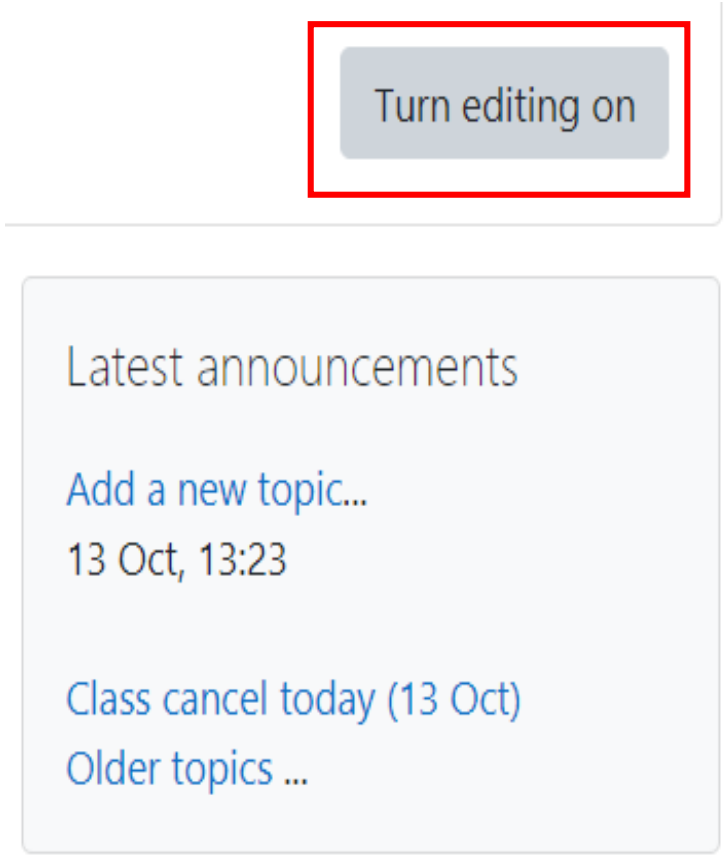
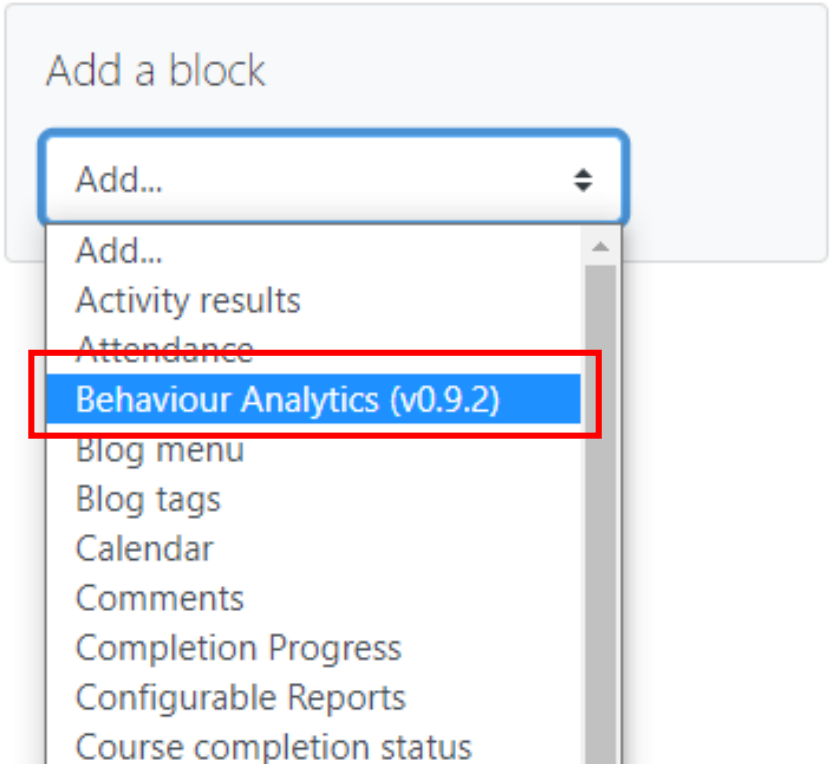
User Guide – Behaviour Analytics

Setting Up Behaviour Analytics

How to Add the Behaviour Analytics Block on Moodle

1. Go to course page
2. Click on "**Turn editing on**"
3. Click on "**Behaviour Analytics (v0.9.2)**" under "Add a block"





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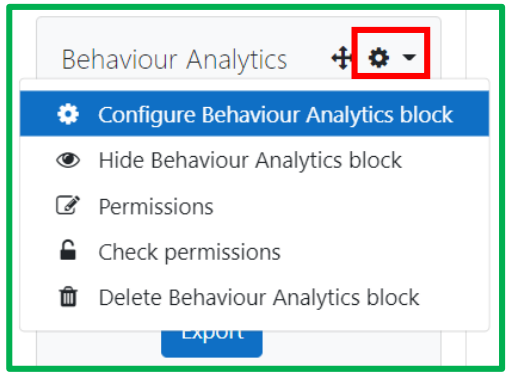
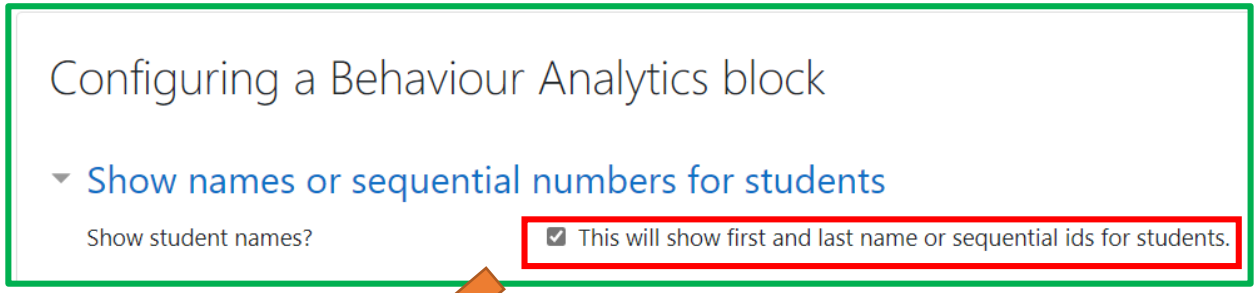
Students' names can be shown or replaced by numbers

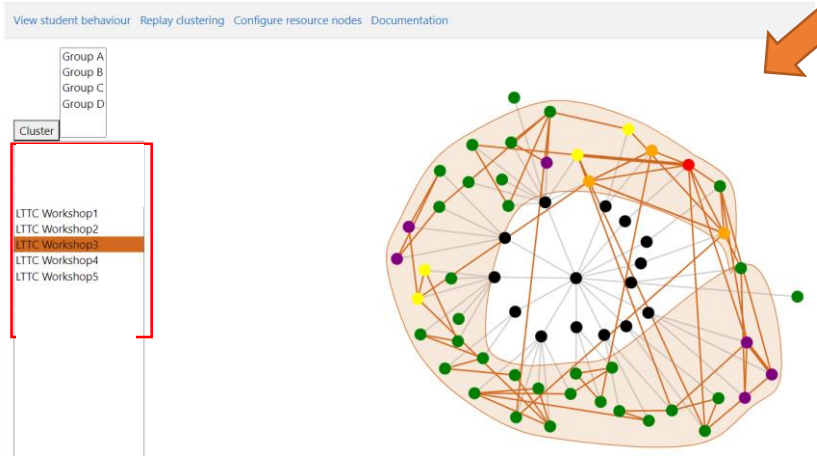
1. Go to the "Behaviour Analytics" block
2. Click ⚙ on the upper right corner
3. Click "**Configure Behaviour Analytics block**"



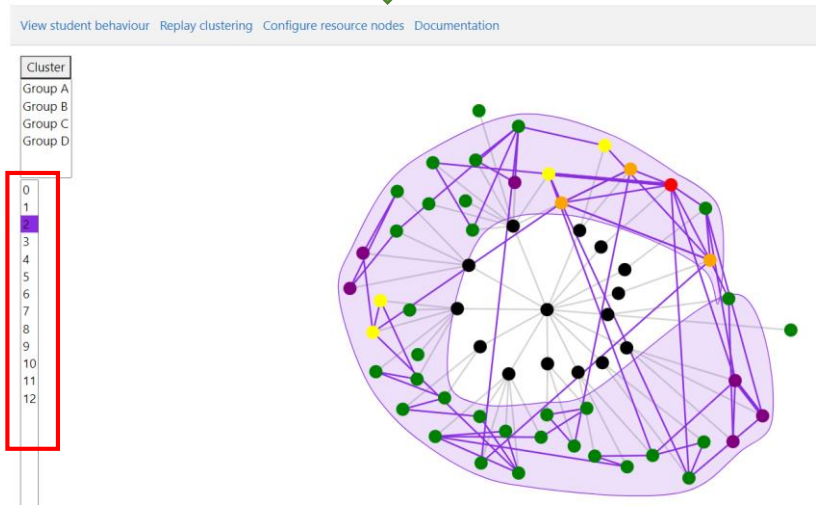


when checked

when not checked



Students' names are shown.



