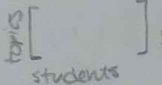
1. Ideas

- 2D scatterplot of clustered students
- parallel coordinates w/ abstracted attributes
- Topic Modeling student's Actions
  - ↳ vis: Show the different probabilities for each word (action) for each topic as a bar graph
  - ↳ vis: Word clouds w/ each word representing action (size of word ⇒ probabilites)

Topic Coins?

- Student Performance on assessments
  - ↳ matrix



scores rep. by boxes (luminance scale)

  - ↳ Bar graphs
- Visualizing student's actions over time
  - ↳ LTMA type visualization could be combined w/ topic modeling
  - ↳ Sedimentation

2. Filter

All of them are different

3. Categorize

- Cluster Vis
  - 2D scatterplot of clustered students
  - parallel coordinates
- Topic Modeling
  - Bar graphs for each topic
  - Word clouds
  - LTMA type vis
- Student performance
  - Matrix
  - Bar graph
- Student's Actions over time
  - LTMA type visualization
  - Sedimontation

4. Combine and Refine

Multiple views

① Student performance
② Student's Actions over time
③ ML visualization
  ↳ clustering
  ↳ topic modeling

5. Question(s)

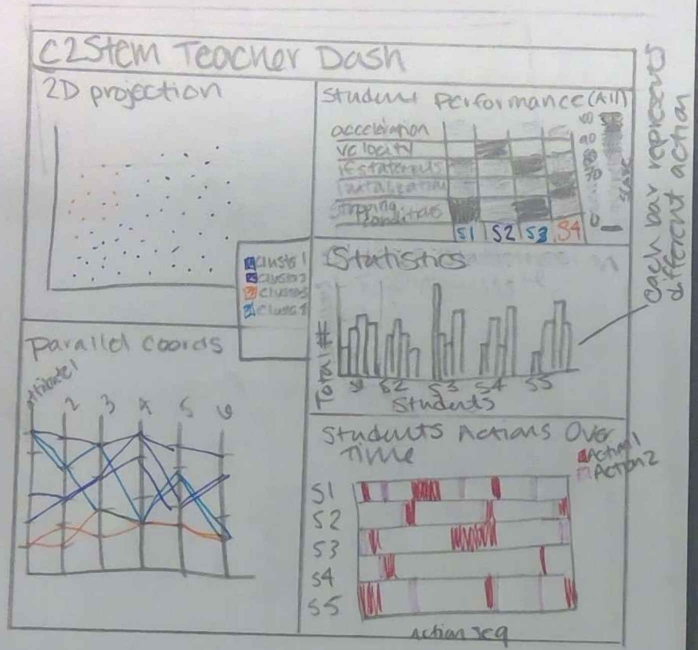
How do students' actions compare?

Which actions or action sequences are successful?

What insights can we get about modeling in C2Stem?

Note: These aren't the colors I would use

Layout



Title: Clustering Vis

Auther: Caitlin Snyder

Date: 3/11

Sheet: 2

Task: C2Stem Teacher Dash

Operations

- Brushing on 2D projection would link to all other views + only show those students
- Clicking a cluster label would populate all other views with only that cluster

Focus

- Cluster Color Mapping would be linked across all subviews
- Student Performance would be represented as a matrix w/ topics mapped to the rows, students mapped to columns + opacity representing scores
- Cluster Statistics would be multiple bar graphs with the y-channel being the number of that type of action, x-channel being the students

Discussion

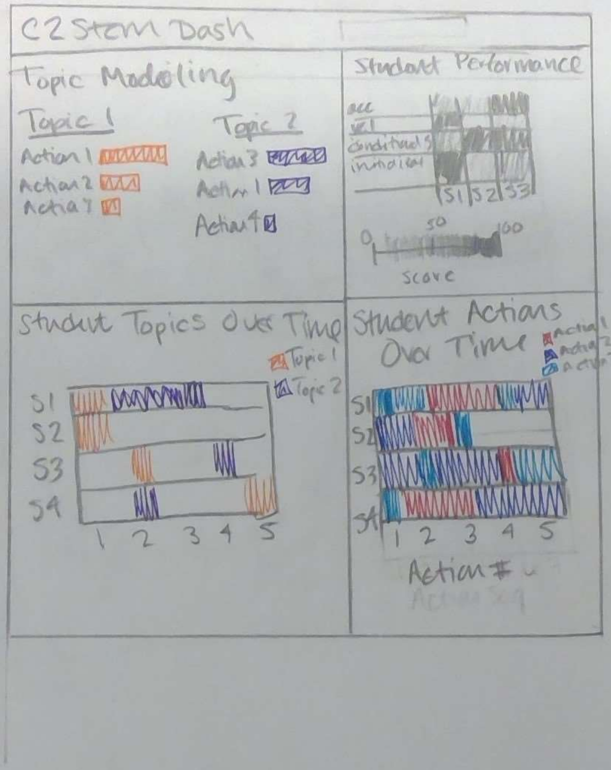
Weaknesses:

