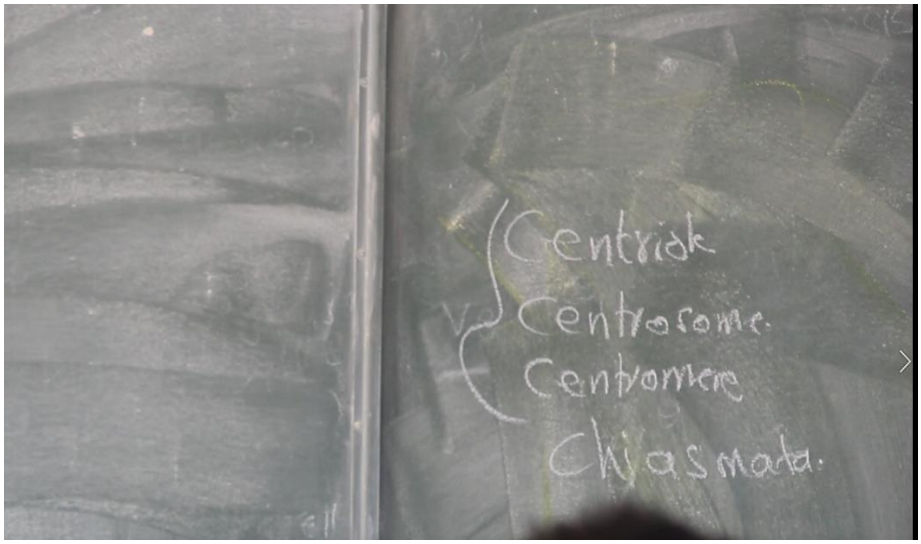
ALL CAPS	Utterance is louder/said with extra stress/emphasised compared with surrounding words
/	Rise tone e.g …saying something, /
\	Fall tone
V	Fall-rise-tone
Λ	Rise-fall-tone
CAPS	Prominent syllable e.g sOn or FAthEr

EPISODE 1: RECAPPING MEIOSIS AND ABNORMAL MEIOSIS

1.	Mrs. Letsiba:	Aah... okay, [clapping hands] ehh… yesterda:y we [pause] yesterday we were still busy with the consequences of ehh…meiosis.
2.		Ehh…we go back just ehh to remind ahh…ourselves ehh… of the four ehh…phases of ehh…meiosis.
3.		I said to you ehh…that it is very important that you ahh… people ehh…differentiate ehh…between that ehh…the centriole.
4.		What is ehh…the centriole because it is what we are going to get in our exam paper and then—
5.	Ls:	Centromere!
6.	Mrs. Letsiba:	What is ehh… the…
7.	Ls:	Centromere!
8.	Mrs. Letsiba:	[Writing on the board] CENTRO— ehh…SOME and also the— the CENTRO— ehh... the CENTROMERE, because if we look at these ehh... three ehh…terminology here, they are more or less sound ehh…the same neh…

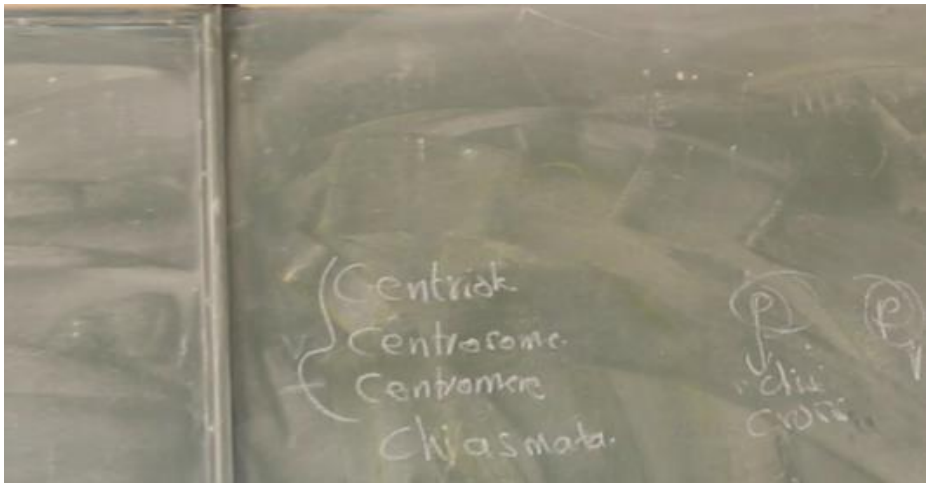


9.	Ls:	The same…
10.		The centriole, centrosome and ehh… the ehh…centromere and the other thing that I can add here is [writing on the board] THE CHIASMATA—