Students' names are replace by numbers.

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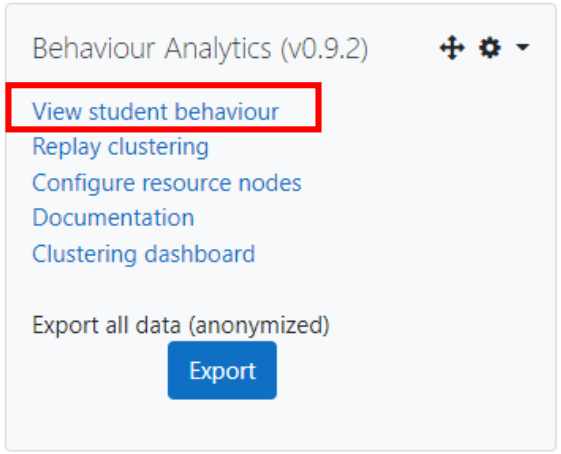
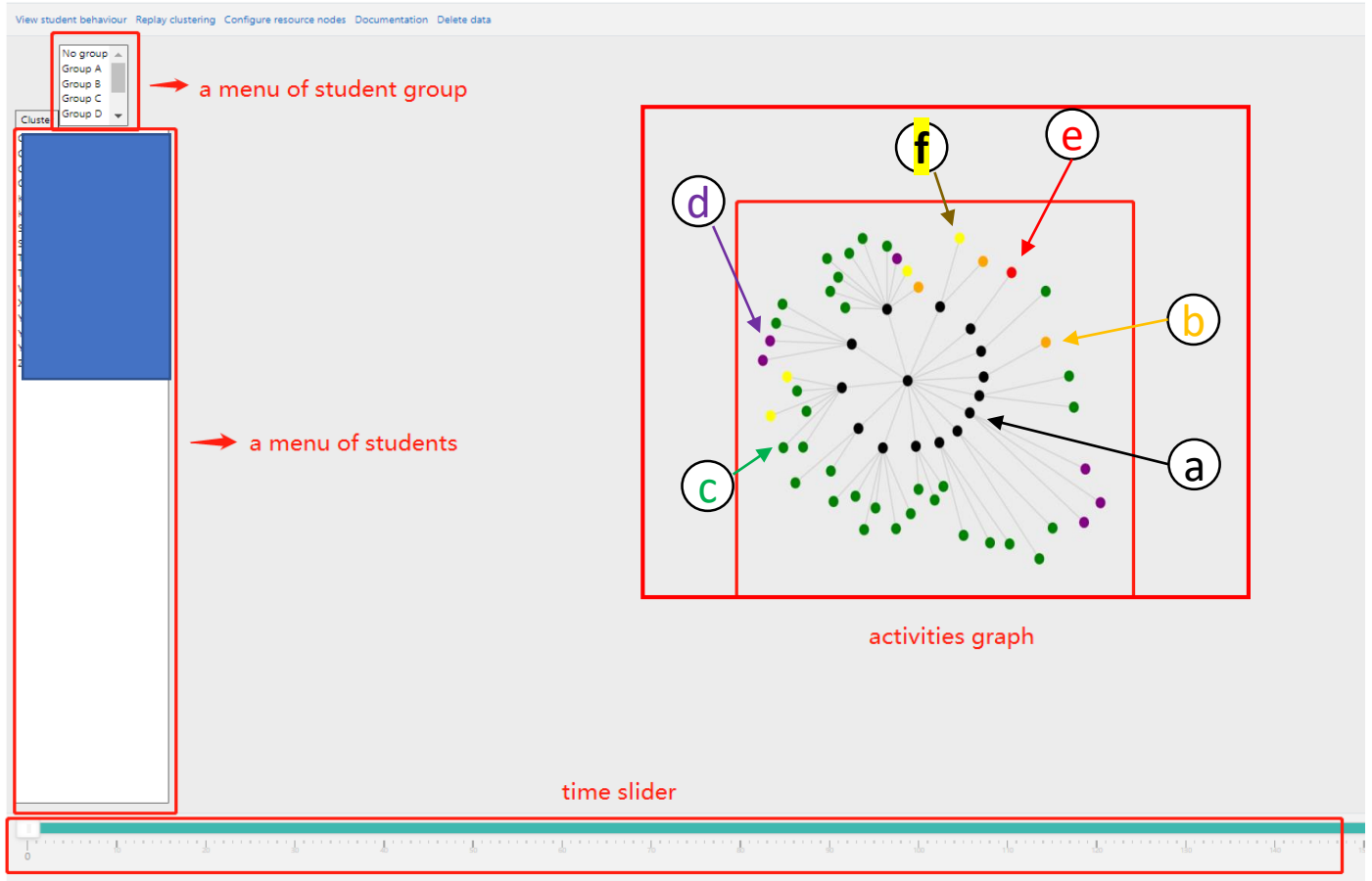
Basic Layout: The Nodes

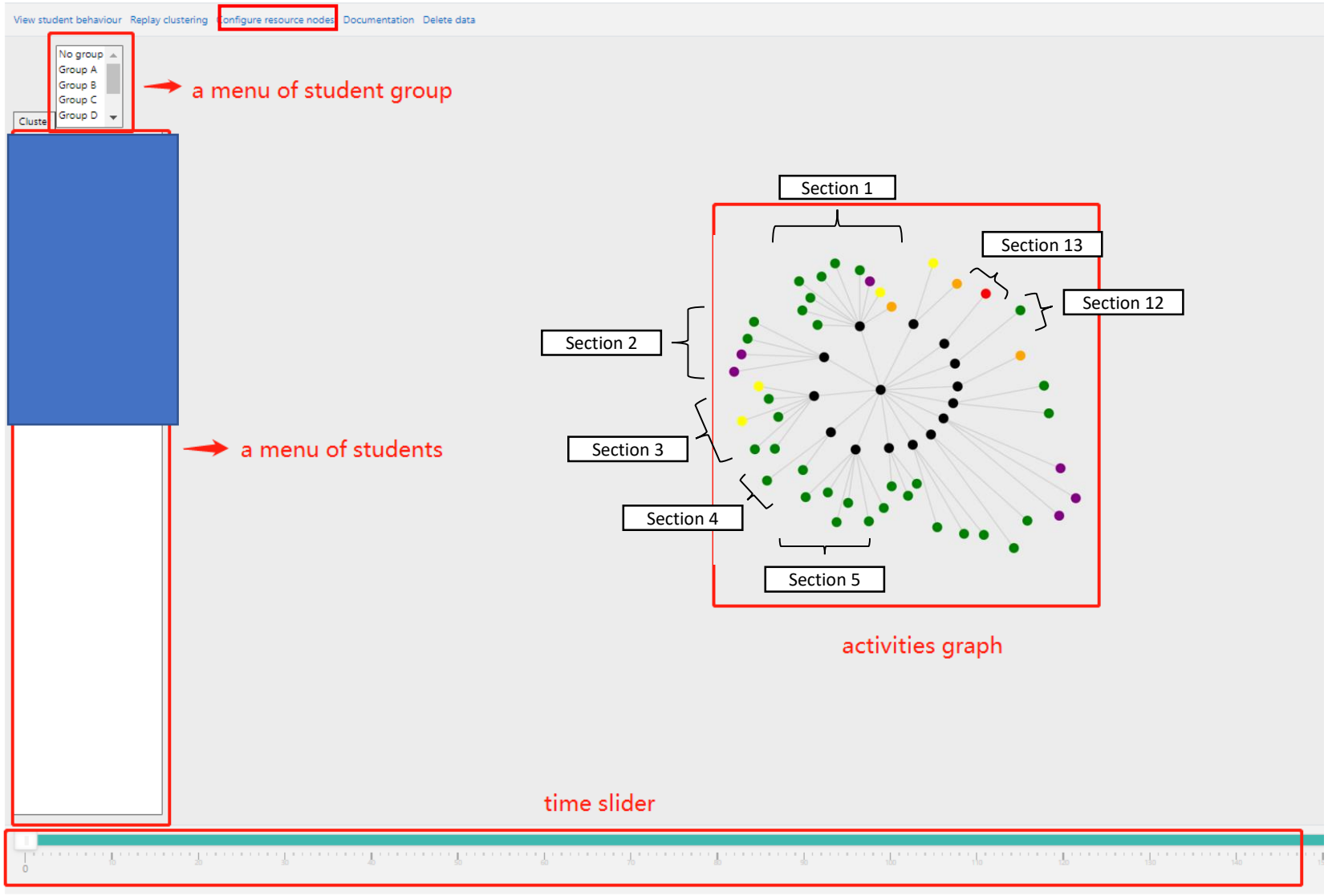
1. Find the block “Behaviour Analytics (v0.9.2)” on course page and click on “**View student behaviour**”
2. The Course resources on Moodle are represented as nodes of different colors:
   a. Black = Section
   b. Orange = Forum
   c. Green = File
   d. Purple = URL
   e. Red = Quiz
   f. Yellow = External tools





