

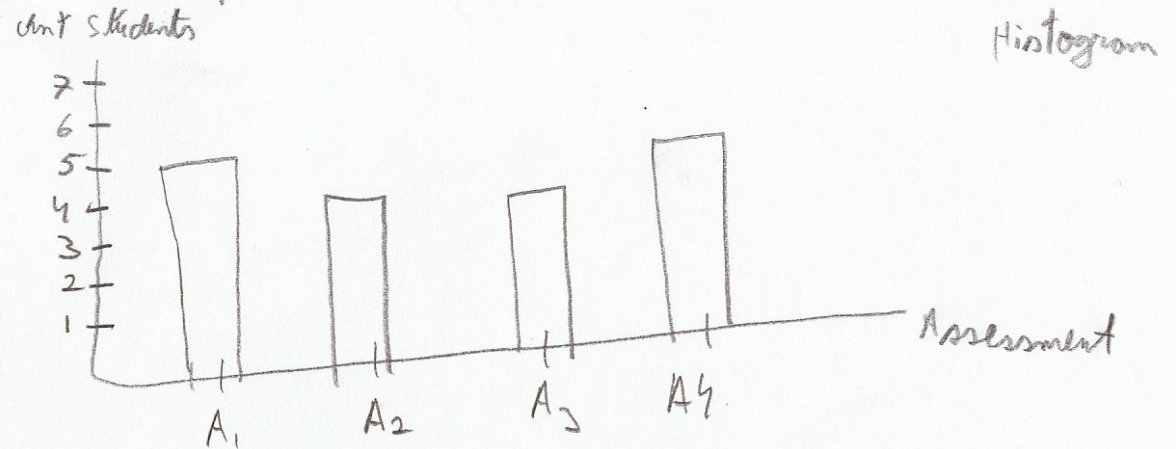
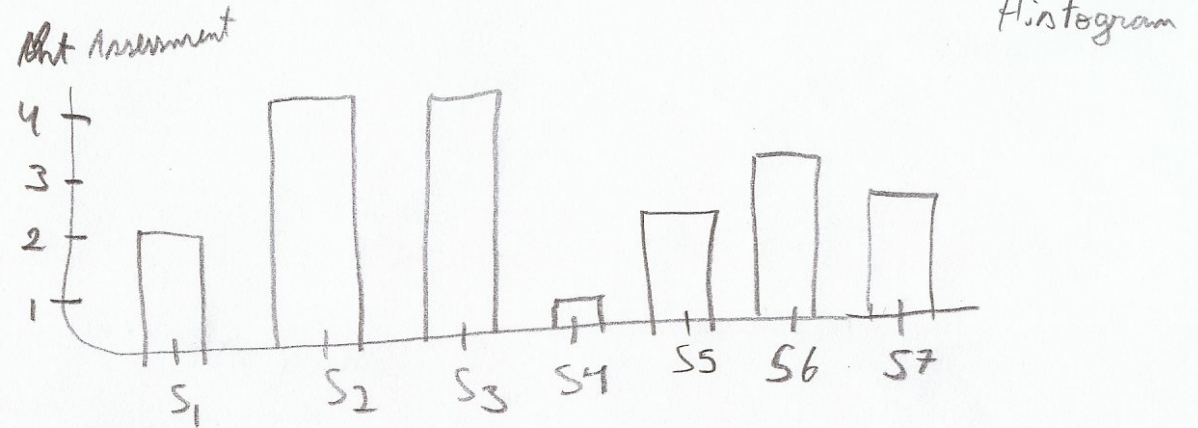
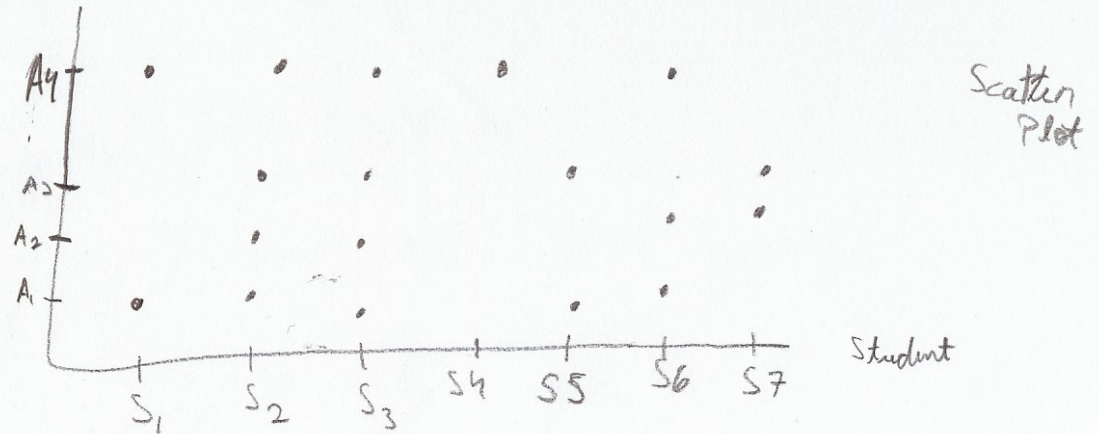
11- Engagement in the online environment, as measured by assessment did on the environment