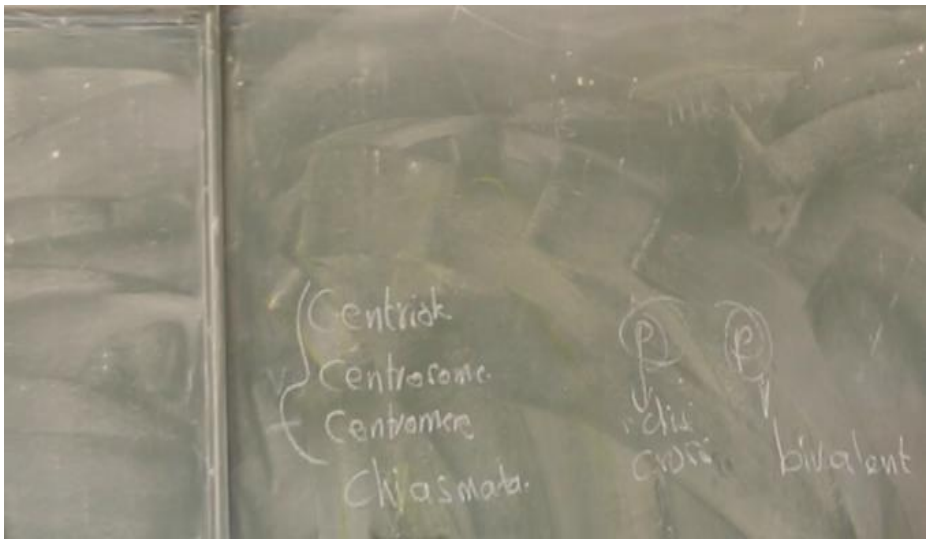


11.	Kamogelo:	Chiasmata!
12.	Mrs. Letsiba:	…neh…, the point where the crossing over…
13.	Ls:	Takes place!
14.	Mrs. Letsiba:	ehh…is taking ehh…place… the point where the crossing over ehh…is taking…place.
15.		So, and we ↓discu:ssed ehh…the differences.
16.		Let us say going back again that ahh…prophase 1 and propha:se [pause] ehh… 2.
17.		I said to you that the mos-- the most important thing is that ehh… (you know)— ehh… those structures neh…ehh…what is happening in our prophase one, what is happening in prophase 2.
18.		So, we said that ehh… prophase 1 for example ehh…the nuclear membrane will start to do what…
19.	Ls:	Disappear!
20.	Mrs. Letsiba:	…ehh…to…ehh…to disa- ppear neh and then we looked again at this ehh…prophase 2.
21.		Still, we have what…our nuclear membrane doing what…ehh...disa-ppearing
22.	Ls:	Disappearing!
23.	Mrs. Letsiba:	…and I said to you again that ahh…looking at the ^TWO ehh…phases we have what…ehh…that the process of—

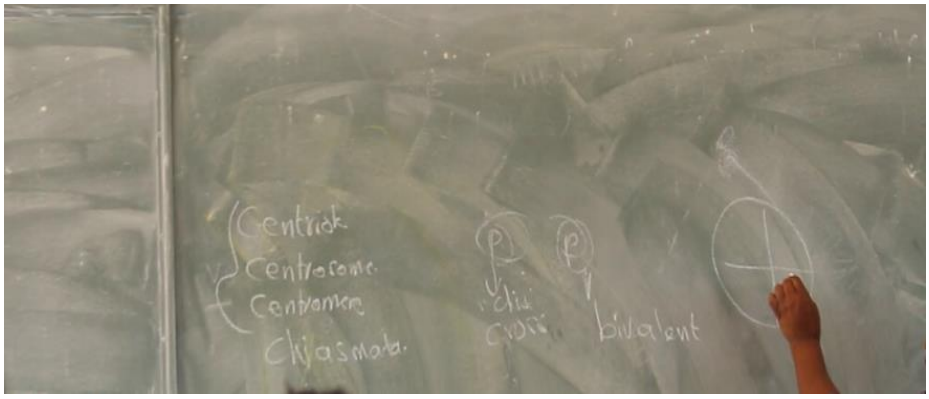
24. Ls: Crossing over
25. Mrs. Letsiba: The crossing over.
26. Then— then we said that ehh… we have crossing over in prophase 2.
27. Ls: No!
28. Mrs. Letsiba: We do not have any…
29. Thank you!
30. We do not have any crossing oVER in ehh…prophase 2, whereby ehh… the MATERNAL and also the PATERNAL [writing]



…are going to do what…to exchange THE genetic ehh…((material)) …
31. Ls: Genes!
32. Mrs. Letsiba: …and will doing what…lying next to each other neh and as MUCH as they— will be lying next to each other, we are referring to that as what…as the bivalent.
[Writing on the board]



33. We said this and then we are going to remind ourselves before we go to the consequences and we said that ehh…this ehh…genetic material or our four daughter cells. [Drawing on the board]



34. Remember I will have one cell that will be divided into four daughter cells.

35. I have said to you that THESE ehh…four daughter cells are going to be ehh…different neh… [using hands to stress]

…and what will make them to be different?

36. Ruben: Crossing over!

37. Mrs. Letsiba: That is ehh…the-- the crossing over neh…

38. Ls: Yes!

39. Mrs. Letsiba: That would make ehh…our ehh…four daughter cells to be different…

ehh… different [changes into a singing tone] and I said again eeh…we have— yes! [Pointing to learner raising her hand]

40. Karabo: /Ma'am what causes the differences in the chromosomes/

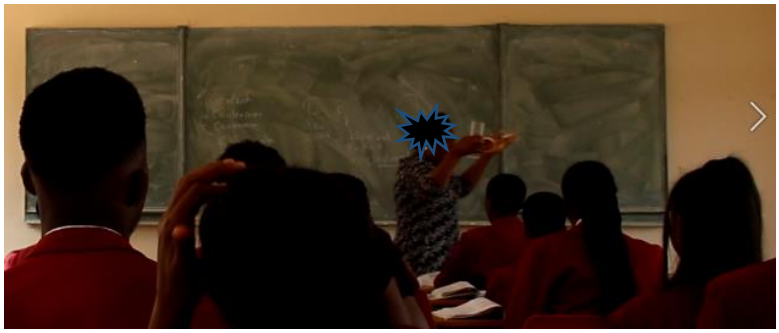
41. Mrs. Letsiba: We have ehh…the random ehh…segregation.

42. The random assortment of ehh…the chromosomes neh…and then I said to you it is very much important that ehh…[singing] YOU MUST KNOW WHAT IS HAPPENING…

in each and eveRY phase.

43. Like in saying [writing on the board] there is what…this crossing over and then it is where in prophase 1 neh. In prophase 1 there is what…ehh…crossing over neh…exchange of ehh…genetic ehh… material ehh…paternal and maternal.

44. Then you have what… meta— ehh…phase ehh…1 and then again in metaphase 1 you have what… is that ehh… random assortment of chromosomes whereby the chromosomes are going to align…



ehh…themselves randomly so ehh…at THE ((equator)) … you understand.