Basic Layout: Repositioning the Nodes

Clicking "**Configure resource nodes**" to adjust the positions of the nodes, e.g., according to the course sections



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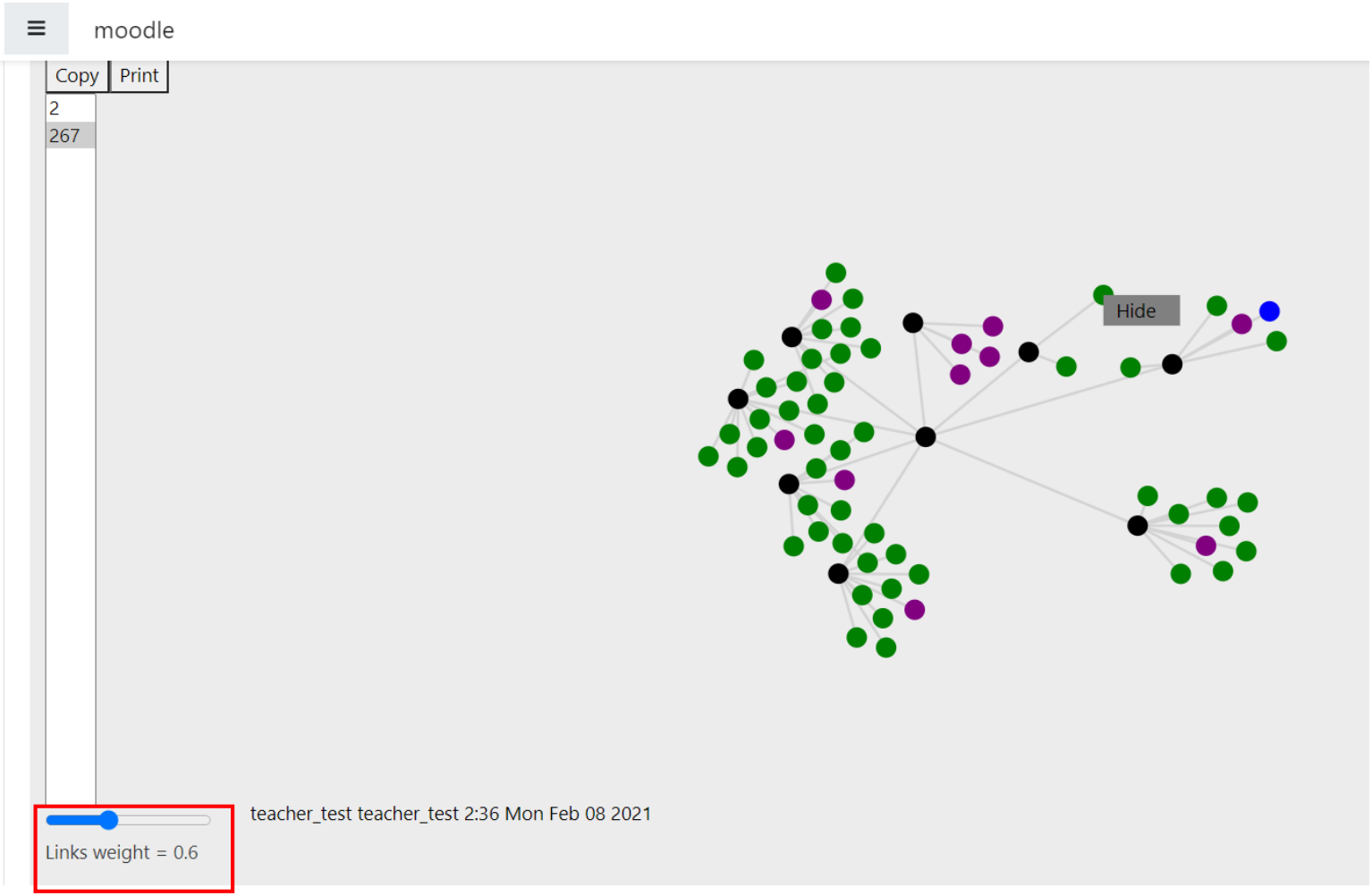

This is where we can customise the layout of the nodes by moving them around, with the control of "Links weight" in the lower left corner:

Links weight < 0 - pressing on a node pushes all connecting nodes away;

Links weight > 0 - pressing on a node attracts all connecting nodes towards it;

Links weight = 0 - A node can be dragged around without affecting the others.

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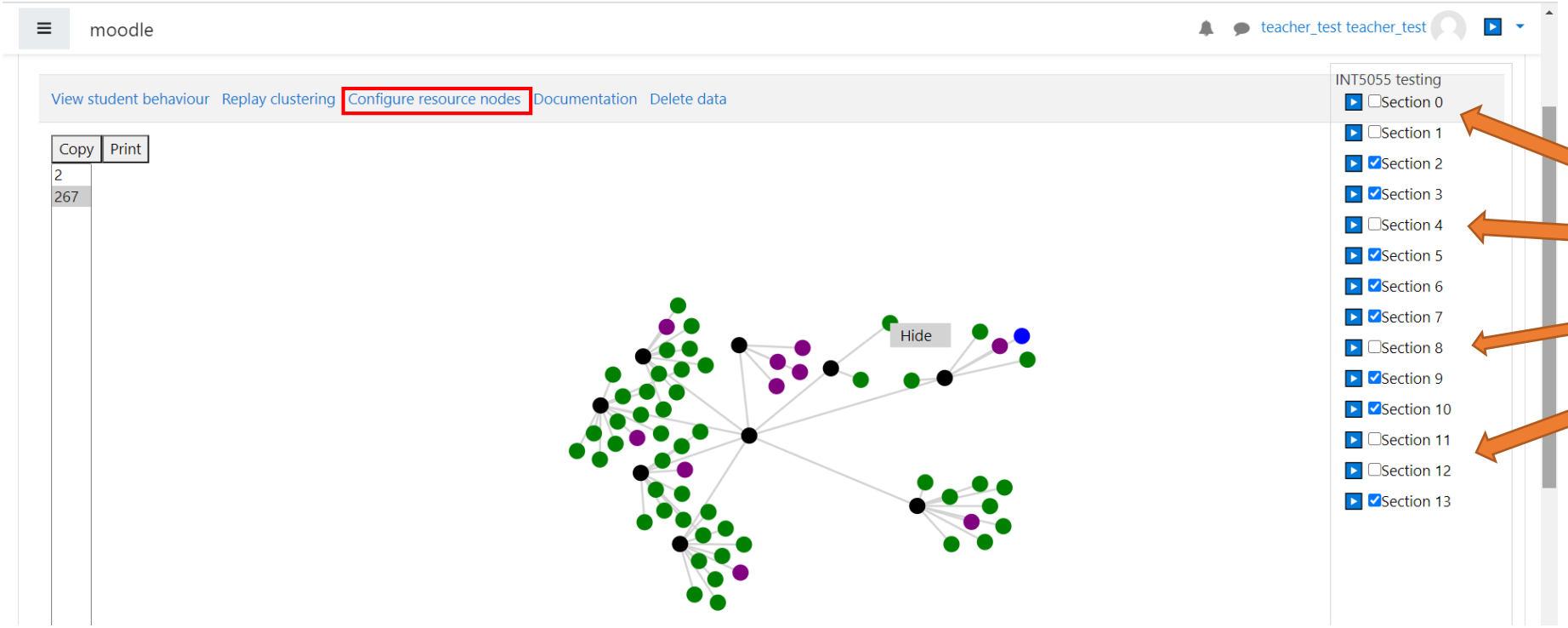
Basic Layout: Repositioning the Nodes