	A1	A2	A3	A4	A5
S1	✓	-	-	✓	✓
S2	✓	✓	✓	✓	✓
S3	✓	✓	✓	✓	✓
S4	-	-	-	✓	✓
S5	✓	-	✓	-	-
S6	✓	✓	-	✓	✓
S7	-	✓	✓	-	-

TABLE

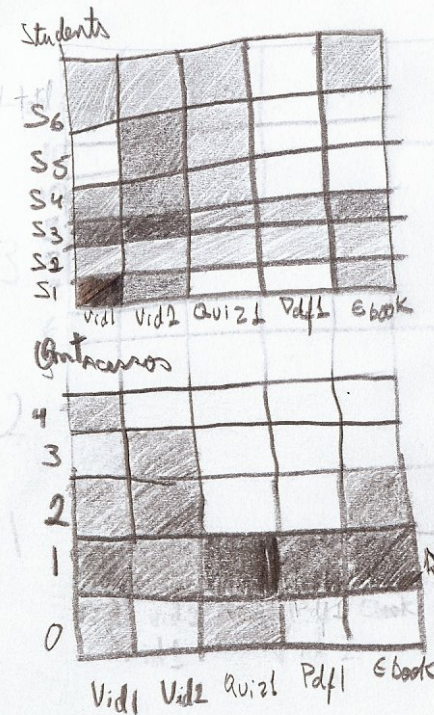
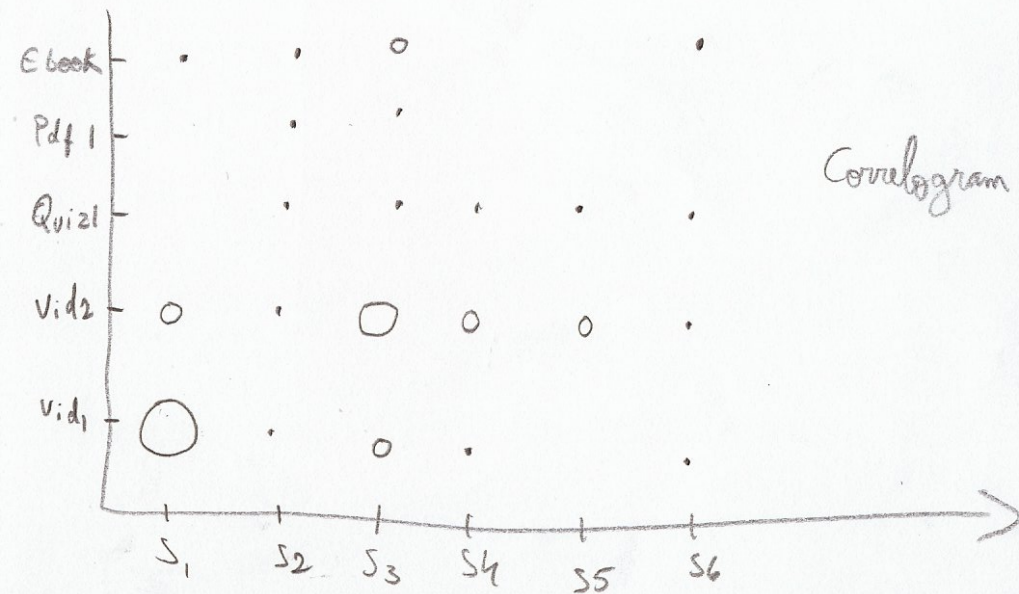
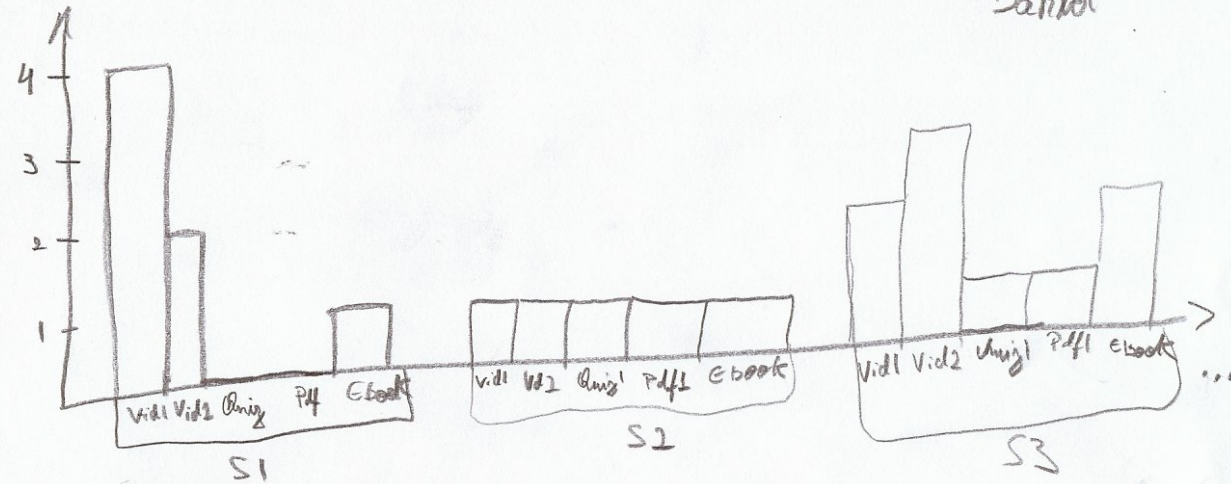
	Assessment
S1	2
S2	4
S3	4
S4	1
S5	2
S6	3
S7	2