45. By (that) ehh…arranging themselves ehh… along the equator randomly so that means again bring that variation ehh… in the-- ehh…in those ehh…daughter cells. And

46. I have said to you that ehh…you go home you ^look at yourself, you look at both ehh… your parents, you look at your siblings and you find out that ehh…somewhere somehow neh…as I was saying that ehh… someone will be lighter in complexion…

someone will be darker ehh… in complexion,

…someone will be tall,

someone will be what…ehh…shorter.

47. That is what…that is the variation that we are talking about.

48. And then I said again ehh…abo:ut metaphase 1 and metaphase 2 neh...

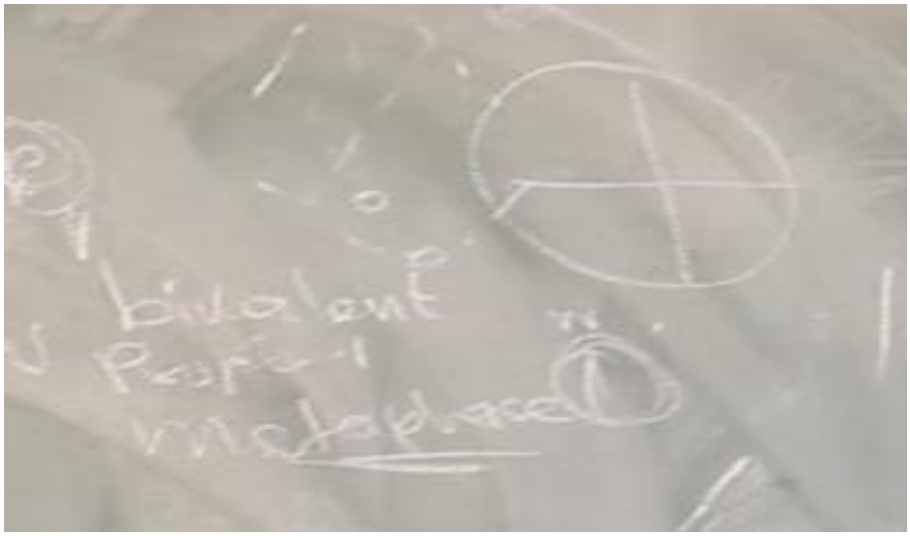
49. Then we said in metaphase 1 /I will take/ you back here in prophase 2 [referring to what is written on the board] just to remind ourselves.

50. We have what…ehh… the formation of ehh…the centrioles neh....

51. The formation of ehh...these centrioles [referring to what is written on the board].

…that we are going to see what again.

52. Ls: Spindle fibres!
53. Mrs. Letsiba: The spindle fibres neh…so in metaphase 2, what is happening in metaphase 2 people…metaphase 1 and metaphase 2?
54. Kamogelo: The chromat…
55. Ls: [Chorus]
56. Neo: Madam metaphase 1 has homologous pairs of chromosomes aligning on the equator and then metaphase 2 does not have homologous chromosomes— ehh…pairs.
57. Kamogelo: No!
58. Neo: Yah, chromatids.
59. Ls: They are chromosomes!
60. Mrs. Letsiba: Ehh… the chromosomes-- the homo- logous chromosomes they will align ehh…themselves at THE equator neh… in what…
61. Ls: Metaphase 1!
62. Mrs. Letsiba: Metaphase 1…

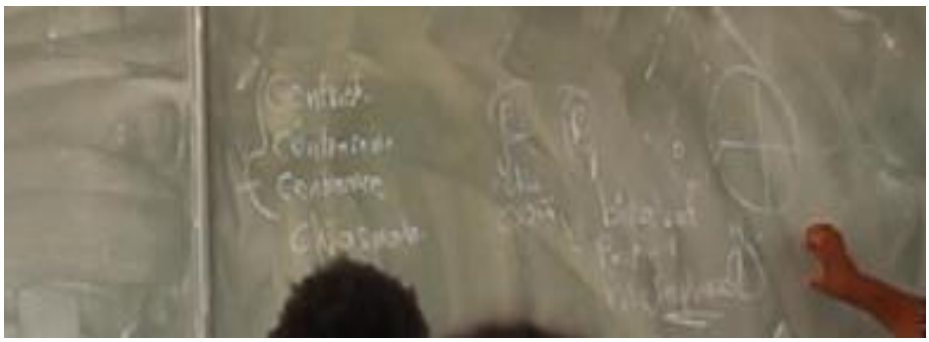


neh…in pairs you understand, remember what I said to you that ehh… there is a way of differentiating ehh…between the two.

63. So, that ehh… it becomes so simple, that even in your exam paper you are a given a diagram of metaphase 2 or metaphase 1, then you are able to identify.

64. Remember what I said to you neh…that is ehh…you are— you look at the diagram, you look at those homologous chromosomes are they arranged in pairs are they arranged ehh…in pairs or are they ehh…arranged ehh…singly so neh… and you will get ehh… whatever…you get that ehh… question correct.

65. Aright, and then the other thing is these phases here [pointing to the board]



…is not it we have meiotic 1 and meiotic 2.

66. So, you must TELL us, you must write, if that it is metaphase 1 or metaphase ehh…2.

67. One other thing that you can say about ehh… right meta- phase ehh…1.

68. The first thing we said that ehh…homologous chromosomes, they will do what…

69. Ls: Arrange themselves.

70. Mrs. Letsiba: They will arrange themselves along the equator.

71. Ls: Along the equator!

72. Mrs. Letsiba: In what…?

73. Ls: In pairs!

74. Mrs. Letsiba: Neh…ehh…is there anything that you can tell me about ehh…metaphase 1? [pointing to learner]

75. Kamogelo: Ma'am, I have a question…

76. Mrs. Letsiba: Hmm.

77. Kamogelo: When you are like showing the differences, do we have to sho-- write the numbers or write in-- what do they call those numbers?