Clicking "**Configure resource nodes**" to decide which nodes to show



Sometimes we may prefer to show fewer learning activities. This can be done by clicking "Configure resource nodes" and then unchecking on the right those activities that need not be shown.

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Viewing Students' Behaviour

Which student has more activities on Moodle?

Map of Paths: Tracking the Student's Learning Activities on Moodle

1. Click on the name of a student
2. Web of lines appear reflecting how s/he moves among different learning activities represented by the nodes

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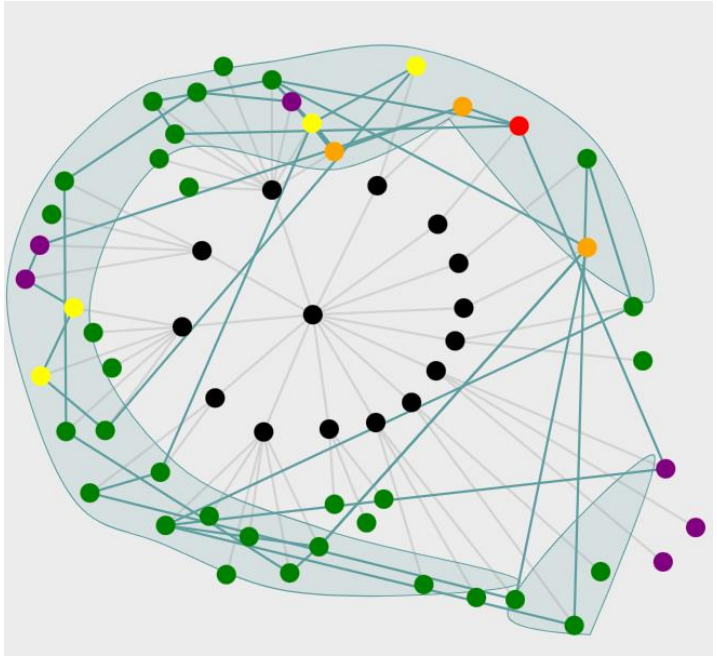
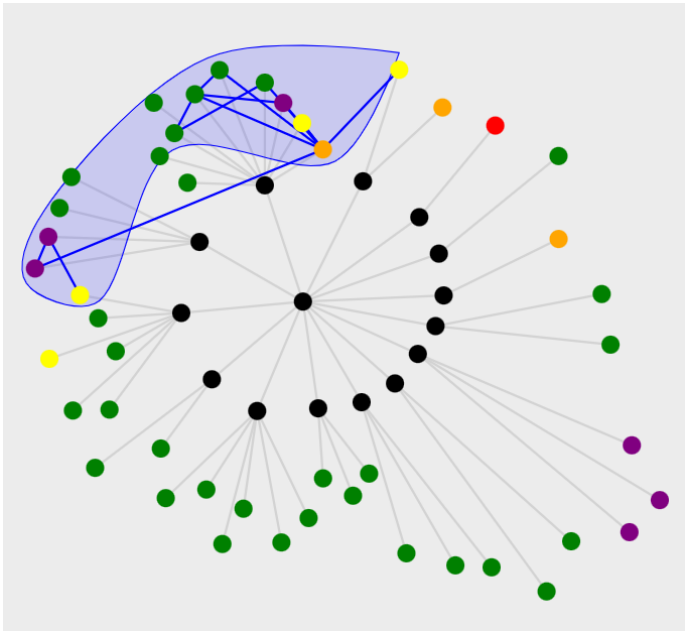


Student A who has more activities on Moodle.



Student B who has fewer activities on Moodle.

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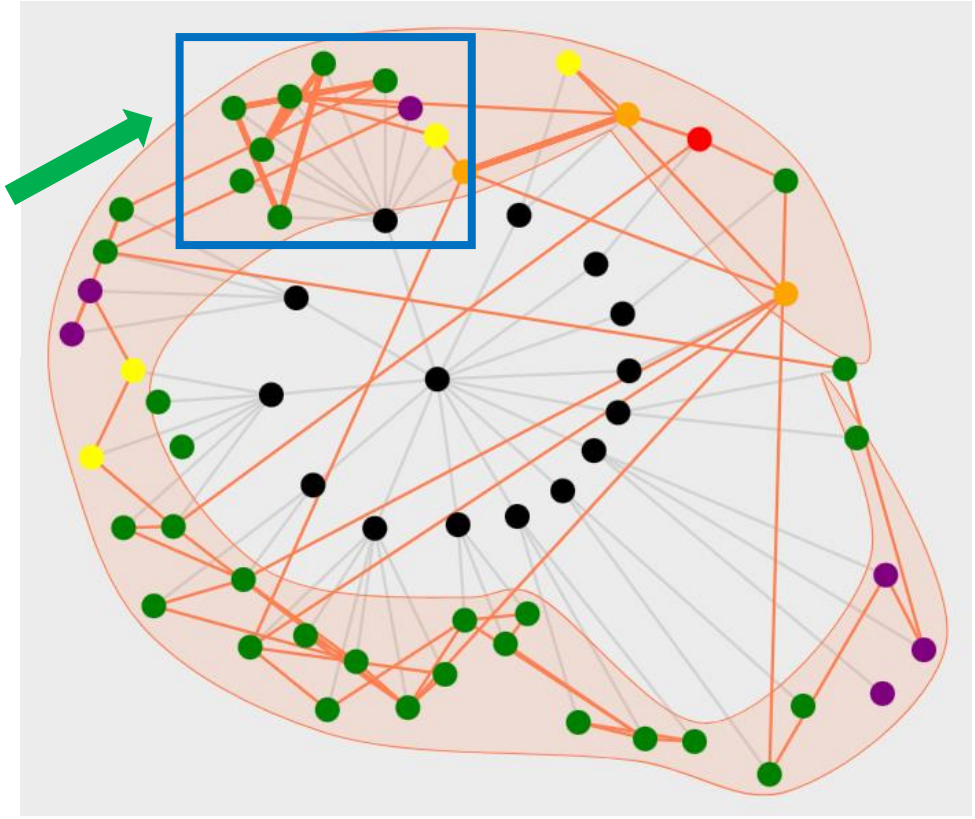
Which resources do students use more?