Table



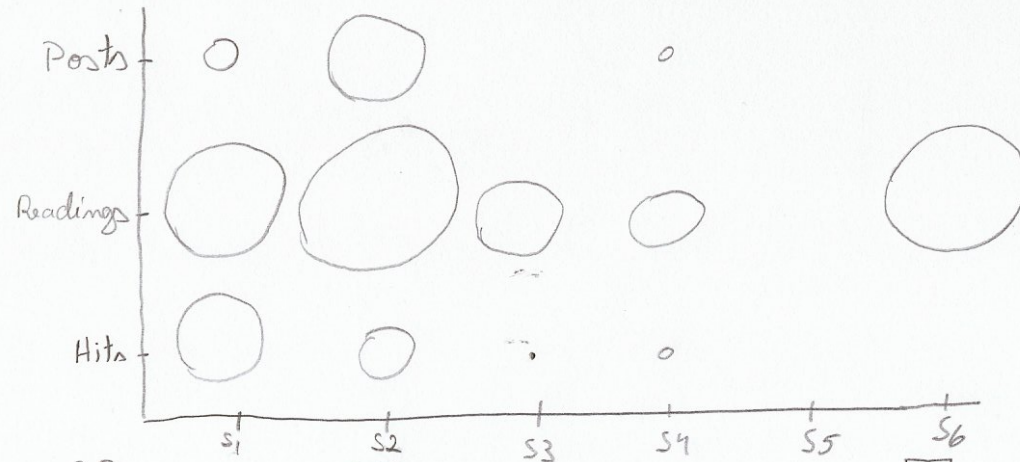
12 - Engagement in the online environment, as measured by materials accessed on the environment.

	Vid1	Vid2	Quiz1	Pdf1	Ebook
S1	4	2	-	-	1
S2	1	1	1	1	1
S3	2	3	1	1	2
S4	1	2	1	-	-
S5	-	2	1	-	-
S6	1	1	1	-	1



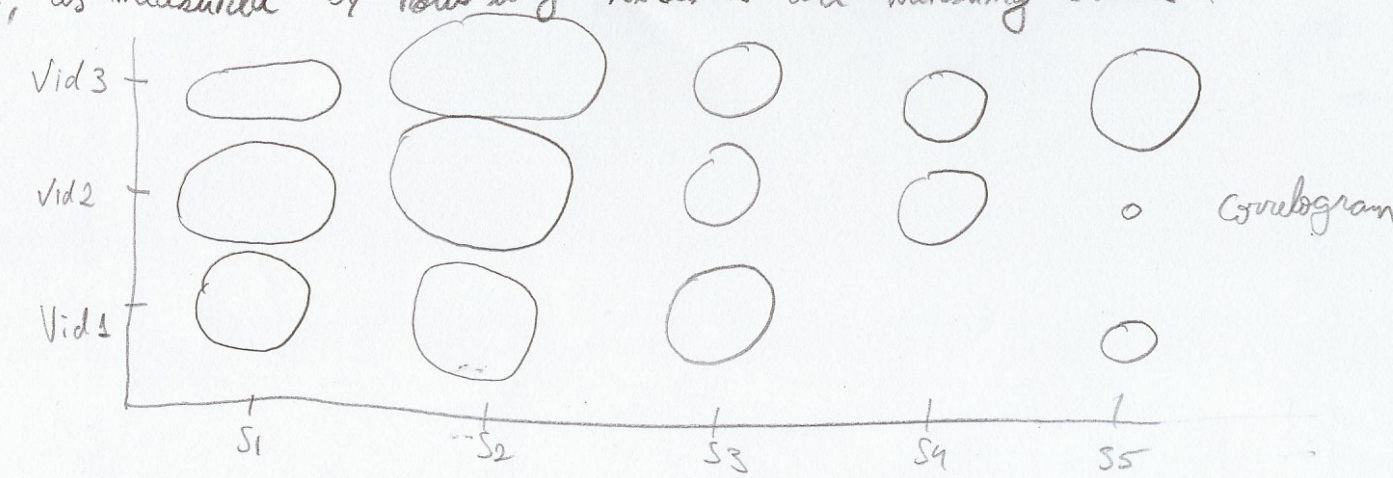
13 - Engagement in the online environment, as measured by total hits, readings and postings