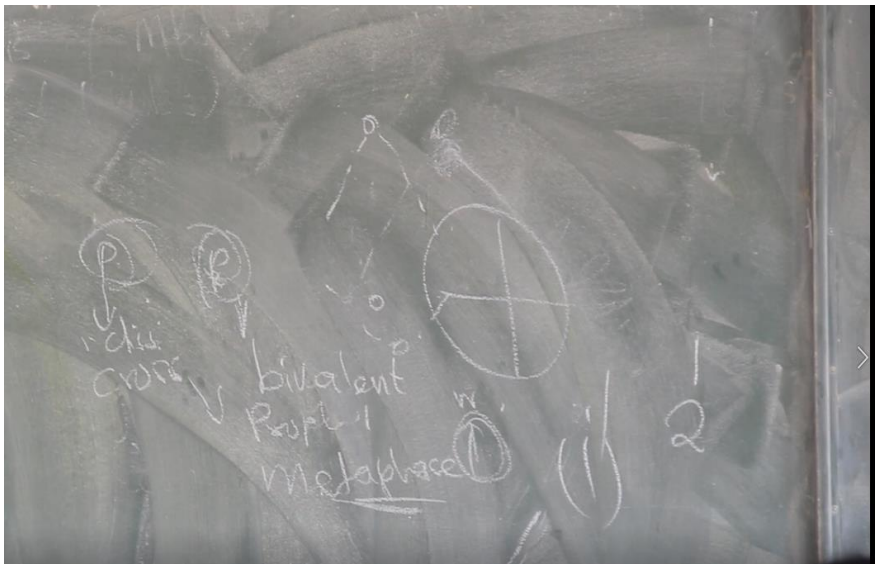
78. Ls: Roman numerals!

79. Kamogelo: Roman figures, is it one thing?

80. Mrs. Letsiba: You write number 1—

81. Ls: [laughing]

82. Mrs. Letsiba: Not roman figures… [writing 1 and 2 on the board]



…akhere [is that not the case in IseSotho] you want roman figures, no!

83. It is metaphase 1, metaphase 2.

84. Kamogelo: Finish and klaar! [let us move on in Afrikaans]

85. Mrs. Letsiba: Finish and klaar! [Let us move on in Afrikaans]

86. Ameirie: / ? /

87. Mrs. Letsiba: Anyone to help ehh…ehh…/ ? /…what is happening?

88. Ameirie: I am saying it forms ehh… ehh…the spindle threads.

89. Ls: [Laughing]

90. Mrs. Letsiba: Anyone to help!

[Noise]

91. Mrs. Letsiba: No! Anyone to help?

[Noise]

92. Mrs. Letsiba: Can you wait…ehh… I want you to help him just explain what ehh…metaphase 1 is all about neh…anyone…

[Noise]

93. Sifiso: Ma'am like ehm…the chromosomes align themselves along the equator in homologous pairs in metaphase 1 but then in metaphase 2 they align themselves as singly meaning…/ ? /

[Noise]

94. Mrs. Letsiba: Ehh…one person at a time ehh…Lethabo

95. Lethabo: In metaphase 1 neh…they align themselves in [using hands]

96.	Mrs. Letsiba:	Can you come? [Lethabo goes to the board]
97.	Lethabo:	Eeh…madam!
98.	Mrs. Letsiba:	I AM not a priest!
99.	Ls:	[Laughing]
100.	Lethabo:	Madam /we can ask a question/ is there one difference in metaphase 1 and in metaphase 2?
101.	Mrs. Letsiba:	I say yes because in metaphase 1 ma'am [drawing on the board] these are centrioles, spindle fibres.
102.	Kamogelo:	Spindle fibres.
103.	Lethabo	Okay [drawing on the board]

…these are your homologous pairs right they are lining pairs…pairs neh

…and then in metaphase 2 it's are no more in pairs, [erasing the other chromosome from the diagram] its singly…one chromosome… [smiling and using hands]

…you understand what I am saying?

104. Mrs. Letsiba: Ehh… let us hear from ehh… [points to a learner]

105. Chinasa: What then happens what then happens to the / ? / ?

106. Lethabo: It did not— it did not disappear angisho— [isn't it in IsiZulu]

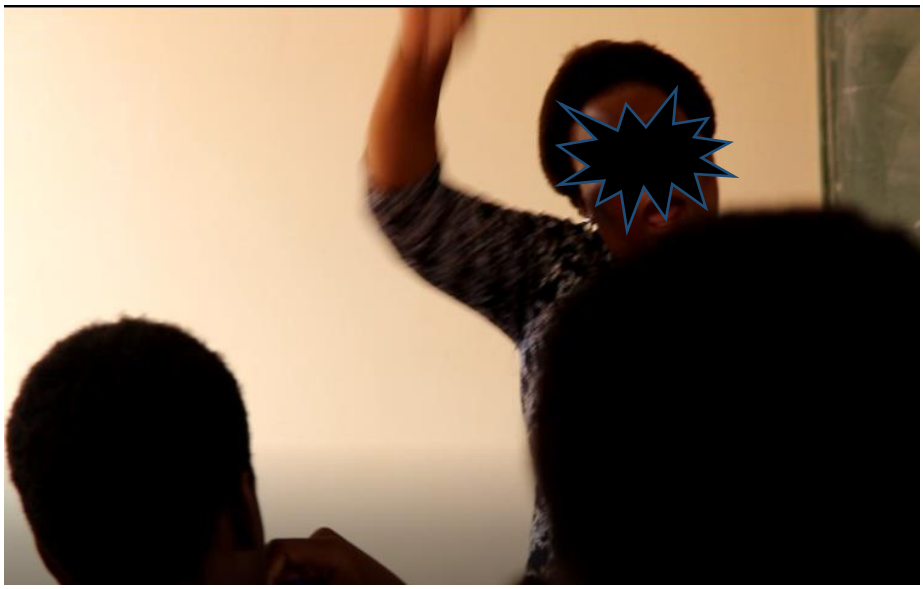
107. Mrs. Letsiba: They just ehh…

108. Kamogelo: Went to the centrioles.

109. Mrs. Letsiba: Is it not that they were in what…ehh…was a marriage between them neh… And then ehh… when [moving close to Jeremy and holds his hand as he stands up]

I am getting married to Jeremy.