Map of Paths: Checking the Amount of Time the Student spent between Course Activities

c. Related materials on coding tasks



a. Black = Section
b. Orange = Forum
c. Green = File
d. Purple = URL
e. Red = Quiz
f. Yellow = External tools

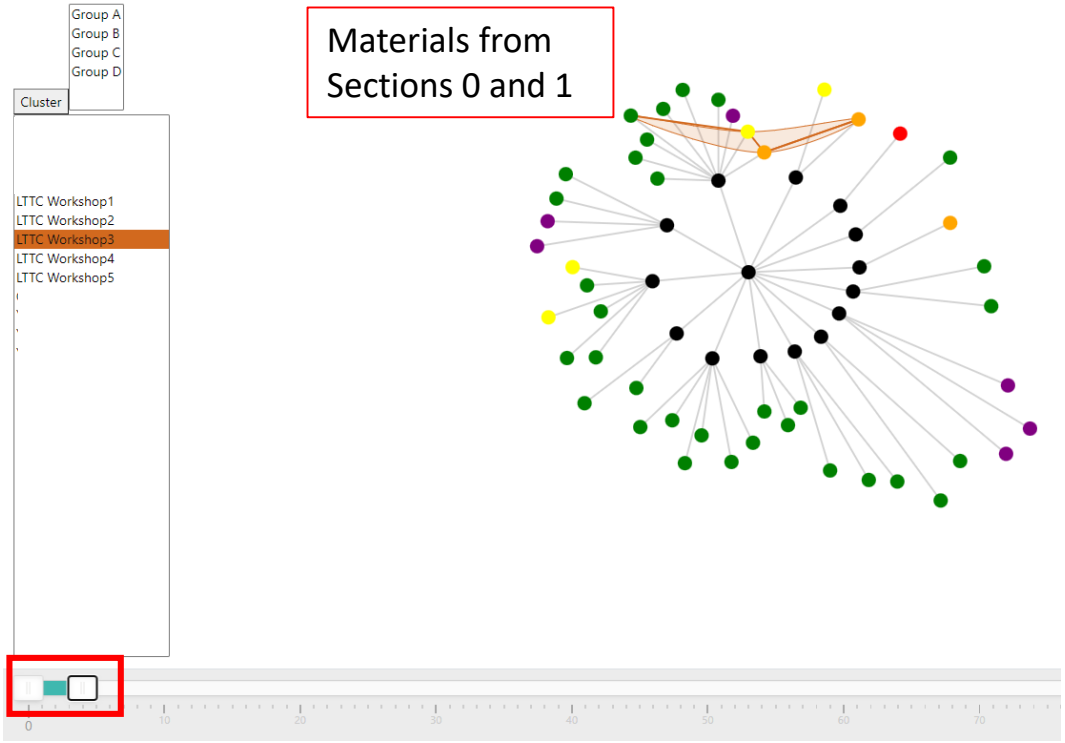
- The thicker the line is, the more a student visits between two pieces of learning resources (as represented by the nodes).
- Interpretation: This student frequently went back and forth between related materials on coding tasks.

How are they making use of the resources I have provided?

Are students using the resources in an order I expect?

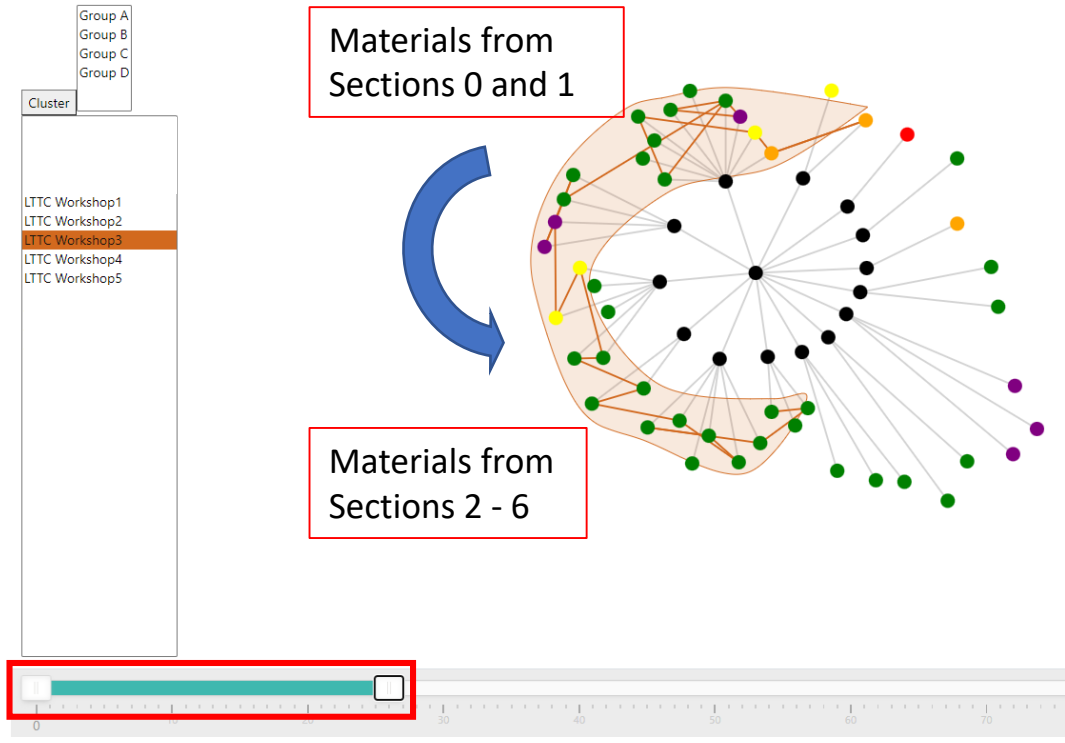
Time Slider Bar: Tracking the Student's Learning Behaviour on Moodle over time

The Learning Activities of Student A in the First Section



The beginning part of the course (slider at left most)

The Learning Activities of Student A in the First Few Sections



Progressing to later part of the course

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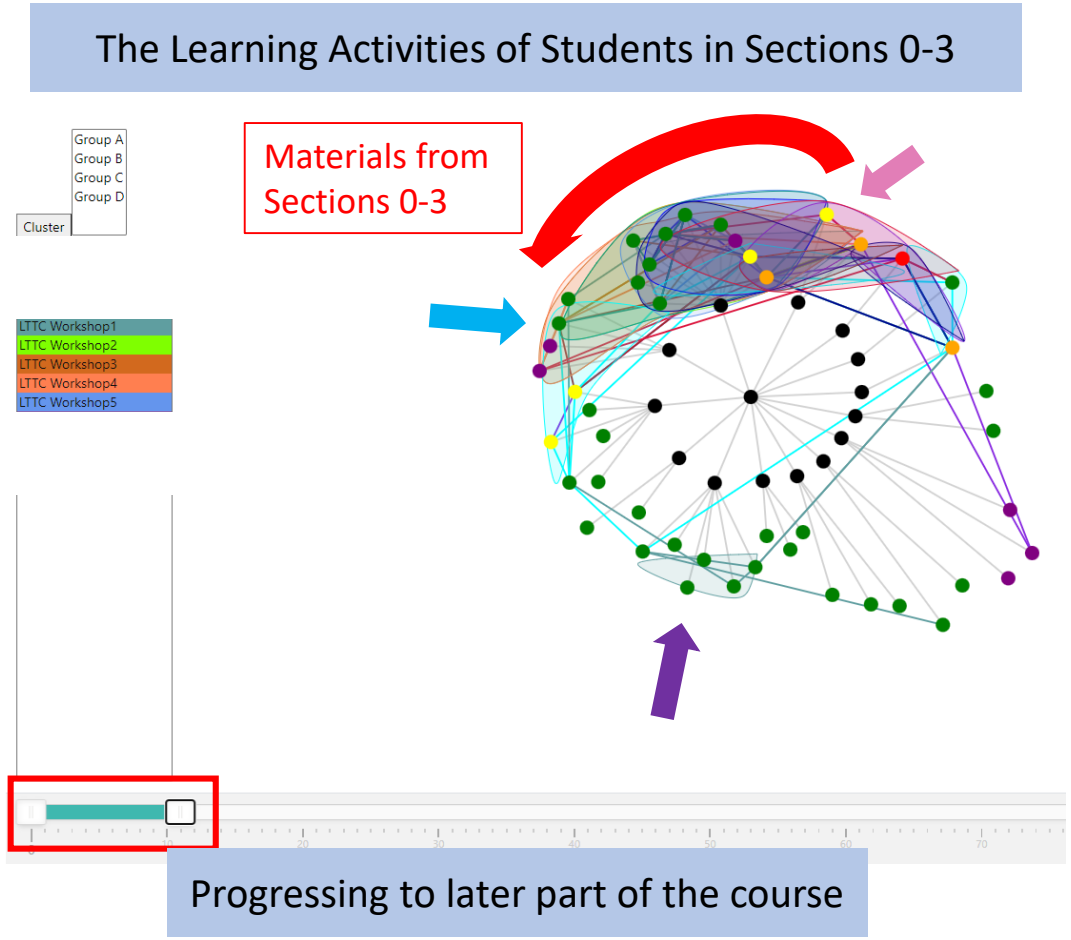
How are they making use of the resources I have provided?