	Hits	Readings	Posts
S ₁	20	28	3
S ₂	10	31	15
S ₃	1	15	-
S ₄	2	11	2
S ₅	-	-	-
S ₆	-	30	-

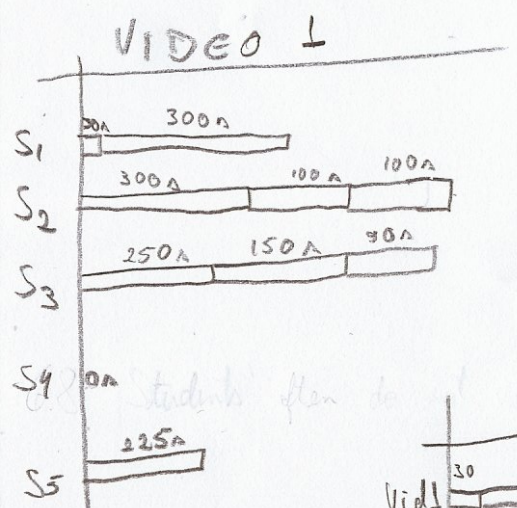


14- Engagement in the online environment, as measured by how long students are watching videos.

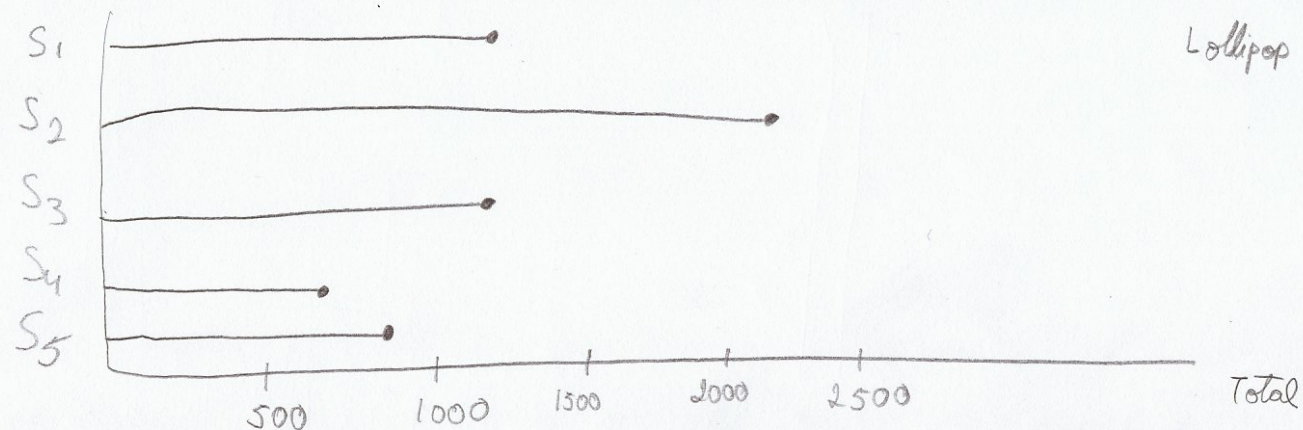
	Vid1	Vid2	Vid3	Total
S ₁	30A 300A	450A 67A	450A	1297A
S ₂	300A 100A 100A	450A 227A 90A	450A 450A 120A	2287A
S ₃	250A 150A 90A	450A	450A	1390A
S ₄	—	200A 100A	300A	600A
S ₅	225A	90A	400A	715A



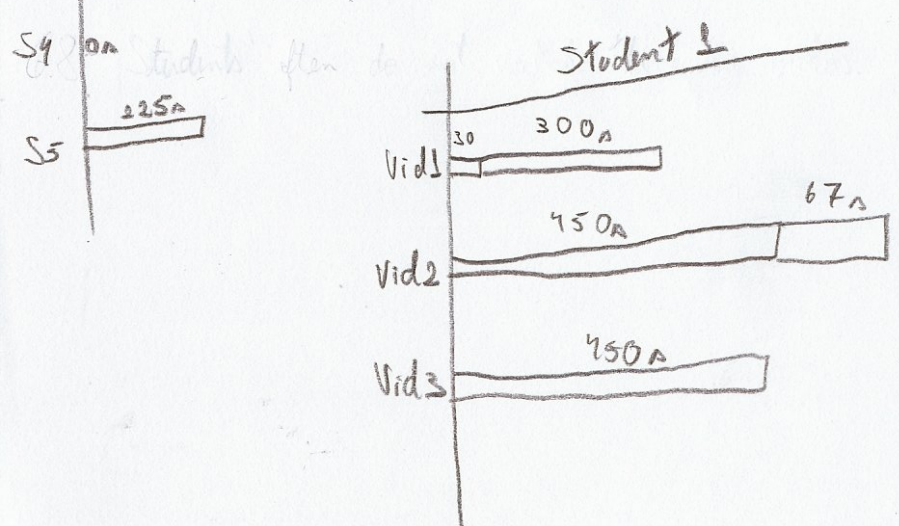
68- Students often do not watch the entire videos