110. Every now and then when I am moving, I am moving…I am moving with Jeremy neh... that is ehh… our meta- phase 1… going with Jeremy to-- ehh… to the equator and I am not going alone.



111.		Is it not so…he is my partner?
112.		So, we must do what…we must GO ehh… toge-ther neh… and then at some point [learners laugh] Jeremy is not doing the right thing then I am doing what…I am—I am ehh…divorcing ehh…Jeremy.
113.		So, when I am divorcing Jeremy then it is /metaphase/ what…
114.	Ls:	2!
115.	Mrs. Letsiba:	…ehh…2 when chromosomes are moving what…all over the place…what…ehh… ((in single))
116.	Lethabo:	Ma'am can you please start in telophase one— one whereby one cell it now has ehh…haploid?
117.	Mrs. Letsiba:	Ah…ahh…okay…I just wanted to make yo:u understand neh...
118.	Lethabo:	^I am being moved.
119.	Mrs. Letsiba:	[Low tone] Oh! Um—
120.	Lethabo:	…'coz I mean she [referring to Chinasa] asked, where did the other chromosomes go?
121.		So, I am referring her [Chinasa] to telopha:se 1.
122.	Mrs. Letsiba:	Ohoo…okay.
123.	Lethabo:	Yah!
124.	Mrs. Letsiba:	…and that is Chinasa [pause] and then ehh…she is asking the question.

125.		Remember we did this yesterday neh…and everybody is-- you are going to answer—
126.	Chinasa:	Okay ma'am / ? /
127.	Mrs. Letsiba:	We not talking about the nucleus what is disappearing is what…
128.	Ls:	Nuclear membrane.
129.	Mrs. Letsiba:	Hah…
130.	Chinasa:	So, ma'am where does cytokinesis take place?
131.	Mrs. Letsiba:	Going back to…ehh…what is cytokinesis /?/
132.	Kamogelo:	Breaking down of the cytoplasm
133.	Mrs. Letsiba:	It is when the cytoplasm is doing what…
134.	Ls:	Breaking…
135.	Mrs. Letsiba:	…is di— is dividing
136.	Ls:	[Chorus]
137.	Mrs. Letsiba:	Ye::s and then we remind ourselves again ehh…okay and then…
138.	Jeremy	/ ? /
139.	Mrs. Letsiba:	I know ehh… / ? / class!
140.	Mamotse:	[In a low voice] In metaphase 1 the chromosomes are still bonded…
141.	Mrs. Letsiba:	Mamotse is talking people!
142.	Mamotse:	[Using her hands] ↑^IN METAPHASE 1… the chromosomes are still bonded into pairs but then in 2 there is no pairing and then in metaphase 1 that is where the spindle threads are formed ((hmm)) and then in metaphase 2 that is where the chromosomes attach themselves to THE spindle fibres.

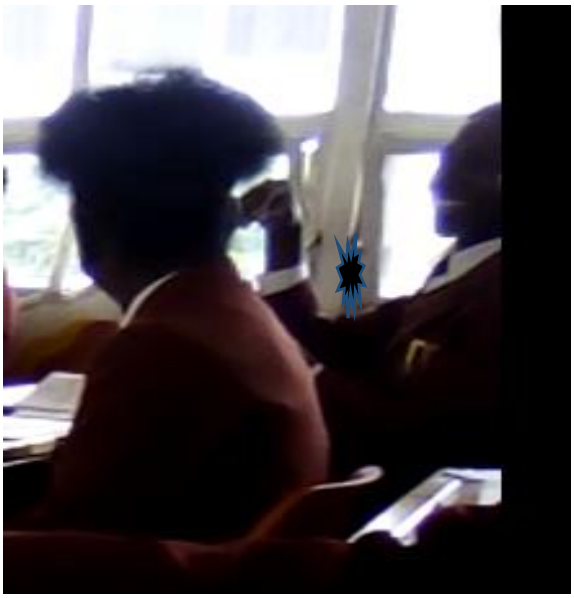
143. Ls: Hmm.

144. Mrs. Letsiba: And then…thank you! [Pointing]

145. Ahh… William!

146. Kamogelo: Ehh…ma'am how are these spindle fibres formed? [Using hands]

147. Takudzwa: It is when the centrosome split into two centrioles ehh… they go in opposite poles…and then they form-- the centrioles form the spindle-- the spindle. [Smiling]



148. Ls: [Applause]

149. Mrs. Letsiba: …and then another one…

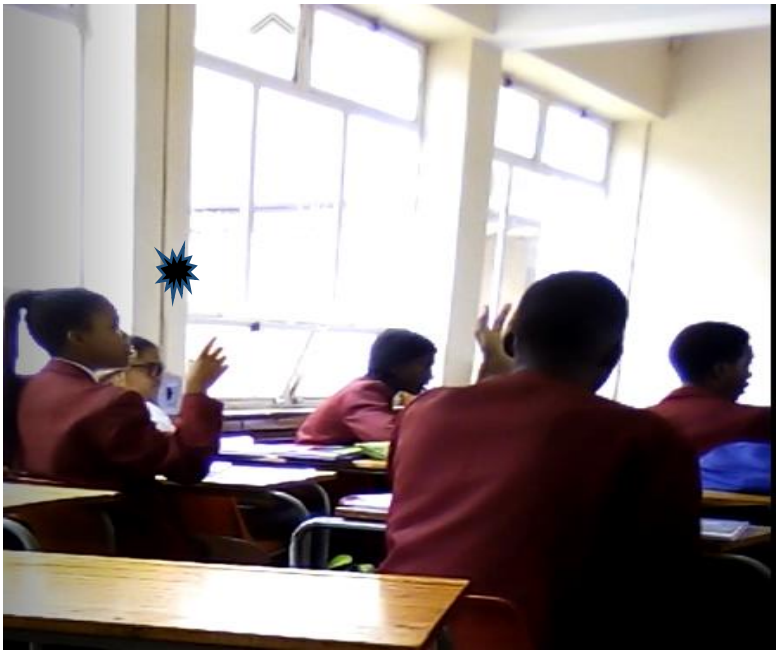
150. Kamogelo: Ma'am I am not done!