What is the collective behaviour of all students as a group?

Time Slider Bar: Comparing Students' Learning Behaviours on Moodle in a Certain Time Period



- More than one student can be observed simultaneously in a chosen time period (Sections 0-3)
- Pink Arrow: Certain students only accessed the materials in the previous section
- Blue Arrow: Certain students accessed the materials according to the course schedule
- Purple Arrow: Certain students accessed the materials in the later sections in advance

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Clustering Students into Groups

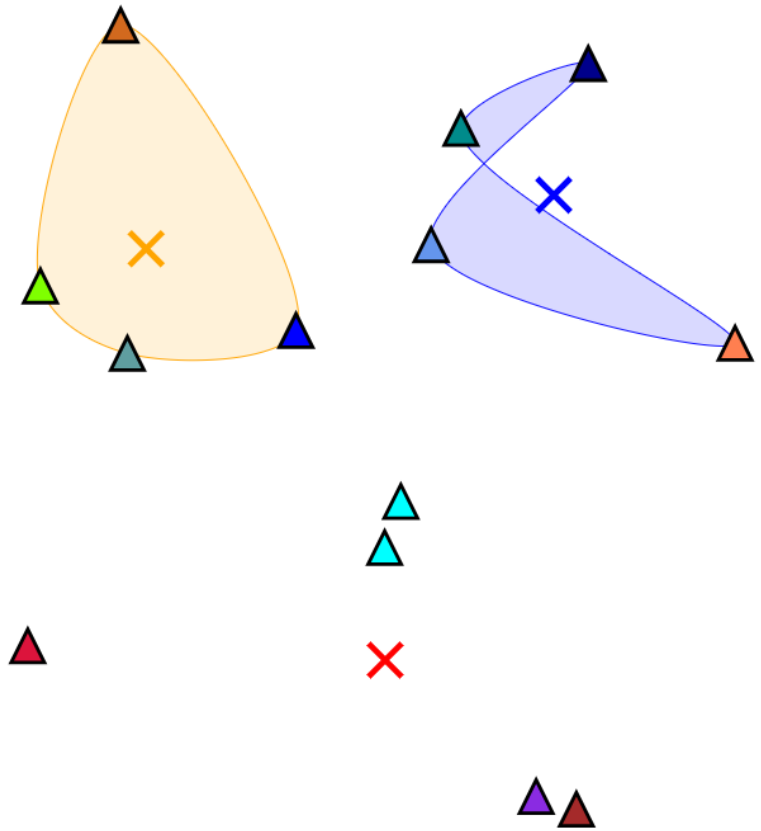
How are they making use of the resources I have provided?

Are there groups of students who share common behaviour?

Clustering: Grouping Students Based on Their Learning Pattern

The plugin allows us to cluster students into any number of groups based on their activities on Moodle,

e.g., clustering into 3 groups



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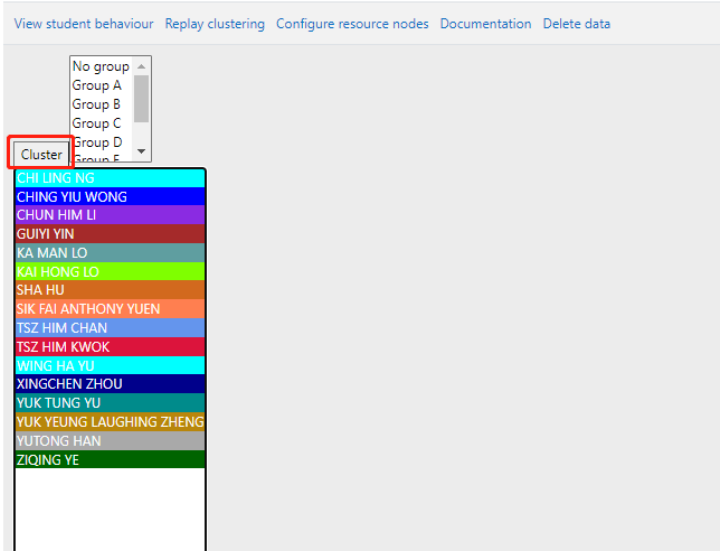
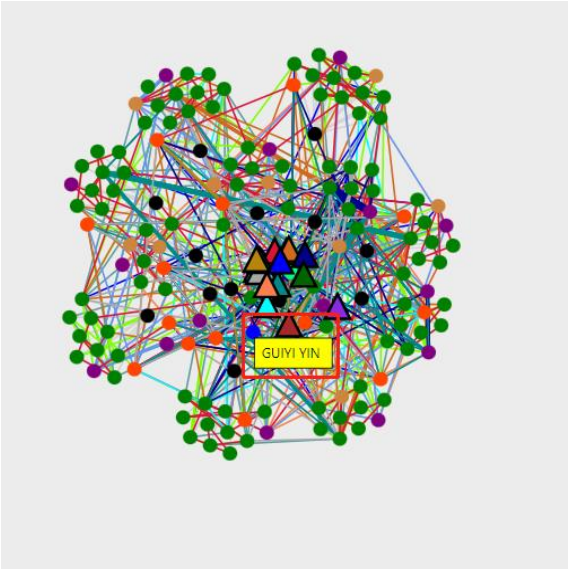
How to Run Clustering

- There is a button labelled "Cluster" above the student menu that moves from the graph viewing stage to the clustering stage.



- Clicking the button will show the same graph and student links, but with each student centroid denoted by a triangle.