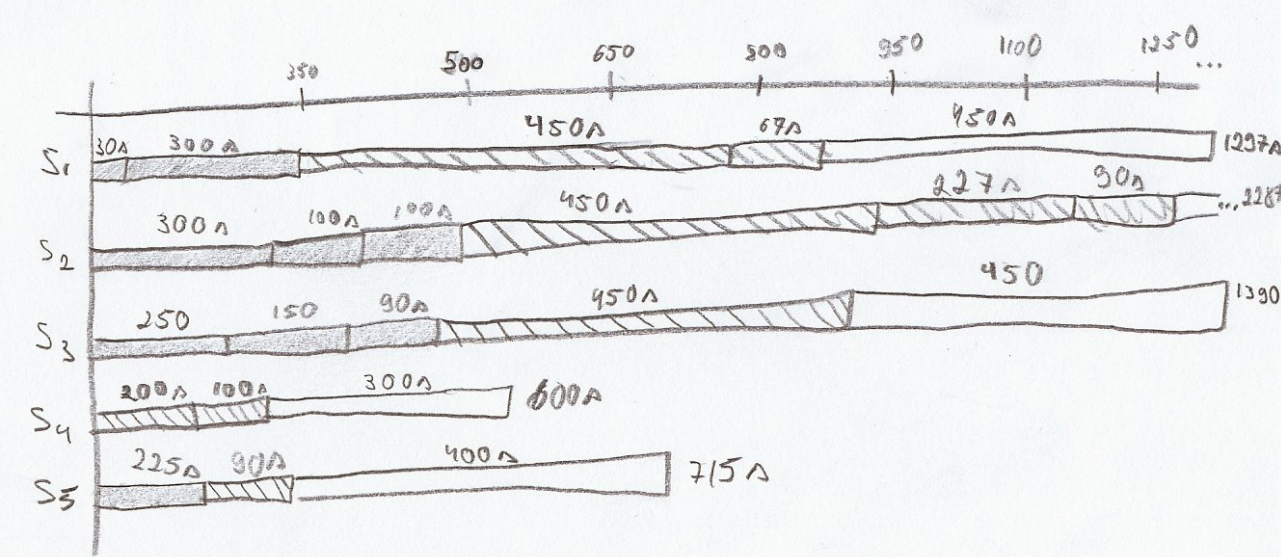
Stacked Barplot



Lollipop

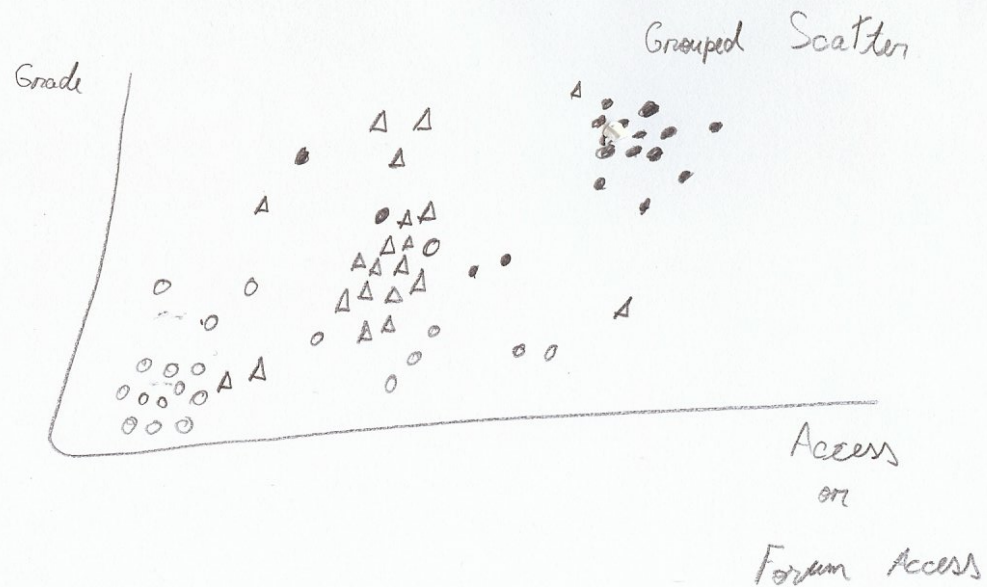


Student 1



17- Students can be clustered into different groups based on their access or interaction patterns

	Grade	Access	Forum Post	Forum Access	...
S ₁	70	50	5	28	
S ₂	85	65	1	31	
S ₃	100	150	27	62	
S ₄	60	40	-	11	
S ₅	65	45	-	20	
S ₆	70	55	-	20	
S ₇	95	130	28	57	
S ₈	55	30	-	15	
S ₉	-	15	-	2	
S ₁₀	73	50	3	20	
S ₁₁	80	52	-	-	
S ₁₂	35	25	-	-	
S ₁₃	78	60	2	12	
S ₁₄	81	60	1	15	
S ₁₅	90	100	-	-	



28- Students groups that use more forums tend to have a good performance

106- Students groups that have more posts are more likely to complete the course

30- Students groups that do more replies in forums tend to have a good performance

31- Students groups that init threads in forums tend to have a good performance

35- Successful students are more frequently and regularly participating and engaged in online activities

20- Students with satisfactory performance ignore part of the materials in distance L.