151. Mrs. Letsiba: You do not have to be is that not so?

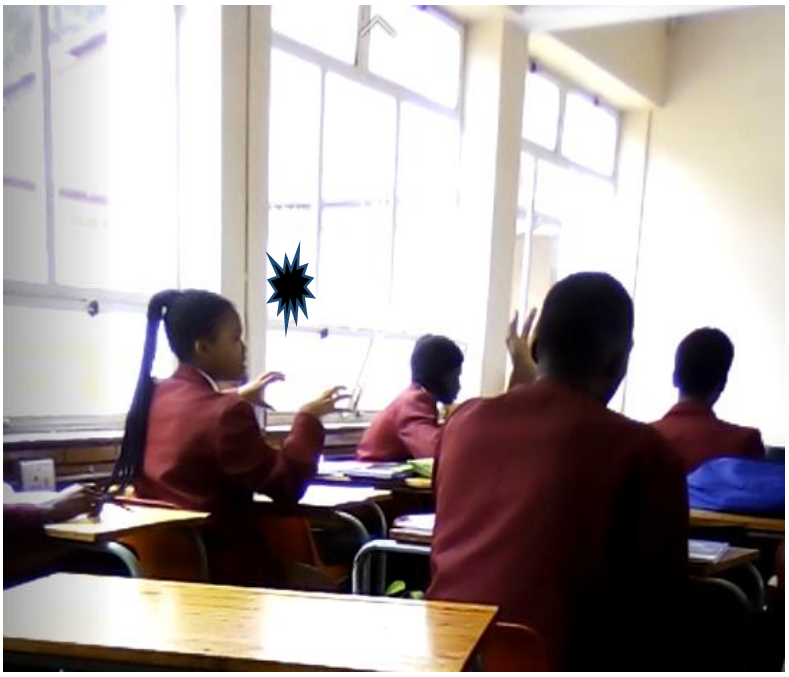
152. Chinasa Madam I want to correct / ? / when we go to metaphase 1 the chromosomes are attached to the spindle fibres

153. Jeremy: But in metaphase 1 that when the spindle fibres are formed.

154. Chinasa: EVEN IN METAPHASE 1…



…chromosomes are attached to the spindle fibres.



155. Jeremy: / ? /

156. Mrs. Letsiba: Thank you! [Points to a learner]

157. Thembekile: Ma'am it is a question. Is the spindle fibre a chain which pulls or it is an imagina::ry line? [Using hands]

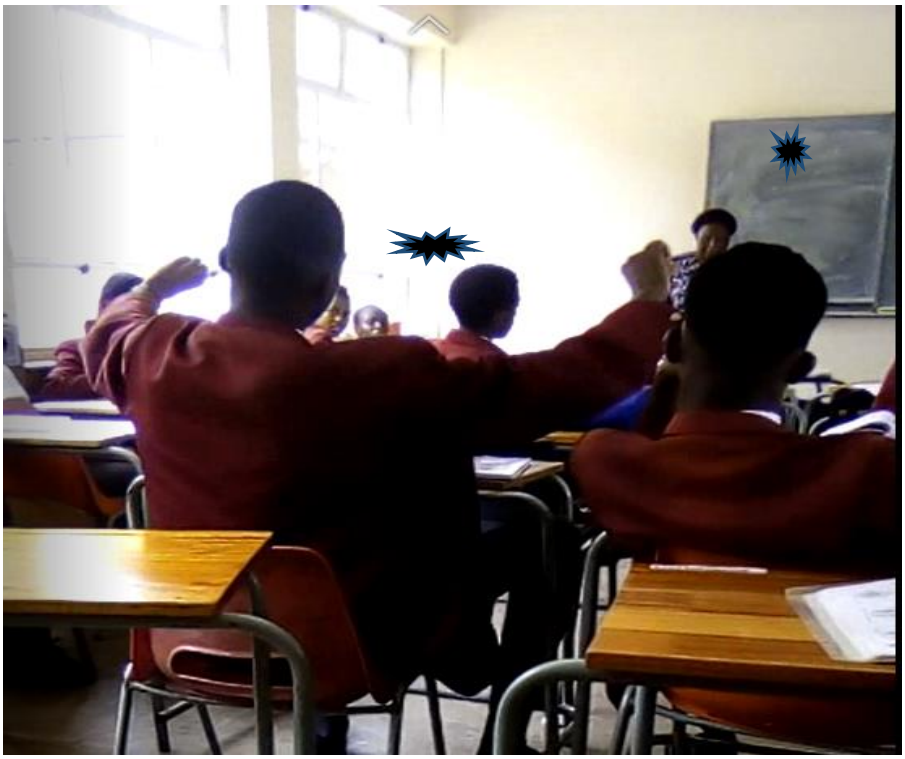
158. Ls: It is an imaginary line.

159. Mrs. Letsiba: We cannot say that it is what…it is ehh…an imaginary ehh… line [throat clearing] we cannot say that…that it is the imaginary ehh…line.

160. So, we know that ehh…it is a STRUCTURE like ehh…when we are talking about what…the centriole, centrosome [pointing to terms on the board]

…we cannot say that the centriole is an imaginary ehh…line we can talk about neh... So—

161. Thembekile: Is it not going to shrink just— [using hands]



162.	Mrs. Letsiba:	Because of that kind of—
163.		No! You cannot say that.
		Right…
164.	Kamogelo:	Ma'am!
165.		I am not done; I am not done.
166.	Mrs. Letsiba:	Then…no we need to move on…yes! [Pointing to another learner]
167.	Mamotse:	Ma'am, I have a question, you see at the end of telophase 2 there are four new cells… so, I want to know how many chromosomes are in each?
168.	Mrs. Letsiba:	[Smiling] No! I cannot give you that because there was class work on that, I want you to –
169.	Ls:	[Laughter]
170.	Mrs. Letsiba:	Okay and then ehh…we keep on / ? /
171.	Mamotse	/ ? / are they four.
172.	Mrs. Letsiba:	The…
173.	Mamotse	Chromosomes!