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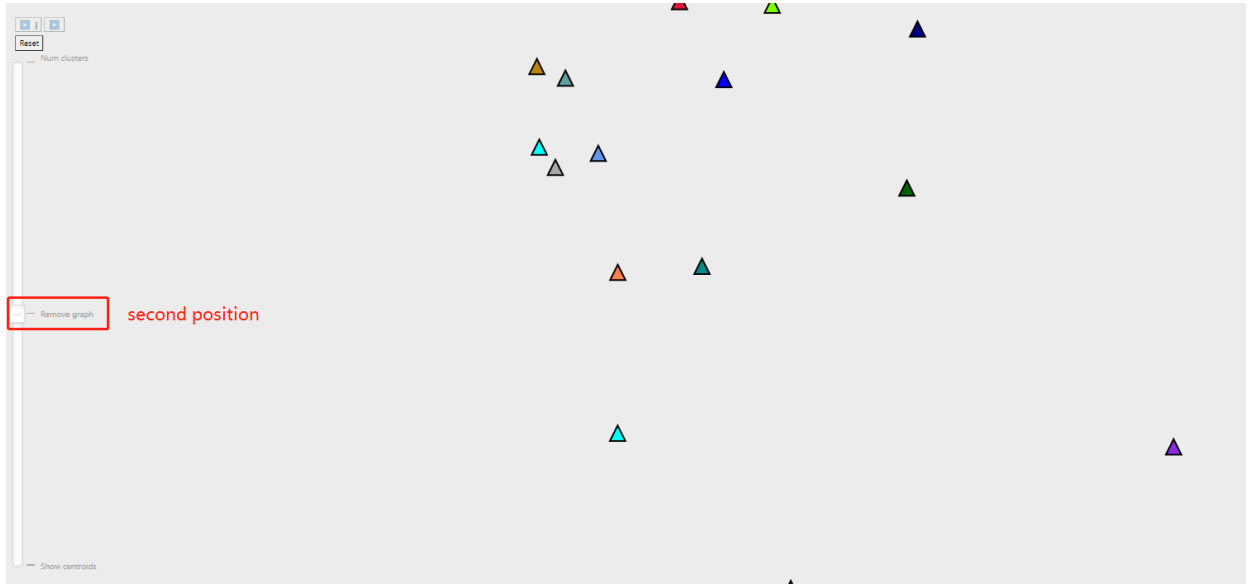
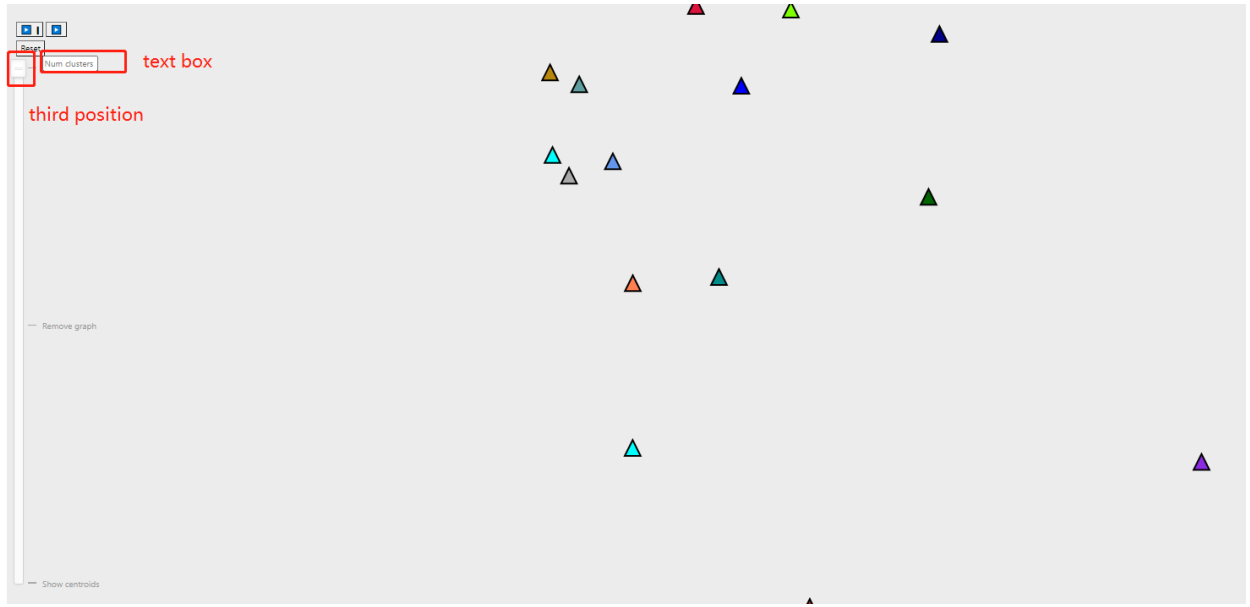
How to Run Clustering



- Moving the slider to the second position removes the graph and scales the student centroids to the edge of the viewing area.



- The third position on the slider allows clustering to be performed. A text box takes the number of clusters to use or the default of 3 will be used.

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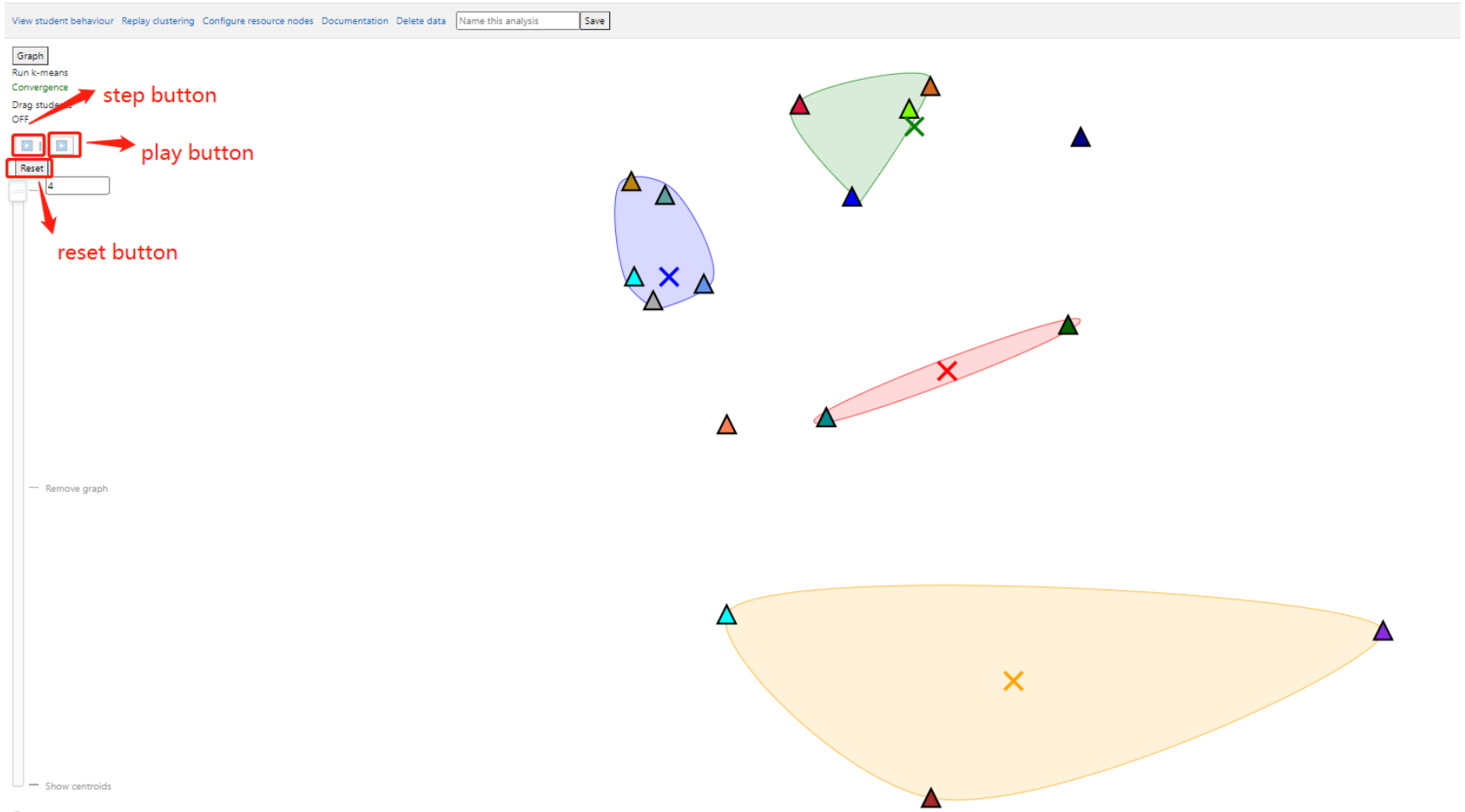
How to Run Clustering (e.g., 4 clusters)

- The k-means clustering can then be stepped through one iteration at a time with the step button or it can be played to convergence by using the play button. The reset button will reset the clustering stage, clearing the current clustering results.