26- Older Students Participate more in forums

	Forum Post	Age
S ₁	30	47
S ₂	27	35
S ₃	29	38
S ₄	10	25
S ₅	11	27
S ₆	7	20
S ₇	5	23
S ₈	—	18
S ₉	1	19
S ₁₀	47	60
S ₁₁	20	32
S ₁₂	22	35
S ₁₃	17	28

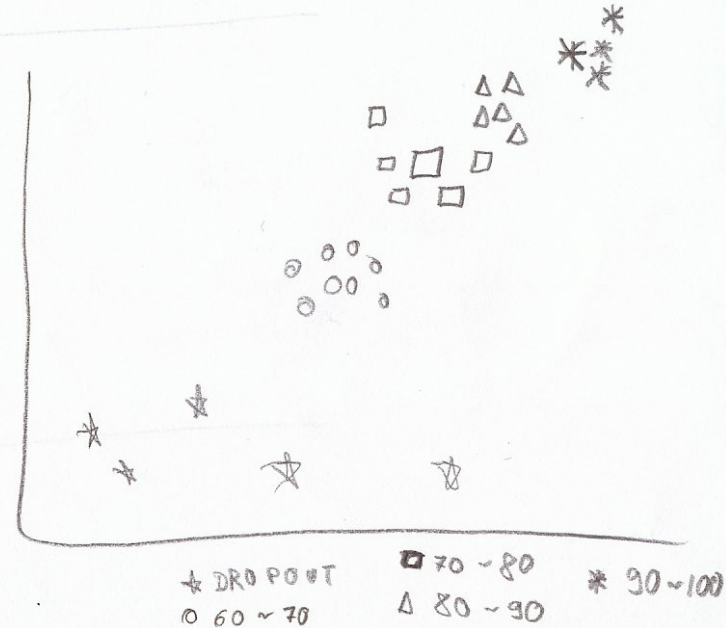
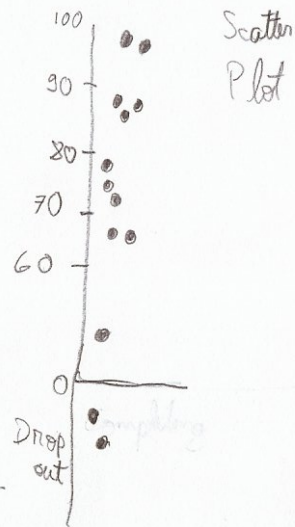
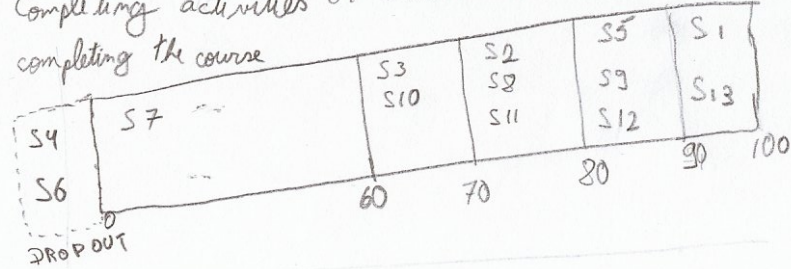


51 - Forum can be used as a predictor of students completing course

	Predicted Grade	Predicted Dropout	Grade
S ₁	90 ~ 100	-	
S ₂	70 ~ 79	-	
S ₃	60 ~ 69	-	
S ₄	-	X	
S ₅	80 ~ 89	-	
S ₆	-	X	
S ₇	0 ~ 59	-	
S ₈	70 ~ 79	-	
S ₉	80 ~ 89	-	
S ₁₀	60 ~ 69	-	
S ₁₁	70 ~ 79	-	
S ₁₂	80 ~ 89	-	
S ₁₃	90 ~ 100	-	

79 - It is possible to obtain accurate classification models to predict students' performance through the analysis of the students' interaction

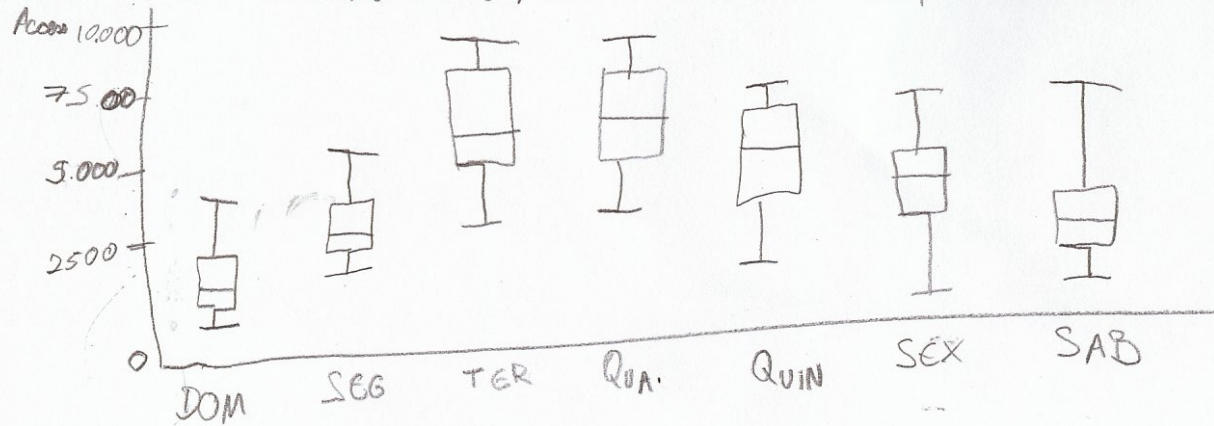
37 - Completing activities or assessment can be used as a predictor of students completing the course