174. Mrs. Letsiba: I do not know, neh…I do not know!
[Noise]
Okay ehh…we are on page number 33.
175. Kamogelo: Madam!
176. Mrs. Letsiba That is the consequences of ehh…meiosis neh…
177. Kamogelo: Madam, madam just listen, you see page 29 neh… madam the difference between— [intercom] mitosis and meiosis / ? / in mei-- meiosis
178. Mrs. Letsiba: Hee…
179. Kamogelo: Page 29…
180. Ls: [Noise]
181. Kamogelo: Yah the last point for meiosis.
182. [Reading] "Meiosis…during metaphase 1[intercom] interruption] during metaphase 1 both chromosomes are pulled towards the poles the chromosome does not split".
[Noise]
183. Mrs. Letsiba: Ehh… page… 29 neh…ehh…the difference between what ehh… mitosis and ehh…meiosis neh…
[Noise]
184. / ? / the differences between ehh… the ehh…two…ehh...the consequences of ehh… of abnormal ehh…meiosis.
185. Lethabo: Shhh… guys!

EPISODE 2: NON-DISJUNCTION

186. Mrs. Letsiba: The non- ehh…disjunction of ehh…chromosomes, the non-disjunction of chromosomes.
↑Is there anyone who can explain to us what you understand by the non- ehh…disjunction of ehh…the chromosomes…yes?
187. Lethabo: Ehh…the non-disju-nction of the chromosomes is-- is when the-e the— the chromosomes the number of chromosomes, one…

…pair of the chromosome has an EXTRA chromosome.

188. Ls: [Laughter]

189. Mrs. Letsiba: Mamotse! Thank you!

190. Mamotse: When one pair of chromosome fails to separate / ? /
[Noise]

191. Mrs. Letsiba: Ehh…and we go to our books page 33.
[Holding the textbook and writing on the board] Ehh during anaphase 1 neh…during anaphase 1.

192. These are these events taking place in a 1 neh…we have anaphase ehh…1.

193. One or more neh…

194. Kamogelo: Yes! Ma—

195. Mrs. Letsiba: …remember we have what…that karyotype [writing on the board] with THE ehh…chromosomes ehh… 1 up to number twenty ehh…three… the XX or the X ehh…Y neh… 1 up to ehh…the 23.

196. [Reading from the book] So in non-disjunction we are saying ehh…"one or more neh…one or more homologous pairs of chromosomes may not ehh…sepa-rate" neh!

197. Ls: Yes! Ma'am

198. Mrs. Letsiba: [Still reading] "One or more chromosomes ehh… chromosomes may-- ehh…homologous chromosomes may not ehh…separate and during

		anaphase 2 the SISTER ehh…chromatids of one or more chromosomes may…" also not do what…
199.	Ls:	Separate!
200.	Mrs. Letsiba:	…ehh…separate. So as much as ehh... sister chromatids or these homo-ehh…logous ehh…chromosomes they are not going to eeh…separate then we are referring ehh…to that ehh… process as what…as non-disjunction. [Referring to what is written on the board]
201.		As I was saying to you that ehh… [pointing to the board] …we have our pair 1 up to 23 and on our PAIR number 21 that we are referring to it as what ehh…trisomy ehh...21.
202.		We have ehh…trisomy 21 ehh…Jeremy.
203.		In trisomy 21 instead of having ehh… [writing on the board] THE XX chromosome neh…we end up having what …ehh…an extra…extra X chromosome because they failed to separate.
204.		So, this child ehh…will have ehh… 47 number of THE (chromosomes) of the chromosomes. In--ehh…okay…
205.		[Reading from the textbook] So, "such an abnormal ehh…gamete may fuse with ehh…a normal gamete and another abnormal gamete leading TO the genetic ehh…disorder neh…a:nd non-disjunctio:n can lead TO ehh… two general conditions that is ehh…aneuploidy" and th:e polyploidy.
206.		We have ehh…the aneuploidy and ehh…the polyploidy— that ehh… polyploidy normally happens ehh in-- takes place in plants.
207.		So, the aneuploidy…Mamotse read that for us quickly…aneuploidy.
208.	Mamotse:	[Reading from the textbook] "In aneuploidy one gamete receives two copies of the same chromosome while the other gamete receives no copy.
209.		If fertilization occurs—"
210.	Mrs. Letsiba:	I want you to underline that one ehh…gamete will receive ehh…two ehh…copies of the same ehh…chromosome… [learners talking] one ehh…gamete will receive two copies of the ehh…same chromosome and while ehh…the other gamete ehh…receive ehh… no (copy) neh…
211.	Kamogelo:	What do they mean ma'am?

