

## Clustering

Title of Method	Clustering
Introduction	
<p>Clustering is a non-linear, brainstorming technique that enables students to visualise possible relationships among ideas. Grouping similar items, i.e., clustering, is a fundamental human activity for organising, making sense of, and drawing conclusions from data. Across many scientific fields, clustering serves a useful function by helping explore, interpret, and summarise data.</p> <p><b>Clustering</b> (sometimes also known as 'branching' or 'mapping') is a structured technique based on the same associative principles as <a href="#">brainstorming</a> and <a href="#">listing</a>.</p> <p>Clustering procedures vary considerably, although the fundamental objective is to equip students with tools for arranging words, phrases, concepts, memories, and propositions triggered by a single stimulus (i.e., a piece of information, a topic, a provocative question, a <a href="#">metaphor</a>, a visual image). As with other [invention] techniques, clustering should first be modelled and practiced in class so students can eventually incorporate the tool into their own repertoire of invention and planning strategies (Ferris, Hedgcock, 2005<sup>i</sup> and Osborne, 1953<sup>ii</sup>). Suitable for small and large groups.</p>	
Aim	To seek out links, connections or patterns between various facts and statements, unknown data through visualisations, discussion and analysis and consensus-seeking.
Target group	First year students.
Intended learning outcomes	
<ul style="list-style-type: none"> <li>• facilitate sharing of information</li> <li>• determine connections or patterns between various facts and statements;</li> <li>• assemble, group or categorise similar information;</li> </ul>	
Description	
<p>Groups are given a list of statements from which clusters are to be formed. Students look for oppositions, contradictions, or conflicts among ideas, data and add arrowheads to lines between those opposing ideas, data.</p> <p>Students can be creative and visually represent the clusters, patterns and connections using doodles, concept mapping etc. and using colours. Darken and thicken lines that make connections that seem important, or circles that seem like they are turning into centres of gravity.</p> <p>Groups create elaborate pieces like art spirals, posters, and so on. They can be invited to write a phrase or sentence that captures some of their ideas about the topic of the cluster.</p> <p>Groups present their clusters.</p> <p>Groups discuss the presented clusters.</p> <p>Example of Cluster creation procedure:</p>	

<ul style="list-style-type: none"> <li>• Tell students that they are going to use a tool that will enable them to write more easily and more powerfully, a tool similar to brainstorming.</li> <li>• Encircle a word on the board--for example, 'Fibromyalgia'--and ask students to cluster the word for themselves. Before they begin, tell them that the clustering process should take no more than one or two minutes and that the paragraph they will write should take about eight minutes. Ask them to keep clustering until the "Aha!" shift, signalling that their mind is holding something they can shape into a whole.</li> <li>• After they finish writing, ask students to give a 'title' to what they have written that is suggestive of the whole.</li> </ul>	
Preparation	The statements need to be prepared by the leading academic beforehand
Resources and equipment	Students need to have access to writing materials and flipcharts.
Success factors	For a visual picture of a particular problem, concept or project, and also for showing the progression of ideas in scientific work.  Clustering is a generative, open-ended, non-linear, visual structuring of ideas, events, feelings. It is a way of mapping an interior landscape as it begins to emerge.
Advantages	<ul style="list-style-type: none"> <li>• The result is fast, intuitive and easily interpretable.</li> <li>• Such presentations aid memorisation, recall and exam preparation.</li> <li>• Useful for highly visual or tactile-kinesthetic learners.</li> </ul>
Disadvantages	<ul style="list-style-type: none"> <li>• Can be chaotic, unfocused and intimidating.</li> <li>• Can take too much time if the group is not properly controlled.</li> <li>• Participants might find it difficult to visualize or picture a particular problem, concept or project.</li> </ul>
Additional information	<p>On this <a href="#">link</a> you will find Pros and cons of a non-linear brainstorming technique.</p> <p><a href="#">Here</a> you will find examples of brainstorming and examples &amp; strategies for clustering.</p> <p>Basic rules make the brainstorming process meaningful and effective. <a href="#">Here</a> are some creative brainstorming exercises and techniques to help enhance problem-solving skills.</p>

<sup>i</sup> Ferris, D. , Hedgcock, J. (2005). *Teaching ESL Composition: Purpose, Process, and Practice*, 2nd ed. Lawrence Erlbaum.

<sup>ii</sup> Osborn, A. F. (1953). *Applied Imagination: Principles and Procedures of Creative Problem Solving*. New York: Charles Scribner's Sons.