40 - It's possible to obtain accurate classification models to predict students' drop out through the analysis of the students' interaction

- 8 - Access in the online environment resources increase in periods close exams or assessment deadline.

S₁

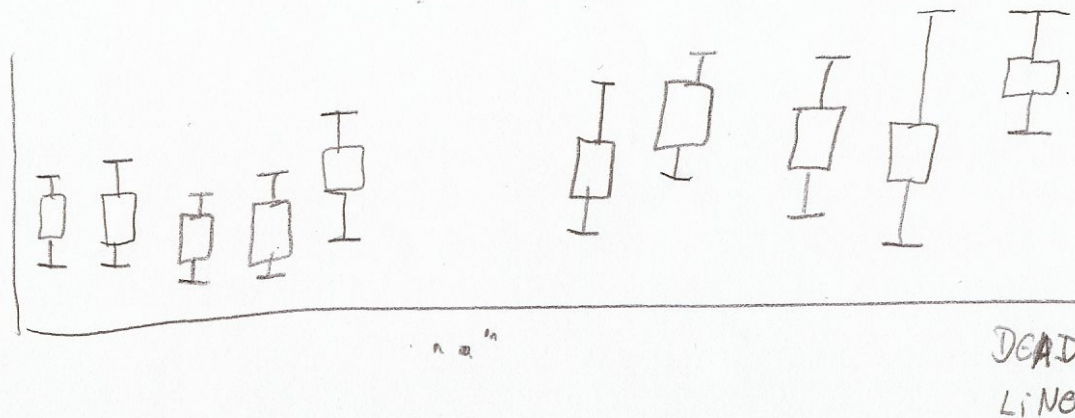


General



Accesses					
	W ₁	W ₂	W ₃	W ₄	W
S ₁	5	7	8	15	27
S ₂	2	5	7	10	19
S ₃	0	2	4	11	21
S ₄	1	5	8	10	19
S ₅	0	7	8	13	17
S ₆	3	3	9	17	25
⋮					

Specific
Period

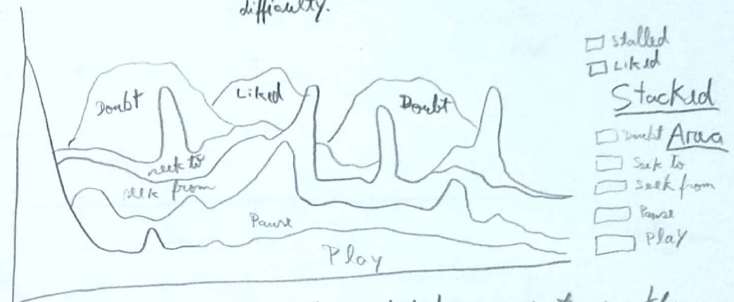


RQ-01 - Statistics of interactions on video (eg., access, re-watch, seek)

	Action
S1	Play 0s
S1	Seek 2s to 27s
S1	Seek 32s to 17s
S1	Pause 40s
S2	Play 0s
S2	Pause 27s
S2	Play 27s
...	

	Play	Pause	Seek from	Seek to
0s	100	0	27	32
1s	32	0	29	7
2s	15	2	32	11
3s	0	3	30	10
4s	2	10	27	17
5s	17	7	35	22
...

RQ-23 - Know video segments that the students have difficulty.