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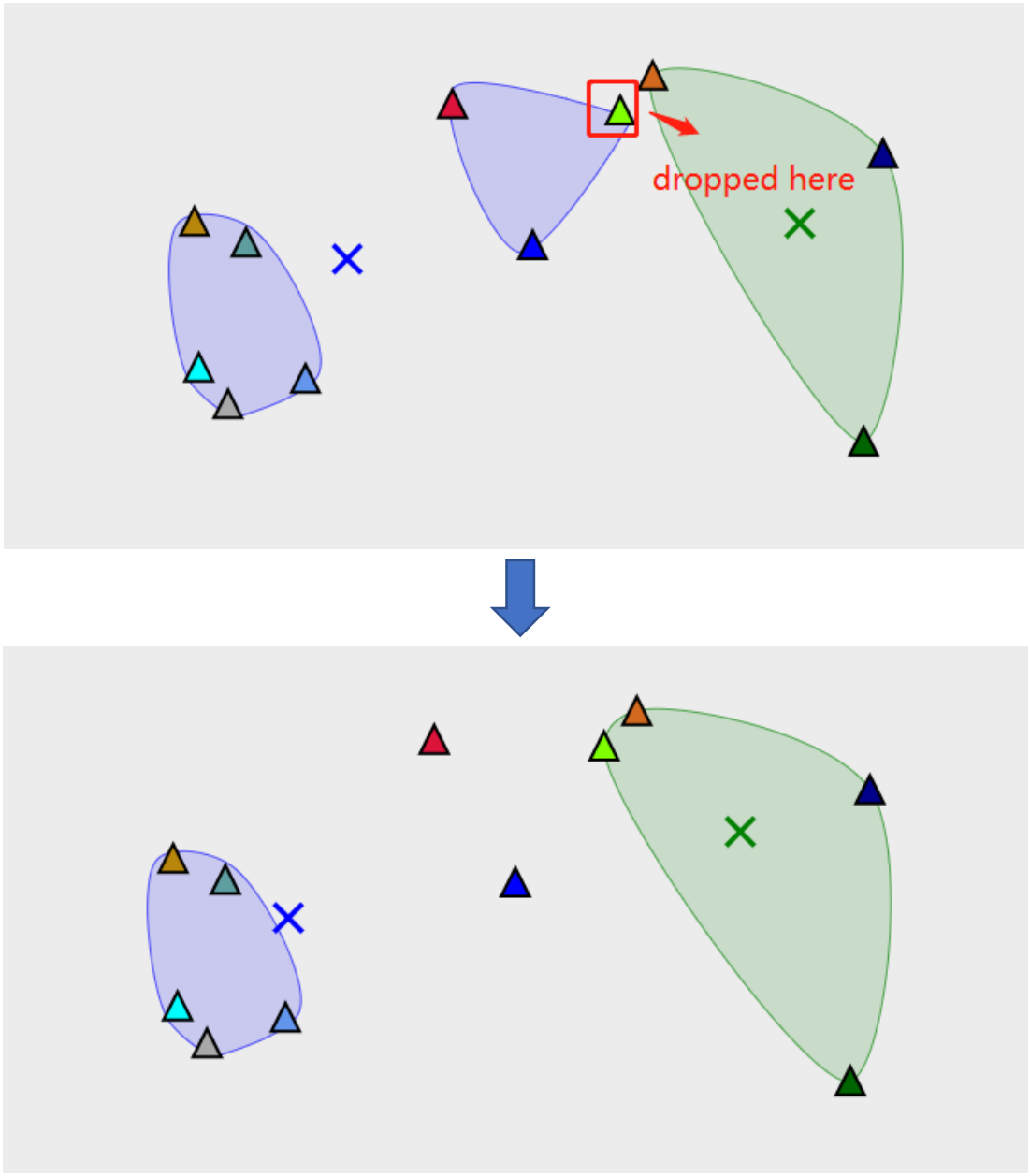
Intervening the Clustering while using the Step Button



- During clustering, it is also possible to assist the clustering algorithm by dragging and dropping student centroids. When a student centroid is dragged away from its original location and dropped elsewhere, the clustering centroid closest to where the student was dropped will have that student included in the cluster.

- This feature can assist the clustering algorithm when its results are not quite what is desired based on the user's perception of the visualization. The clustering algorithm will continue to run and may later override the intervention made at this point.

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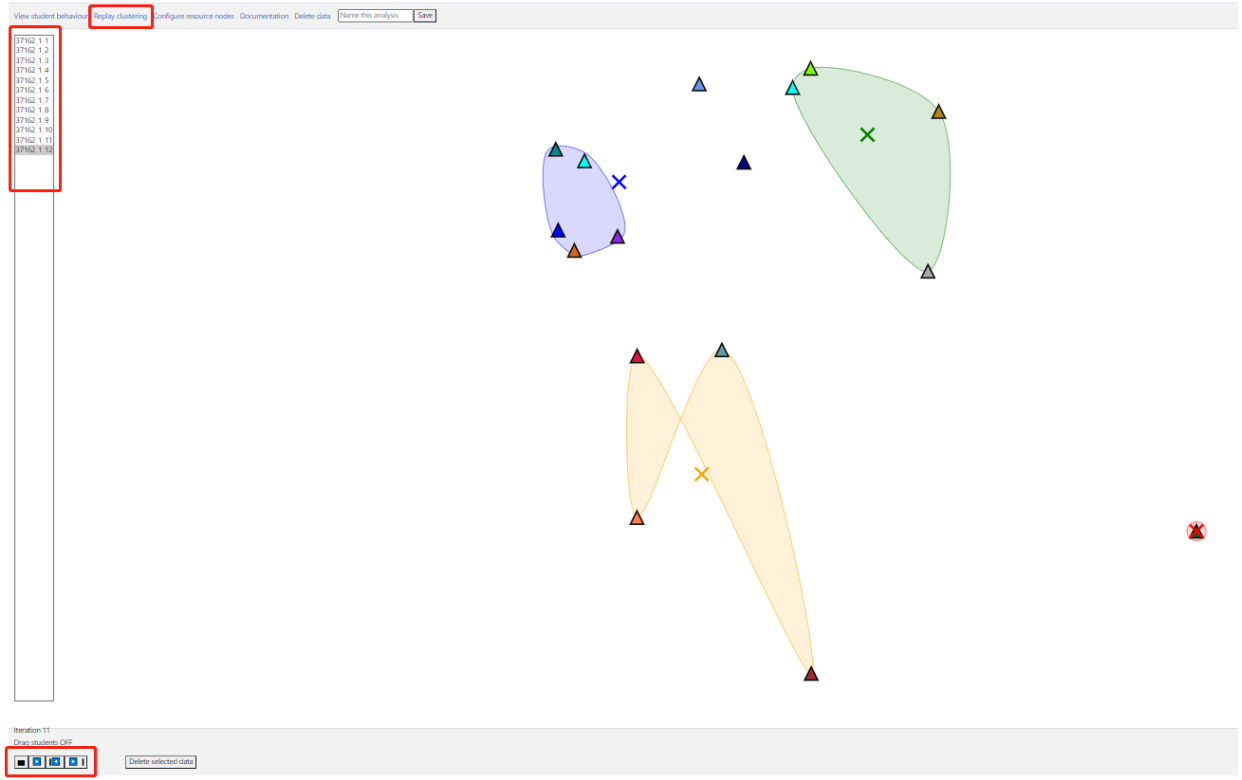
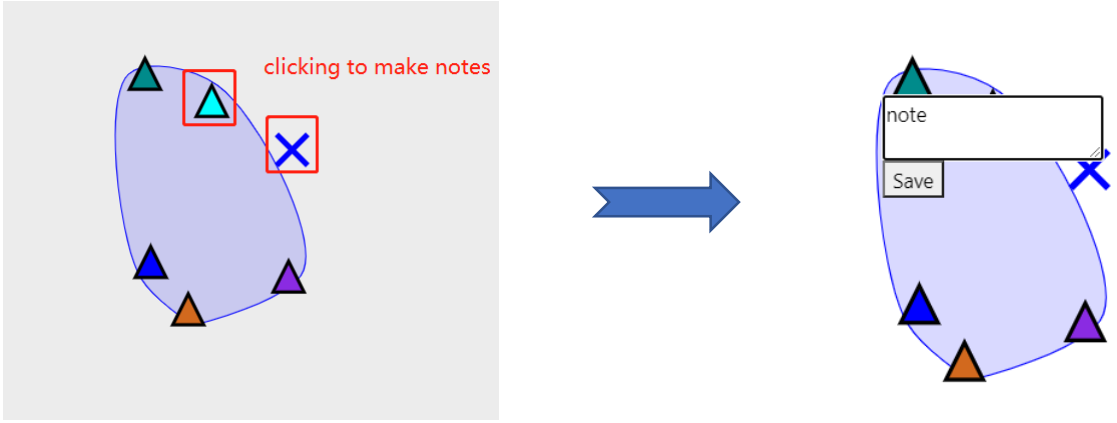
Replay Clustering and Add Notes



- Click menu “Replay clustering”
- Select an item from the menu to bring up the same graph shown at the onset of clustering. The clustering process can then be replayed step by step or automatically to the end.



- Clicking a centroid will allow notes to be added or viewed if any comment was already made for that centroid.

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