212. Mrs. Letsiba: Ehh… we continue.

213. Mamotse: [Continues reading] / ? /

214. Mrs. Letsiba: Alright, we have ehh…the trisomy and the monosomy neh…the trisomy and the mono-ehh…somy.

215. What is the difference between the two… Sharlene?

216. Sharlene: Ma'am trisomy—

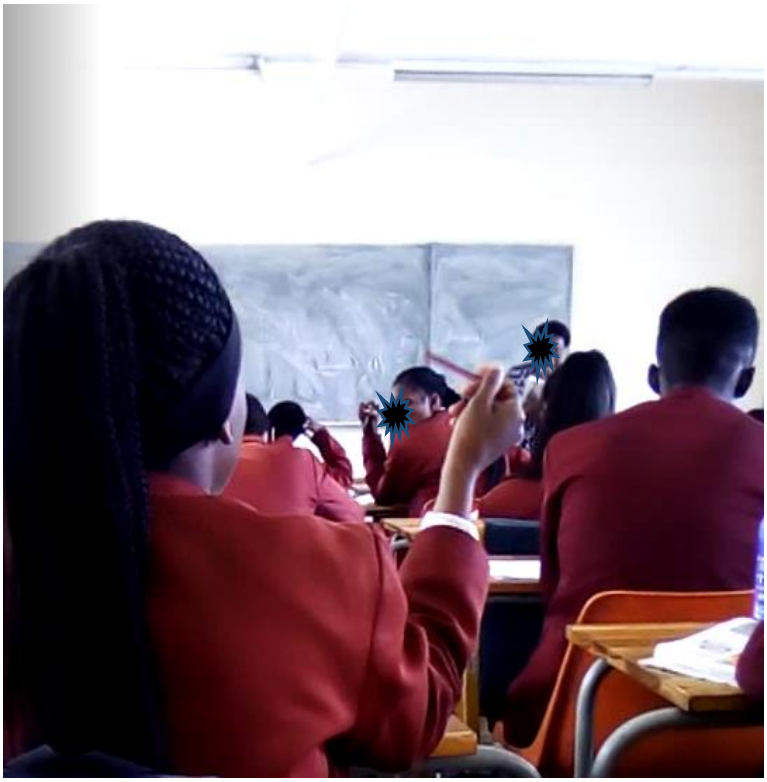
217. Mrs. Letsiba: ↓Can you give her chance people.

218. William: Ma'am in trisomy there is going to be three chromosomes because of the extra and then if it lacks one chromosome it going to be monosomy because there is only one instead of two.

219. Mrs. Letsiba: Thank you!

220. Rethabile! The difference my girl.

221. Rethabile Trisomy It is when chromosomes are there and mi-- monosomy it is lacking one chromosome. [Using a hand]



222. Mrs. Letsiba: Uhm…my girl again!

223. Mamotse: Trisomy ma'am there is one extra chromosome and monosomy lacks one chromosome.

EPISODE 3: DOWN'S SYNDROME AS AN EXAMPLE OF TRISOMY

224.	Mrs. Letsiba:	Alright, so we are given THE—the… example of ehh… the ehh…Down's ehh…syndrome neh… we are given the example of ehh…the Down's ehh…syndrome and then Kaone, you read the passage for me [Learners giggling] Down's syndrome.
225.		So, at least today you know ehh…while they are saying that someone is suffering from Down's syndrome [learners giggling] what happened actually— alright…an extra chromosome.
226.	Kaone:	[Reading from textbook] / ? /
227.	Mrs. Letsiba:	Anyone to help me Thapelo!
228.	Thapelo:	[Reading loudly] Ahh… "individuals with Down's syndrome are characterized with mentally retardation, hearing loss, heart defects, / ? /muscle tone upwardly setting eyes skin, small mouth, and nose". [Laughter]
229.	Mrs. Letsiba:	Aright Thapelo!
230.	Thapelo:	Abnormal ear shape— [Noise and laughter]
231.	Mrs. Letsiba:	Then check-check! [Noise and laughter]
232.	Mrs. Letsiba:	/ ? /
233.	Ls:	[Laughter]
234.	Mrs. Letsiba	Ehh…ehh…And then you Thapelo!
235.		Ehh…if you check ehh…those-- your ears…
236.	Ls:	[Laughter]
237.	Thapelo:	My ears are fine... my ears are fine.
238.	Mrs. Letsiba:	…and the mouth…
239.	Thapelo:	Ahh… my mouth is fine.
240.	Ls:	[Laughter and noise]
241.	Mrs. Letsiba:	The nose…
242.	Ls:	[Laughter and noise]
243.	Mrs. Letsiba:	Alright, ehh…those are some of the-- / ? / alright…

244.	Thato:	There is no cure for Down's syndrome only symptoms are treated.
245.		To detect it the parents of Down's syndrome in unborn babies, feotal cells are removed from the u-- uterus of the pregnant mother by amnioce— amniocentesis and analysed.
246.		The karyotype resulting from such an analysis is then deter— determined to determine— is the abnormal number of chromosomes.
247.	Mrs. Letsiba:	Ahh…okay, ehh…thank you!
248.		So, what is important ehh…here or what is usually in your ehh…question paper.
249.		They will just give you ehh…the example of that figure 2.13 ehh…that diagram where… on page number ehh…twenty ehh…one, we have an extract there neh… then they will ask you how many number of the chromosomes that are here, you know ehh…this child is of course someone with Down's syndrome and the child is having how many… ehh…forty ehh…seven the number of the ehh…the ehh…of the chromosomes okay.
250.		Then, alright I wanted to give— ma'am I want to give them their tests.
251.	Kamogelo:	I have a question ma'am…I should ask…okay ma'am. [One learner coughing] [Inaudible]
252.	Mrs. Letsiba:	Can you hear what he is saying?
253.	Ls:	No!
254.	Mrs. Letsiba:	↓Ehh…make it louder. [Noise]
255.	Kamogelo:	Since there is no cure for Down's syndrome.
256.	Ls:	Shhhh…
257.	Kamogelo:	Here we are hearing that ahh…that it can be detected ahh…in the unborn babies by / ? / from the uterus of the pregnant mother, does this act as a cure mam?
258.	Ls:	[Noise]
259.	Mrs. Letsiba:	Ehh…it is…
260.	Candice:	Ngiyakusola [I suspect you in IsiZulu]

[laughter and noise]

261. Mrs. Letsiba: No! Is it not that you are helping him to understand neh!

262. It is not like ehh…now ehh…you… / ? / undermine him, judge him neh… ehh…he is also learning neh…at the end of the day [intercom interruption] otherwise he will go out and say that by removing those chromosomes that can be cured. Can you fill out those forms? [Learners making noise]

THE END