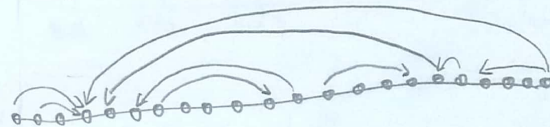


RQ-26 - Know how students navigate in the video

RQ-16 - Know if the student is watching the video

RQ-20 - Know what videos (or segments) the students have liked

seek from & seek to

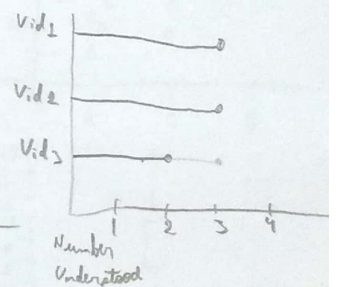
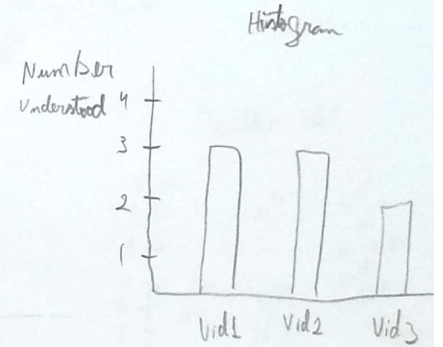
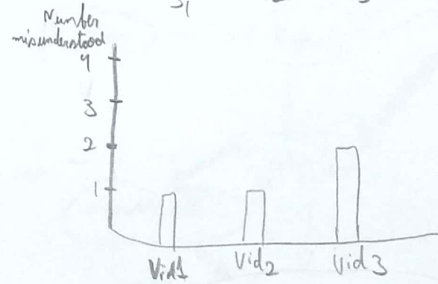
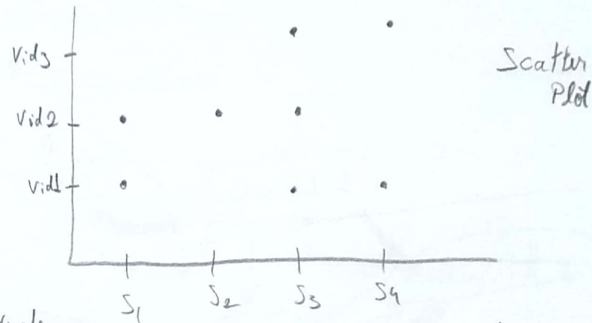


Arc diagram

RQ-12 - Know if the student has understood the videos.

	Vid 1	Vid 2	Vid 3
S1	V	V	-
S2	-	V	-
S3	V	V	V
S4	V	-	V
⋮			

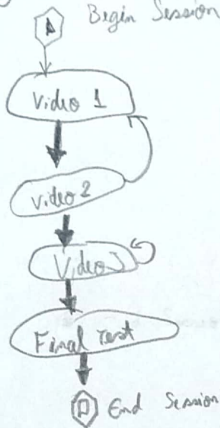
RQ-20 - Know what videos (or segments) the students have liked



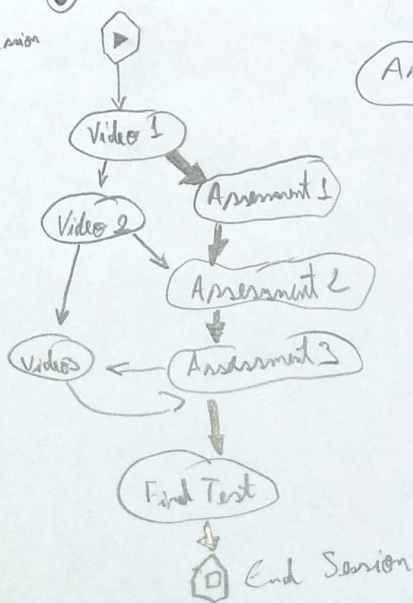
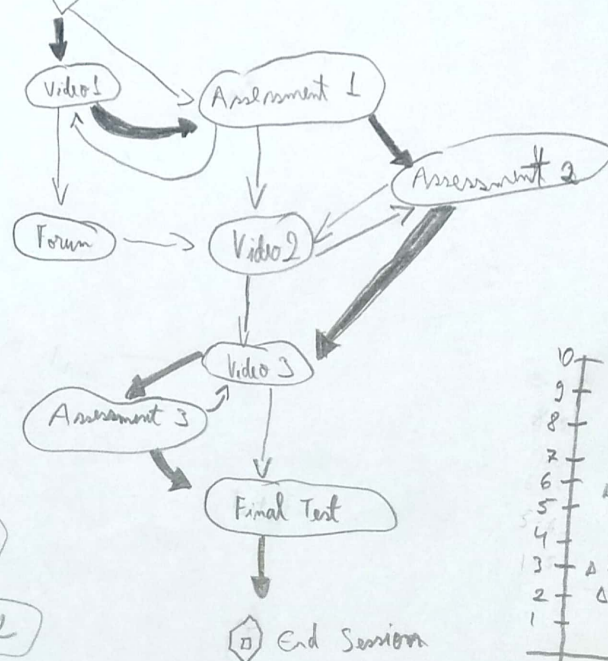
RQ - 10 - Identify student navigate patterns on the VLE

RQ - 25 - Know how students navigate among the video lectures

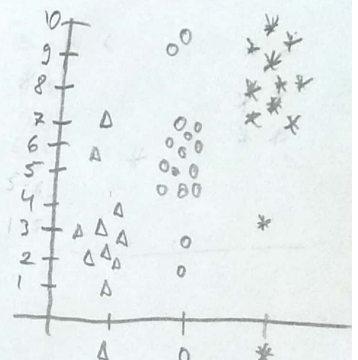
① Begin Session



* Begin Session



Scatter Plot



Boxplot