- requires abstraction of actions from 40 to a smaller dimension
- Might be too many actions for color in student actions over time view

Strengths:

- Teachers can see how clusters compare
- easy to view student performance

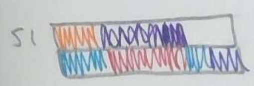
Layout



Title: Topic Modeling Vis
Auther: Caitlin Snyder
Date: 3/11
Sheet: 3
Task: C2STEM Teacher Dash

Operations

- Comparison b/w Actions & Topics over time
  - ↳ if user clicks on a specific student it will show these two next to eachother like:



Focus

- See Student Performance in sheet 2
- Topic Modeling
  - ↳ length of bars is mapped to probability of given word (action) in each topic

Discussion

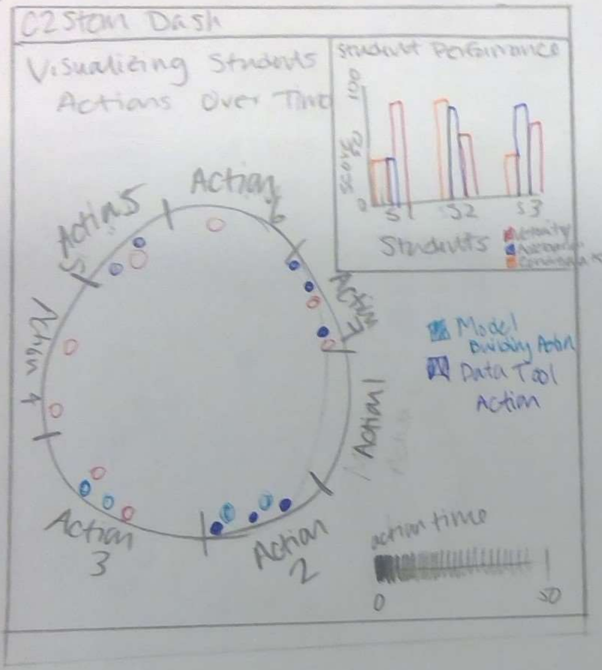
Weakness:

- not alot of operations as design is now
- Student performance isn't linked to topics

Strengths

- Can compare topics to individual actions

Layout



Title: Student Actions Over Time
Auther: Caitlin Snyder
Date: 3/11
Sheet: 4
Task: C2Stem Dash

Operations

- Hover over action & it will tell you which student performed it
- Click on student in performance view & it will highlight all of that student's actions

Focus

- Student Performance
  - bar graphs — each bar represents
- Sedimentation
  - luminence → represent what time the action was done
  - each action would be classified by higher abstraction (mapped to color)

Discussion

Weaknesses:

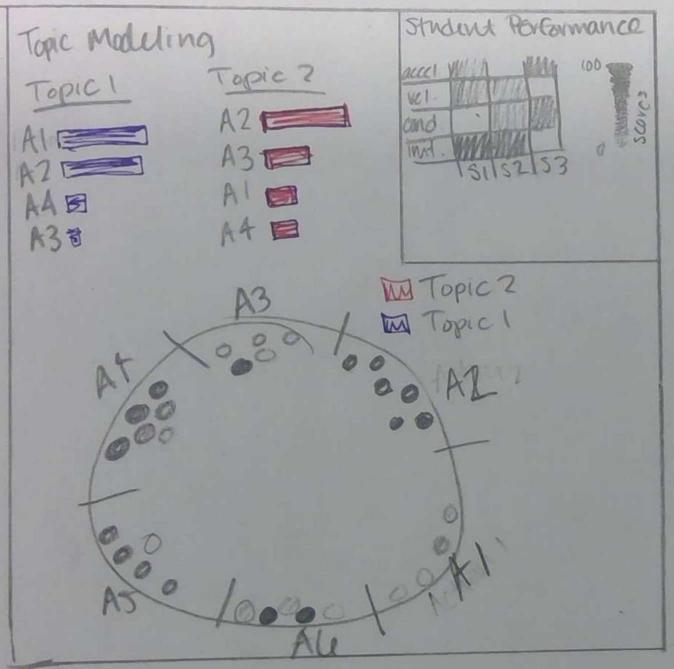
- Individual Student Actions are not immediately obvious

Strengths:

- prioritizes student's actions & gives overall picture

Title: Possible Vis
Auther: Caitlin snyder
Date: 3/11
Sheet: 5
Task: C2Stem Dashboard

Layout



Operations

- Click on a topic & it will only show that topic's action in sedimentation view
- Click on student & it will only show that student's actions in sed. view

Focus

- Overall Takeaway:
  Combine Topic Modeling w/ ability to view actions over time
- Opacity of sediment ⇒ time placed

Detail

Algorithms:
- LDA for topic modeling

Libraries
- Visual sedimentation (javascript)
- d3
  ↳ bar graphs & matrix